Metaphor

A MANAGEMENT KALEIDOSCOPE

March 2009

Sustainable Development: The Challenge and Response

Our Faith

न चौर हार्यम् नच राज हार्यम् |
न भातृभाज्यम् नच भारकारी ||
व्यये कृते वर्धते एव नित्यम् |
विद्याधनं सर्वधन प्रधानम् ||

Knowledge can neither be stolen by a thief,
nor snatched by a king.
It is indivisible unlike ancestral property,
it never burdens the bearer,
it multiplies manifold when offered to others.
Knowledge is the supreme form of wealth.

Our Vision

To shape professionals, to conquer the present and future challenges to the socio economic fabric of our society, by institutionalising search, development, research and dissemination of relevant knowledge through structured learning systems.

Our Mission

To evolve, develop and deliver dynamic learning systems to equip professionals with conscience and commitment to excellence and courage to face business challenges.

ABOUT MET

At MET, we encourage students to push the limits of their minds. Because, we believe, that's what gives them the edge. Today, we can say with pride that our students aren't just intelligent. They are sharp. Razor sharp.

Armed with experience and knowledge, the MET faculty goes beyond the syllabus and teaches the students life management. Quick-thinking. Ingenious. Committed. The faculty won't leave the class till every question has been answered, every doubt erased.

If MET students are head and shoulders above the rest, it's because our faculty spares no effort to sharpen the area between their ears.

Just a stone's throw away from the Arabian Sea, is an institution that is creating waves. Because, it is quite simply, a cut above the rest. The MET League of Colleges is a conglomerate of premiere educational institutions, driven by a single minded focus on imparting quality education to make students sharp.

Established in 1989, with a mission to redefine the system of education, MET is a professionally managed, multi disciplinary and multi faceted oasis of knowledge. Its premiere educational institutes conduct university accredited and autonomous programmes. The grant of the ISO 9001:2000 certification is an acknowledgment of the institution's capability to deliver professional education that meets the highest standards of professionalism worldwide. All this, to help young professionals face the challenges of life. And make their mark in the corporate world.

Mumbai Campus

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Institute of Mass Media
Asian Management Development Centre
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Institute of Medical Sciences
Institute of Information Technology
Institute of Computer Science
Institute of Distance Learning
Institute of Software Development and Research
Institute of Trichology
Institute of International Studies
Rishikul Vidyalaya
Knowledge Explorer - Publishing Division

Nasik Campus

Institute of Management
Institute of Pharmacy
Institute of Engineering
Institute of Technology (Polytechnic)
Institute of Information Technology
Institute of Distance Learning

GIVING INDIA THE EDGE

There comes a time in the history of a nation, when braving all odds it marches forward regardless of global dominance. Powered by the double digit growth of the industrial sector, 300 million middle class and 500 million young hopefuls, our country is developing as an engine of growth of the world economy. Globally, thought leaders hold the common view that India represents the aspirations of the world. Undoubtedly, the educated English speaking, technology savvy youth will lead us to universal success.

With two million schools, five million teachers and associates with a million young professionals offering their services to the industry and business annually, the economy is poised ushering in a techno commercial revolution in the country. But as the forces of globalisation bring in competition with accompanying cost and bottom line pressures, we will soon be faced with the question of class vis à vis mass education. As the industry becomes more competitive and as we try and reach out to the global markets, we will have to deliver world class quality products and services all the time. Therefore, nurturing and developing high quality educational systems and institutions will become the prime responsibility of all the stakeholders in education.

We believe that the golden age of India is with us and ahead of us and not behind us. At MET, through our academia and pedagogy, we seek to offer world class learning systems to the youth. Through a balanced mix of academics and industry interaction, we train professionals who have not only contributed significantly to the Indian industry, but have reached beyond the shores of this country and sought global acclaim for our efforts.

Today, India is emerging as a global super power. Not surprising, considering she has produced some of the best minds in the world. In every field, Indians are making their mark in the international arena. At MET, in our own small way, we are trying our best to add to the country's intellectual capital, by producing the next generation of sharp minds, who, we hope, will shape India's future and lead her to greater heights.

MET is our humble contribution to the building of resurgent India, poised to conquer the global economy.

Board of Trustees
MET League of Colleges

MET SCHOOLS OF MANAGEMENT

Programme	Institute	Affiliation / Accreditation	Duration
MMS Masters in Management Studies	MET Institute of Management, Mumbai	University of Mumbai, AICTE, DTE	2 Years Full Time
MMM / MFM / MHRDM / MIM	MET Institute of Management, Mumbai	University of Mumbai, Govt. of Maharashtra	3 Years Part Time
eMBA e-empowered Management & Business Administration	MET Asian Management Development Centre, Mumbai	Four certificate courses	2750 Hrs. Duration
eMBA-Insurance e-empowered Management & Business Administration (Insurance)	MET Asian Management Development Centre, Mumbai	Four certificate courses	2750 Hrs. Duration
PGDM (e-Business) Post Graduate Diploma in Management (e-Business)	MET Institute of Computer Science, Mumbai	AICTE, Govt. of Maharashtra	2 Years Full Time

The MET Advantage

- ISO 9001:2000 certified
- NGO in Special Consultative Status with UN (ECOSOC)
- MET has been ranked 13th best B School in South Asia by Asia Inc. Magazine
- 12th best B School in India by CNBC TV18
- Ranked 'A++' grade B School by Business India
- Outlook ranks MET amongst top 30s in India
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- Research focused faculty with a cumulative experience of over 150 years
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- Global faculty
- Live management threshold
- International alliances with reputed B Schools
- Outstanding Indian / global industry interface
- Corporate social responsibility projects
- Enlightened interaction for urban-rural synergy
- Globalised learning systems delivered with Indian ethos

SUSTAINABLE DEVELOPMENT: THE CHALLENGE AND RESPONSE

The seventh issue of Metaphor is an effort of the students and faculty members of the MET Schools of Management, to understand the business potential offered, while meeting the challenge of sustainable development. Ever since the United Nations Framework Convention on Climate Change (UNFCCC or FCCC) engaged the global community in a serious dialogue on climate change, at the Earth Summit [Rio de Janeiro, Brazil – 1992], its mission and the message were universally propagated, by organisations like Green Peace and other NGOs. When the Kyoto Protocol offered a binding agreement, to reduce greenhouse gas emissions worldwide, entered into force on 16th February, 2005, more voices and nations joined the cause. By 2008 over 183 countries ratified the protocol and serious steps have been taken by the European Union and other developed nations, including the US, to bring down GHG emissions to manageable levels. However, few countries have been successful, in launching concrete programmes, to meet the deadlines laid down by UNFCCC.

Initially, the business community the world over, looked at the entire climate change challenge, as a stumbling block or hindrance, to their expansion plans; since the strict norms of GHG emissions, required costly research effort and put a limitation on their profit margins. Gradually the breakthrough research and introduction of the carbon credits mechanism that could then be sold to buyers enhanced the interest of business, in promoting the cause of sustainable development. In fact, the spurt in crude prices led to intensive and extensive research, in developing renewable sources of energy, thereby contributing to the widening of a profitable business horizon, in implementing climate change initiatives. It is this positive side of the sustainable development challenge, which can be the engine for the growth of the economies the world over, in the 21st century.

This issue of Metaphor addresses various dimensions of sustainable development, as applicable to enterprises in agriculture, bio fuels, transportation systems, the automotive industry, the construction industry, as well as the impact and fallout of such initiatives, on all the sectors of the economy. The students and faculty have been actively engaged, in tracing the contours of sustainable development, more especially in the context of the Indian industry, and have attempted to analyse the business potential of this fusion, in leading to a catalytic growth. It is hoped that this exercise will sow the seeds of various business ideas and initiatives, which will subsequently flower into profitable business enterprises, as students reach out to the real world of business.

In conclusion, I would like to state that through centuries of research into the tumultuous past of mother earth, we have realised that we are living on a dynamic planet, which has been continually adjusting to the various climate changes, which have been occurring, throughout its half a billion years of existence. Whether in the form of a meteor shower or a planetary collision or volcano, the flora and fauna of the earth have always modified, redesigned and evolved to make this a beautiful place to live in and prosper after the event, as is evident through the mitigation of the concern about the depletion of the ozone layer, due to the excessive emission of greenhouse gases, which has been laid to rest, as the ozone layer is expected to right itself entirely by 2009. Through the UNFCCC and the Kyoto Protocol, the conscience keepers of this planet firmly believe that if we prepare ourselves with proper scientific care and management and build a bulwark against the deterioration of the eco system, we have a better chance of maintaining the human habitat, with all its flora and fauna, protecting our existence and moving to posterity.

The idea behind Metaphor 2009 is to provide the students with the avenue to express their thoughts and share them with others, in order to evaluate them and initiate changes, as after all, the future belongs to them, and the earlier they work towards it, the better. It is in this hope and with a message that this issue of Metaphor reaches out to you, with a prayer that, like the young writers, you would also put your thoughts to paper, to compose the universal symphony of harmony, which will waltz us into a bright future.

Hail to the spirit of global enlightenment, binding us, to ensuring the elemental purity and sustainability of our planet.

Prof. Vijay Page
Director General
MET Institute of Management

FROM THE EDITOR'S DESK

Treat the Earth well. It is not inherited from your parents, it is borrowed from your children.

- Old Kenyan proverb

The Darwinian theory of the 'survival of the fittest' has somewhere along the way got itself so deeply ingrained in our mindset, that its other no longer occurs to us, even as a theoretical possibility. While we are busy, caught up in attempting to stay ahead in the rat race of development, what we fail to realise is that all of our efforts at 'consciousness' prove to be mere tokenisms. We stand divided largely at two ends of the scale, either wallowing in our ignorance and therefore surrounded by a bliss, resulting from it or then concerned but unaware about what we can do to control the damage, being wreaked by what has grown to become the Frankenstein of development, finding solace in declaring ourselves helpless cogs in a wheel gone astray or then making efforts that may either be too little or too late.

Whether in the areas of ecology, economy or society, we find that though the possibilities for change are immense, the excuses for not being able to put them in place are greater; and so, if we fail to take a keen look at the double edged path of progress, on which we have so confidently embarked, we would paradoxically make the very concept of 'development' redundant.

The attempt of Metaphor 2009 is thus to look at the various issues that are involved in sustainability, for without it development is meaningless. It is time we acknowledge that our past, present and future are linked in an inextricable continuum, and so till we are able to ensure a tomorrow our today is redundant. As a response to this, Metaphor 2009 has probed the varied areas, where initiatives towards 'sustainable development' are no doubt underway, but much more than what has been initiated, actually needs to be done.

And while one cannot deny that the situation is bleak, the wise rather than giving up in a paroxysm of despair would take it as a challenge, to reverse what we can and rein in what we cannot.

It has been our humble attempt therefore to chart territories, where much can be and needs to be done, and open a forum for contemplation, acknowledgement and assessment, for after all awareness is the first step towards action. It's in fact high time that we realise that as Niall Fitzgerald from Unilever has so cogently put it, "Sustainability is here to stay or we may not be."

Preeti Shirodkar
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A Paradigm Shift in Indian Agriculture

Taking a detailed look at organic farming as an alternative to current farming methods that rely heavily on chemicals for a higher yield, the article by taking up two case studies discusses how organic farming is not merely a viable and practicable option but also one that will ensure better results without at any point compromising with productivity, resources and the environment at large.

Drupad Raja - eMBA

The Indian subcontinent is a part of the oldest civilisations known to the human race and one which has declared itself as an agricultural economy. According to the National Commission on Farmers, India has a 10,000 year old history of agriculture. Barring the last five decades, all of it was organic and the diversity of the crops was phenomenal. The land had the highest population density in the world, even in that long gone era. But today, Indian farmers are increasingly reduced to penury. Indian agriculture is in crisis. The production of food grains is stagnant for the last 10 years. There are mounting suicides in various parts of the country, particularly in Vidharbha in Maharashtra and in Andhra Pradesh, as also in Punjab, the frontline state of India's "Green Revolution". The National Commission on Farmers has observed that 40% of farmers are willing to quit if any alternative is made available to them. It is rather surprising to see that in an agrarian country like India where around 65% of the population relies on farming and allied activities for their survival, 40 % of the farmers are willing to quit if any alternative is available. The annual growth rate of Agriculture has come down to less than 2%. Farmers are committing suicides in large numbers, as they find that it is impossible to sustain themselves on the returns they get. In many cases, these returns do not cover even the cost of production. The situation is grim and the time has come to give a new direction to the entire set up. 'Everything can wait but not agriculture', was what Jawaharlal Nehru had declared in 1952.
There are a number of widespread problems faced by farmers all across the country, which India as an agrarian economy should focus on for overall development.They can be enumerated as follows:

1. The net income of farmers must increase. The first step in this direction is to reduce his cost of cultivation.
2. Per acre productivity of all crops must increase year after year.
3. Remunerative prices should be offered for the produce.
4. More employment opportunities should be made available in rural areas, particularly in the farming sector.
5. Attempt should be made to prevent numerous diseases that result from pollution, due to the use of unnecessary chemicals in the form of fertilisers, pesticides and weed destroying chemicals.
6. The change in the environment has affected the monsoons.
7. Our dependence on imported chemical fertilisers makes our position highly vulnerable and the entire system can collapse if imports become difficult for reasons beyond our control. Our food security too stands compromised.
8. The burden on the exchequer on account of the subsidy on fertilisers has become back-breaking. It has jumped to Rs.1,20,000 crores, while the budget provision is only Rs. 31,000 crores.
9. Farmers are inclined to grow only cash crops and ignore food grains. We are required to import large quantities of pulses and oilseeds. While some farmers may be allowed to grow only for exports, they too should realise that the overseas consumers are also demanding food and fruits, which are free from poison.
10. Agricultural education system needs a complete makeover. Students coming out of the agriculture universities know that the technology that they have learnt is not sustainable. They dare not attempt to follow it. No wonder a very minuscule percent of these graduates take to farming as their livelihood.

Organic Farming can provide a complete solution to these problems while also contributing to an ideal economic situation.

1. Organic farming stipulates complete withdrawal of all chemicals, both in the form of fertilisers and the pesticides. Naturally the cost of production comes down by almost 60%, hence improving the net income of the farmers.
2. Productivity of any crop depends primarily on 4 factors namely sunlight, air, moisture and living soil. The fear of loss of productivity is largely imaginary, as has been demonstrated in case of all crops not only in India but many other countries including U.S.A.

   For example, the SRI method, which is essentially organic, has proven that rice production can be doubled by adopting SRI, which ensures that every rice plant gets adequate supply of sunlight and air and needs little moisture to ensure good growth and yields. It is well known that photosynthesis is the cause of 97-98% of the total biomass produced by any plant. That is why

farming is also called harvesting the sun. The growth of a plant is a natural process and so the least one interferes in it the better. The farmer has to ensure that the geometry of the plantation should ensure that every plant gets the necessary sunlight, air and moisture. The large number of micro flora present in the soil will ensure the supply of all other nutrients.

Moreover, experiments made by the Maharashtra Organic Farming Federation on sugar cane also establish these findings. One can keep a distance of 10 to 12 feet in the twin rows of sugarcane and use this empty space to grow three seasonal crops. The arrangement ensures that sugar cane plants get full sunlight and air and the crops in between serve as a bonus to the farmer, without affecting the production of sugar cane. The F.A.O. has approved this method and published it in an article entitled 'Water Efficient Sugar Cane Cultivation'. No chemical fertilisers are used either for the sugar cane or the mixed crop. So too, the water saving is as much as 40%.

It is necessary to understand that Nature ensures that a static organism like a plant will get all the food it needs, as and when it needs this, with the help of known and unknown microbes, such as Nitrogen Fixing bacteria, P.S.B., Mycorryhza etc. Living soil is the only condition for excellent growth and farmers have to ensure that the soil is and remains a living soil. A famous Indian soil scientist says that "the word 'SOIL' stands for 'Source of Infinite Life'".

Furthermore, there are published reports by F.A.O., World Watch, Icrisat, Rodale institute et al about the productivity of organic farming. Additionally, every farmer can experience it on a small plot, by first getting full knowledge books and then visiting the demonstrative farms. By doing this, it should be possible to usher in organic farming over a short period of 3 to 5 years for all crops in all parts of the country.

3. We blame agriculture for its low contribution to the national GDP but we forget that we have followed policies, which ensure that the farmer shall remain poor forever. When his produce is low, we import to ensure that he will not get the benefit of higher price but when he produces in abundance, we leave him to the market where demand and supply determine the price. In fact, the farmers are spread over 6 lakhs villages and cannot agitate to cripple the government and therefore their demands often go unheard. As a result, because of the debt burden the farmer is always a distressed seller, but an organic farmer can afford to wait till the market rises, as in an organic farm the flower stays much longer on the plant.

4. Organic farming needs some manure, bio-fertilisers and bio-pesticides, which can be locally manufactured by young boys and girls, who can be trained in a week or so. When undertaken in each village these activities will provide year long employment to many youth in their own village. Packaging, transport and taxes could be avoided, thereby making it easy and economical. The investment quired to start-up such a unit will also be insignificant.

5. Organic Farming can also ensure healthy food and prevent diseases.

6. Each kilogramme of urea consumes 6 kilo calories of energy in the manufacturing process. The case is similar with other chemical fertilisers. If we stop using urea, we will save the enormous amount of energy, which is consumed during its production as well and transportation from the factories to the farms. In fact, India can claim Carbon Credits on per acre basis, if we turn to Organic Farming.

7. India produces 200 million tonnes but at the same time imports 40% of the Nitrogen, 97% of the Phosphorous and 100% of the Potash that farmers use. Such heavy imported inputs compromise our food security. When we adopt Organic Farming our dependence on fertiliser imports can be drastically reduced.

8. The burden of subsidy on chemical fertilisers has progressively increased in the last 4 years. The figures released by the Government of India are as follows:

Year	Amount in crores
2004-05	Rs. 15,779
2005-06	Rs. 18,299
2006-07	Rs. 25,952
2007-08	Rs. 40,338
2008-09	Rs. 1,19,772

The Fertiliser Association of India met in Pune on 15th September,2008 and disclosed that the industry will not survive for long unless the Government is more liberal in giving more subsidies. In a press conference, the President claimed that the Government has not provided the budget for 79,000 crores that the industry must be paid this year. Moreover, the Government gives the subsidy in the form of bonds, which the industries sell in the market at 50 % discount to meet their cash needs. When Organic Farming is adopted as mainstream agriculture, the need for chemicals will be over and the Government would not need to pay any subsidy, as the farmers will not need the chemical fertilisers.

9. We are importing enormous quantities of pulses and oil seeds. If the Minimum Support Price of these items is increased substantially, as was done in case of wheat, our farmers will grow these pulses. Mono-cropping will be replaced by mixed cropping, thereby the production of both, pulses and oil seeds will go up and more nitrogen will be fixed in the soil.

For example, soya bean covered an area of 96 lakh hectares for its production this year. It is promoted as an oil bearing crop. But we consume only 18 % of the crop. The balance 82% is exported to the United States of America to feed their pigs, cows and poultry. If

the land under soya bean cultivation is diverted to oilseeds like sesame, safflower, etc. along with mixed crop of pulses, the need to import will be avoided and our farmers as well as the soils will become rich.

10. The present system of agricultural education and research needs drastic changes. The students of rural schools are getting removed mentally and physically from the farms and their families. They do not know the art of farming and are unable to get gainfully employed elsewhere. The education provided must build confidence in the students that after passing they can get gainfully employed in their own village.

    While on the one hand it is agreed that a large majority of farmers are small land holders, our research is directed towards high-tech agriculture, which benefits only a handful of rich farmers. The direction of research and the funding must ensure that it benefits the aam aadmi amongst the farming community.

International Case Study

Cuba Organic by Default

Cuba has developed one of the most efficient agriculture systems in the world and organic farmers from other countries are visiting the island to learn their methods.

Due to the U.S. embargo and the collapse of the Soviet Union, Cuba was unable to import chemicals or modern farming machines, to uphold a high-tech corporate farming culture. Cuba needed to find another way to feed the people. The lost buying power for agricultural imports led to a general diversification within farming on the island. Organic agriculture has since become the key to feeding the nation's growing urban population.

Cuba's new revolution is founded upon the development of an organic agricultural system. Peter Rosset of the Institute for Food and Development Policy states that "this is the largest conversion from conventional agriculture to organic or semi-organic farming that the world has ever known". Not only has organic farming been prosperous, but the migration of small farms and gardens into areas with dense vegetation has also played a crucial role in feeding citizens. State food rations were not enough for Cuban families, so farms began to spring up all over the country. Havana, home to nearly 20 percent of Cuba's population, is now home to more than 8,000 officially recognised gardens, which are in turn cultivated by more than 30,000 people and cover nearly 30 percent of the available land.

The growing number of gardens might seem to bring up the problem of space and price of land. However, "the local governments allocate land, which is handed over at no cost, as long as it is used for cultivation" says S. Chaplowe in the Newsletter of the World Sustainable Agriculture Association. The removal of the 'chemical crutch' has been the most important factor to come out of the Soviet collapse, trade embargo and result in the subsequent organic revolution. Though Cuba is organic by default because it has no means of acquiring pesticides and herbicides, the quality and quantity of crop yields have increased. This increase is occurring at a lower cost and with fewer health and environmental side effects than ever. There are 173 established 'vermicompost' centres across Cuba, which produce 93,000 tonnes of natural compost a year. The agricultural abundance that Cuba is beginning to experience is disproving the myth that organic farming on a grand scale is inefficient or impractical.

Indian Case Study

Kalpavruksha Farm, Gujarat

Bhaskar Save, often called the 'Gandhi of Natural Farming' has dared to challenge the propagators of the Green Revolution and has been the forerunner of Organic Farming in India. It has been close to half a century since he has been practising Natural Farming on his 14 Acre Farm in the Valsad District of Gujarat. What is more interesting is that Mr. Save practiced Chemical Farming or conventional farming for around 10 years, after which he shifted to the Natural Way. According to him Conventional Farming has far too many loopholes and agriculture has to be practised in harmony with Nature.

His respect for nature is evident form the following excerpt from the Upanishad which the veteran farmer Bhaskar Save firmly believes in:
Om Purnamadaha Purnamidam
Purnat Purnamudachyate
Purnasya Purnamadaya
Purnamewa Vashishyate

"This world is whole and complete.
From the whole emerge creations,
Each whole and complete.
Take the whole from the whole,
But the whole yet remains,
Undiminished, complete!"

Gandhi declared: Where there is soshan, or exploitation there can be be no poshan, or nurture! Vinoba Bhave added, "Science wedded to compassion can bring about a paradise on Earth. But divorced from non-violence, it can only cause a massive conflagration that

swallows us in its flames"

Based on these beliefs Save has created a food forest. Kalpavruksha compels attention, for its high yields easily out perform any modern farm using chemicals. This orchard has trees like the coconut, which yields an average exceeding 350 coconuts per year. Similarly, chikoo yields an average of 300 kg of delicious fruit per tree each year. Also growing in the orchard are banana, papaya and a few trees of date-palm, drumstick, areca-nut, mango, jackfruit, toddy palm, custard apple, jambul, guava, pomegranate, lime, pomelo, mahua, tamarind, neem, audumber, bamboo, various under-story shrubs like kadipatta (curry leaves) and crotons; and vines like pepper, betel leaf, passion fruit, and what so ever wants to grow at its will.

Nawabi Kolam (or Surti Kolam) – a delicious and high-yielding, native variety of rice, several kinds of pulses, winter wheat and some vegetables too are grown in seasonal rotation on about two acres of land. These provide enough for this self-sustained farmer's immediate family of ten and an average of two guests. In most years, there is a surplus of rice, which is gifted to relatives or friends, who appreciate its superior flavour and quality.

The diverse plants on Bhaskar Save's farm co-exist as a mixed community of dense vegetation. Rarely is there even a small patch of bare soil exposed to the direct impact of the sun, wind or rain. The deeply shaded areas under the chikoo trees have a spongy carpet of leaf litter covering the soil, while various weeds spring up wherever some sunlight penetrates.

It is not without reason that Charles Darwin declared a century ago, it may be doubted whether there are many other creatures that have played so important a part in world history, as have the earthworms. Bhaskar Save confirms, "A farmer who aids the natural regeneration of the earthworm and tiny soil-dwelling organisms on his farm, is firmly back on the road of prosperity". Vermicompost – or earthworm compost – is a treasure of fertility. In relation to the surrounding parent soil, the intricately sculpted worm castings may contain twice as much as magnesium, five times as much nitrogen, seven times as much phosphorous, and eleven times as much potash. Moreover, the bacterial population in such castings is nearly a hundred times more than in the surrounding soil. Save estimates that at least 6 tonnes of nutrient-rich castings are provided by the earthworms each year in every acre of his land. That is a higher grade fertiliser than most farmers can afford to buy!

"In nature, every humble creature and plant plays its role in the integrated functioning of the eco-system. Each is an inseparable part of the food chain. The excrement of one species is nutrition for another. In death too, every organism, withered leaf, or dry blade of grass leaves behind its contribution of fertility for bringing forth new life." Consequently, pleads Bhaskar Save - if we truly seek to regain ecological harmony and sustainability, the very first principle we must learn to follow is 'Live and let live.'

Since all plants are provided by Nature in her wisdom to fulfil certain functions, in relation to the soil and the creatures of the soil, we need to think twice before removing what we consider undesirable weeds. In particular, violent methods like spraying chemical weed killing chemicals or herbicides, and the use of heavy tractors should be totally given up. At Kalpavruksha, no labour is wasted even in manually rooting out weeds, though sometimes such weeds that over-shade young saplings may be cut and mulched.

"Even if some weeds threaten to become rampant and over-shade crops," says Bhaskar Save, "the modern methods of weed control are sheer madness. After all, we do not tear out the hair on our head when it grows too long. Nor do we spray poison on it. And so with weeds, the saner way is to moderate their growth, where needed, by cutting."

Excluding the two acres under coconut nursery and another two acres of paddy field, the average food yield from the ten acres of orchard is over 15,000 kg per acre per annum! In nutritional worth, this is many times superior to an equivalent weight of food grown with intensive use of toxic chemicals, as in Punjab, Harayana and many parts of India. Apart from the sale of fruit, considerable income is obtained from the sale of coconut saplings, which are always in high demand. Even from distant Kerela - the coconut country – farmers visit almost every year and carry back some saplings, apart from valuable insights! Thus, Bhaskar Save comfortably makes a net income of several hundred thousand rupees every year, apart from being self-sufficient in most food needs. And this, without exporting his produce to ready buyers of Organic Food in Europe, offering a much higher price.

There is an old saying,"we are a product of our environment". However, this is no longer true, now the environment is a product of us.
Nature is our Mother, she cannot be controlled, one can only work in accordance with her to ensure our existence. Sustainable Development is our sole mantra of existence. It is time that we no longer take Mother Nature for granted and realise that the progress of mankind will be short-lived, if development is not in harmony with the environment.

"We owe this planet to our children; after all we borrowed it from them!" - Anonymous

Are Biofuels Sustainable as Energy Substitutes to Fossil Fuels?

Discussing at great length the types of bio-fuel, the means to produce them and their advantages and disadvantages, this article goes on to create a case for a balance between different types of energy generation in order to create sustainable development.

Pooja Rane - eMBA

When applied to the human community, sustainability has been expressed as meeting the needs of the present, without compromising the ability of future generations to meet their own needs. Humans have an inborn craving for innovations; those innovations, which can make their life more comfortable. And in this desperate urge to create luxuries, human beings have unknowingly exhausted the natural resources that have been available to them. But then things did not stop there! Humans explored and conquered nature.

Humans already had fossil fuels, which are non-renewable, as also other renewable sources of energy like solar, wind, geothermal, hydro power, ocean energy, nuclear energy etc., but when all this could not suffice, humans went in for large scale production of Biofuels. And what happened then? Was it a successful measure? Did this help in overpowering nature? If yes how? If not, the most important question is yet to be answered .What next? These are the questions that need in fact to be answered.

Biofuels are solid, liquid or gas fuels derived from recently dead biological material and are thus distinguished from fossil fuels, which are derived from long dead biological material. Biofuels seem lucrative because they offer the possibility of producing energy, without a net increase in carbon in the atmosphere. They make economic sense as well, with fuel prices soaring high. There are two strategies for producing Biofuels: one is to grow crops high in sugar (sugarcane, sugar beet and sweet sorghum); the second is to grow plants, containing high amount of vegetable oils, such as palm oil, soybeans, algae or jathropa. When these oils are heated, their viscosity is reduced and they can be directly burned in diesel engines or can be chemically processed to produce biodiesel. The basic process engineering for making Biofuels involves the blending of a processed biological material with petroleum products, depending on the raw material, from which they are derived. The technology for manufacturing Biofuels divides it into four types:

First Generation Biofuels: They are fuels made from animal fats, starch, sugar oils, using conventional technology. The basic feedstock for producing Biofuels primarily constitutes wheat grains, which yield starch that is fermented into bioethanol or sunflower seeds that are pressed to yield vegetable oil that can be used as fuel. Vegetable oil, biodiesel, bioalcohols (ethanol, propanol, butanol), biogas etc. are examples of first generation Biofuels.

Second Generation Biofuels: They are claimed to be more environment friendly and produce more energy at lower cost. They are also said to be more viable because they essentially use non food crops as raw materials. They include waste biomass, stalks of wheat, corn and special energy or biomass crops (e.g. Miscanthus).

Third Generation Biofuels: Algal fuel, also called oilgae is a Biofuel from algae. Algae are low input, high yield field stocks, used to produce Biofuels. They produce 30 times more energy than land crops like soya beans.

Fourth Generation Biofuels: The latest types of Biofuels are based on the conversion of vegoil and biodiesel into gasoline.

Biofuels were said to solve the problem of energy scarcity. If not as a complete substitute for energy resources, they are at least believed to supplement them to a certain extent. Therefore nations like the United States, the European Union, Brazil, India and many more have gone in for large scale production of Biofuels, in order to meet their energy needs. There has however been a lot of hue and cry made about the arrival of new generation fuels, called Biofuels. They have been hyped to such an extent that in an attempt to achieve energy sufficiency, Biofuels were over made. The land and biological raw materials used for the production of Biofuels led to catastrophic effects on the human race. The amount of food grains, which were converted into Biofuels, was so enormous that it gave rise to a food crisis. 25% of the food crops in the US were transferred for the production of Biofuels, but it contributed to only six percent of their energy needs. According to the European Union mandate a major chunk of the maize crop was diverted to the production of Biofuels. Brazil, being the largest producer of sugarcane in the world, could easily attain its goals in Biofuels and has achieved self sufficiency in energy needs, as almost all its vehicles and small aircrafts are run on Biofuels. Countries like the US, EU, India, and Brazil, which are the major exporters of food crops diverted their crops into fuel production; the eventuality which took place could have hardly been averted. It led to food riots in countries, which were solely dependent to a large extent on exports. There was an artificial food scarcity created. This whole situation led to an increase in food prices all around the globe. Talking about India, inflation crossed the double digit mark of about 12%, which was primarily due to the increase in the WPI of food grains. Statistics say that in India 36 US$ billionaires contribute to 25% of our GDP and

about 27% of the people live on less than one dollar per day. These, the people, who are said to be below the poverty line, as also those who are just above the poverty line are the ones who have been the most severely affected by inflation. Now the question that arises here is that - could this disastrous possibility have been predicted? The answer is yes. Then why was it not averted? Because it would have been a major hindrance to the growth of some nations in particular and the entire world in general. Today we live in a merciless world, where a few people determine the destiny of the rest. Money and power is what makes the difference. Darwin's theory truly applies here, that of 'the survival of the fittest'. Now that the damage has already been caused, what steps do we take to undo the effects of this happening/disaster?

Fuel generation cannot be tampered with to a large extent. If we do not supply power to our industries and manufacturing units, it will adversely affect the growth of our economy. In this industrial age, the fuel demand has to be met, in order to remain competitive in this globalised world. If Biofuels seem to be the best possible alternative, so be it. We need to make and implement new policies and legislations in order to create a stringent regulation as regards diversion of food crops to Biofuels.

To elaborate on certain crucial Biofuels used in energy generation

Ethanol

It can reduce the reliance on oil imports and enable moderate reduction in emissions of greenhouse gases, when compared with oil. It also fosters the building of Biofuels infrastructure. Ethanol is energy intensive to produce, and the recent boom has pushed corn prices to more than $5 a bushel. That is increasing the cost of everything from beef to soft drinks. The Biofuels' craze is helping drive up grain prices worldwide, as farmers devote more acres to corn and less to other crops. Over 450 pounds of corn are needed to fill a 25-gallon tank with ethanol; enough calories to feed a person for a year.

Ethanol, also called grain alcohol or ethyl alcohol, can be made from any starch or sugar-based feedstock. Corn and sugarcane are the most common feedstock used. The energy content of ethanol is approximately two-thirds that of gasoline by volume. For that reason, and because of its higher cost, ethanol is typically used as a gasoline additive. All reciprocating engine vehicles can use ethanol blends in small quantities (up to 20%), and with slight alterations can accommodate ethanol blends as high as 85%. It is also possible to run engines on pure ethanol.

Ethanol reduces levels of carbon monoxide and other toxic air pollutants. The biomass used for ethanol absorbs carbon dioxide, when it is grown, so it adds no net CO2 to the atmosphere. It can be used to boost the octane in gasoline, to prevent engine knocking, and it increases gasoline's capacity as a lubricant. It also takes only six months to harvest a substantial crop of fuel. Ethanol is an oxygenate that reduces ground-level ozone. Since ethanol can be produced locally, it has the potential to add to the local economy, particularly in the agricultural sector, and help reduce the import of oil.

Depending on the ethanol/gasoline blend, ethanol may raise levels of nitrogen oxides, produced as gasoline emissions. Because of its lower energy content, relative to gasoline, ethanol also reduces mileage per gallon. Corn-based ethanol production is energy intensive, and in some instances uses nearly as much energy to produce (including the energy needed for farming and making fertilisers) as it supplies, although new technologies are improving the efficiency of production.

Biodiesel

Biodiesel is a combustible fuel that is physically similar to petroleum diesel but is made from natural, renewable sources. A blend of 20 percent biodiesel with 80 percent petroleum (B20) can be used in all diesel-burning equipment, without modification, including in compression-ignition engines and oil heat boilers. Higher blends, including pure biodiesel, can be used in many engines made after 1994, but slight modifications are necessary.

When blended with standard transportation diesel, biodiesel helps to extend the energy capacity of the diesel. Biodiesel can also be used as a home heating oil. A blend of 20 percent biodiesel will reduce carbon dioxide emissions by 15 percent; moreover, adding biodiesel also reduces the amount of particulates, carbon monoxide, and sulphur dioxide released as emissions. Biodiesel is less combustible than petroleum, making it safer to store and transport. In addition, if biodiesel spills, it is biodegradable and breaks down roughly four times faster than petroleum diesel.

But the use of biodiesel results in increased levels of harmful nitrogen oxide emissions, when used in diesel engines, although not usually in residential heating equipment. Also, in and of itself, biodiesel releases the same amount of hydrocarbon (or soluble carbon) emissions, when burned as regular diesel. Furthermore, pure biodiesel has a high "clouding" point, meaning that liquid biodiesel begins to thicken into a solid at low temperatures. Because of its higher clouding point, biodiesel is more difficult to store and transport in cold climates, which adds to its cost.

Biomass

Biomass is generally made up of woody plant residue and complex starch. The largest percentage of biomass used to create energy is wood, but other bioproducts, such as fast-growing switch grass, are being investigated as sources of energy. The three largest sources of biomass used for fuel are cellulose, hemi cellulose and lignin. Biomass processing results in the end-products - biochemicals, Biofuels, and biopower, all of which can be used as fuel sources. Biochemicals involve converting biomass into chemicals to produce electricity;

Biofuels are biomass converted into liquids for transportation; while biopower is made by either burning biomass directly (as with a wood-burning stove) or converting it into a gaseous fuel, to generate electric power.

Production of electricity and heat from biomass has the potential for widespread use in the U.S., as the gasification process uses many diverse and plentiful feed stocks. Although biomass releases carbon dioxide (CO2) into the atmosphere, when combusted, the amount of CO2 released is equal to or less than the amount that the crop absorbs, while growing (net emissions of CO2 are zero). The production of biomass feed stocks creates jobs in the domestic agricultural sector. In the case of the paper products industry, biomass gasification may eliminate the need to purchase electricity, while reducing some of the industry's chemical use and improving waste management.

At present, the technology to produce electricity from biomass in large quantities is not economically viable; however, research is being done in many areas of biomass production, and this situation will most likely change. Even though net CO2 emissions are zero, other pollutants such as SOx and NOx are released during combustion of biomass.

Sugarcane

Sugarcane yields more ethanol per acre than corn, and it requires less energy to produce; hence, it is regarded as greener than corn ethanol. Sugar isn't a food staple, so making ethanol from it hasn't driven up food prices, as has the production of large amounts of corn ethanol. However, growing sugarcane requires a warm, rainy climate, which limits its potential as a global fuel source

Cellulosic ethanol

It is made by breaking down wood chips, farm waste, and non food crops like grasses, and so,cellulosic ethanol wouldn't require diverting the use of cropland. Scientists are making progress at breaking down plants' tough cellulose and lignin molecules, the key to turning non food biomass into fuel. Still costly and difficult to make, ethanol produced from non food plants is more energy intensive than that made from corn and sugarcane. By one estimate, putting all the grassland in the U.S. into fuel production could replace only about 10% of petroleum.

Algal Biofuel

Algae are a large and diverse group of simple, autotrophic organisms found almost everywhere – in oceans, ponds, swimming pools and common goldfish bowls. Algae basically do not require highly specialised conditions for growth. It is therefore only important to satisfy the minimum requirements of temperature, light, oxygen and nutrients. Algae have photosynthetic ability to convert sunshine into chemical energy. For some forms of algae, this chemical energy is in the form of oil, very similar to common vegetable oil. This oil can be processed and used as vegetable oil. Algae's growth and productivity is 30 times higher than crops like soybean. They do not require soil for growth and use 99% less water than conventional agriculture. The task is to find the most favourable species of algae to extract oil. A particularly rich mix of by products can be made in algal-Biofuels operations (everything from nutraceuticals to feedstocks for making plastics), potentially abetting their cost-effectiveness. Unlike cellulosic ethanol, the biomass for making a lot of fuel from algae doesn't yet exist; it has to be grown from scratch. Harvesting is still expensive. Cost-effectively producing algal Biofuels on a large scale may be many years away.

Jatropha

Jatropha is a genus of approximately 175 succulent plants, shrubs and trees. The hardy Jatropha is resistant to drought and pests, and produces seeds containing up to 40% oil. When the seeds are crushed and processed, the resulting oil can be used in a standard diesel engine, while the residue can also be processed into biomass, to power electricity plants. Goldman Sachs recently cited Jatropha curcas as one of the best candidates for future biodiesel production. However, despite its abundance and use as an oil and reclamation plant, none of the Jatropha species have been properly domesticated and, as a result, its productivity is variable, and the long-term impact of its large-scale use on soil quality and the environment is unknown.

Some astonishing facts about Biofuel production

Energy outputs from ethanol produced using corn, switch grass and wood biomass were each less than their respective fossil energy inputs. The same was true for producing biodiesel, using soybeans and sunflower; however the cost for producing soybeans biodiesel was only slightly more negative as compared to ethanol production. Ethanol production using corn grain requires 29% more fossil energy than the ethanol fuel produced. Ethanol production using switch grass requires 50% more fossil energy than the ethanol fuel produced. Ethanol production using wood biomass requires 57% more fossil energy than the ethanol fuel produced. Biodiesel production using soybean requires 27% more energy than the biodiesel fuel produced. Biodiesel production using sunflower requires 118% more energy than the biodiesel fuel produced.

It is therefore important to take some constructive steps to reduce the burden on food grains, for producing Biofuel. Research should be encouraged to develop more non food crops, as sources of Biofuel production. Algae culturing could be a promising alternative, only if it is made cost-effective. Energy generation should be considered as a humanitarian issue, wherein the sustenance of millions of people is at stake. Unless some urgent measures are taken, to avert the on-going energy crisis, we are defying the principles of sustainability, by merely exhausting the available resources. Neither are we meeting the needs of the present, nor are we preserving the scarce resources for future generations. Therefore, by 2030, the burden of energy generation should be shared proportionately: one third by hydro and Biofuels, one third by nuclear, solar and wind energy sources and one third by fossil fuels. Only then can energy security be achieved to the fullest!

Buildings Go Green

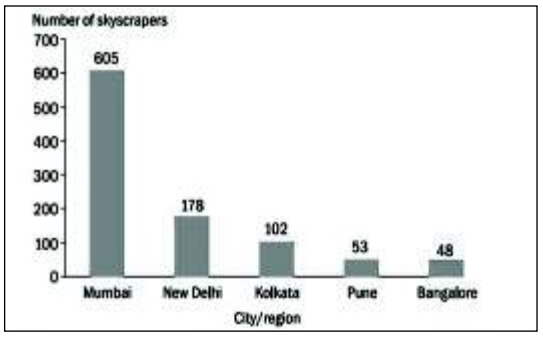
Taking examples, detailing the meaning and method and attempting to clear myths and put in perspective the reality, this article makes a strong plea for Green Buildings as a means of ensuring development in the construction business, while at the same time minimising the damage that the environment faces.

Neha Vazarkar - PGDM

Overview

From 1947 to 2000, the population of India has grown two-and-a-half times but that of urban India has grown nearly five times. The building/construction industry is growing at a fast rate, to meet the demand of the increasing population. In recent years, the number of skyscrapers, in the metropolitan cities, such as Delhi and Mumbai, has increased drastically, raising concerns as regards urban infrastructure and resources.

The average commercial building is mostly brick-and-concrete, steel-and-metal and generates more than two pounds of solid waste, per square foot of space, while under construction. The buildings are a major source of air pollution - sulphur dioxide emissions, nitrous oxide emissions, carbon dioxide emissions and particulate emissions, all of which damage air quality and some which are blamed for climate change. All of this has a great impact on our environment and natural resources.



Sustainability in Construction

Sustainable development is a pattern that meets the need of the present, without compromising the ability of future generations, to meet their needs. Sustainability requires that human activity only uses nature's resources, at a rate at which they can be replenished naturally.

With power cuts being a daily phenomenon these days and global warming concerns preoccupying the mind, the concept of green buildings is fast catching up.

Green Building is the practice of increasing the efficiency with which buildings use resources, through better siting, design, construction, operation, maintenance, and removal. Green is synonymous with change. It is the construction business that has taken the lead in going green, with a whole lot of green projects coming up from builders like Hiranandani, Raheja, DLF and others.

Green Buildings are designed to reduce the overall impact of the built environment on human health and the natural environment through:

- **Operational Savings:** Green Buildings consume at least 40-50 % less energy and 20-30 % less water vis-à-vis conventional buildings.
- **Daylights and Views:** Working in an environment with access to daylight and views provides connection to the exterior environment. Various studies prove that the productivity of people, who have access to day light and views, is at least 12-15 % higher.
- **Air Quality:** Every Green Building has to purge continuous fresh air, to meet the 62 requirements laid down by ASHRAE (The American Society of Heating, Refrigerating and Air-Conditioning Engineers). The ASHRAE Standard 62 defines procedures for setting up ventilation air supply rates, depending upon pollutant source strength. Moreover, Green Buildings use interior materials with low volatile organic compound (VOC) emissions. A typical office building would require purging of fresh air of about 15 cfm/person, which provides a fresh ambience inside the building.

Components of Green Buildings

1. **Siting**
   The process starts by selecting the site and protecting and retaining the existing landscape and natural features. Use of recycled content paving materials, furnishings and mulches further help to close the recycling loop.
2. **Energy Efficiency**
   Developing strategies for using natural lighting/high-efficiency lighting systems, with advanced lighting controls/motion sensors tied to dimmable lighting controls. So too, alternative energy sources, such as photovoltaic and fuel cells are used.
3. **Material Efficiency**
   Recycled and reusable materials are used to promote resource conservation and efficiency. The buildings need to be designed, with adequate space, to facilitate recycling collection and to incorporate a solid waste management programme that prevents waste generation.

4. **Water Efficiency**
   The buildings need to be designed for dual plumbing, to use recycled water for toilet flushing or a gray water system, that recovers rainwater or other non potable water for site irrigation. Water wastage is also minimised by using ultra low-flush toilets, low-flo shower heads and other water conserving fixtures.

Myths Surrounding Green Buildings
Developers often equate green development with reduced profits and delayed schedules. On the contrary, green development projects often 'perform extremely well financially', according to the Rocky Mountain Institute, and often command a premium price in the marketplace.

Building	Year awarded	Built-in Area (Sq.ft)	Rating Achieved	% increase in cost	Payback (years)
CII-Godrej GBC, Hyderabad	2003	20,000	Platinum	18 %	7
ITC Green Centre, Gurgaon	2004	1,70,000	Platinum	15 %	6
Wipro, Gurgaon	2005	1,75,000	Platinum	8 %	5
Grundfos Pumps, Chennai	2005	40,000	Gold	6 %	3
Technopolis, Kolkata	2006	72,000	Gold	6%	3
Spectral Services Consultants Office, Noida	2007	15,000	Platinum	8%	4
HITAM, Hyderabad	2007	78,000	Silver	2%	3

Myth 1: Green Buildings are costlier Reality
Construction of a Green Building comes at an incremental cost. However, the operational costs over the years for such buildings are much lower, when compared to conventional buildings. While comparing the cost effectiveness of the Green Buildings, two aspects of the incremental costs have to be considered. Primarily, the incremental costs would be lesser if the baseline design is already at a certain level of good eco-design; as against this, it would appear huge, if the base design has not considered green principles.

Secondly, the incremental costs depend upon the life cycle of the project. It has been observed that the incremental costs have been decreasing over the years. We can hence look forward to the day, when the cost of a Green Building is lower than a conventional building. The table below illustrates the point.

Myth 2: Green Buildings have to be air-conditioned
Green Building concepts and the LEED (Leadership in Energy and Environmental Design) rating can be applied to non-air conditioned buildings. In India, it has been applied to the IGP office, Gulbarga and the Hyderabad Institute of Technology and Management.

While performing energy analysis using software tools, such buildings will input the same cooling system, both in the baseline and the proposed design. This ensures that the building is recognised for any of the other energy efficiency measures incorporated, for example, envelop lighting, roof insulation etc.

This kind of an approach also ensures that an apple-to-apple comparison is made, while evaluating two Green Buildings, whether conditioned or not.

Myth 3: Green Buildings take more time to build Reality
There is a general perception that going the green way may affect the project schedules. This was perhaps the case for the CII-Godrej GBC building, when it was the first time that a Green Building rating tool was applied in the country. The design in this case took about one-and half years, while the construction was completed in about 9 months!

Now, there is absolutely no difference in the time involved in constructing a Green Building vis-à-vis a normal building. The time schedule for the rating can be synchronised with that of the building.

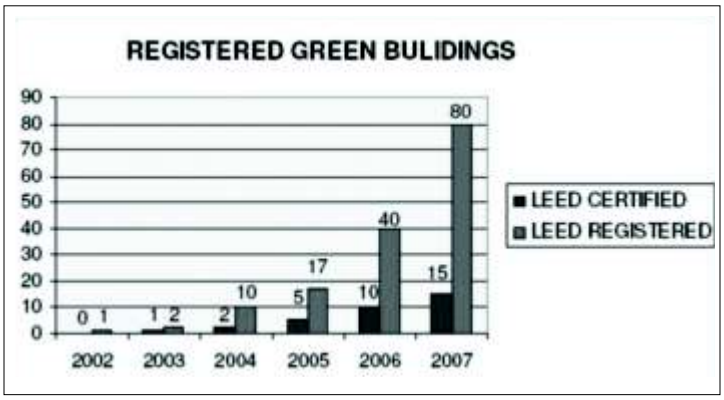
Governing Body
The Confederation of Indian Industry (CII) plays an active role in promoting sustainability in the Indian construction sector. The CII is the central pillar of the Indian Green Building Council or IGBC. The IGBC has licensed the LEED Green Building Standard from the U.S. Green Building Council and currently is responsible for certifying LEED-New Construction and LEED-Core and Shell buildings in India.

The IGBC is a council that has been set up with the primary objective of working towards reducing the cost of Green Buildings, as compared to conventional buildings. The IGBC trains Green Building professionals and hopes to groom 5000 Accredited Green Building professionals by the end of 2010. The IGBC also plans to tap the Green Building materials and equipment market of Rs.15000 Crores by 2010, along with garnering service opportunities for Green Building consultants in India and other countries.

Leadership In Energy And Environmental Design (LEED - India)
LEED is a Green Building Rating System, which is a nationally and internationally accepted benchmark for the design, construction and operation of high performance Green Buildings. It provides building owners, architects, consultants, developers, facility managers and project managers with the tools they need to design, construct and operate Green Buildings.

The LEED rating system is the most versatile and widely adopted rating system in the world. Around 15 to 20 countries, the world over have adopted this rating system.
It promotes a whole-building approach to sustainability, by recognising performance, in the following, five key areas:

- Sustainable site development
- Water saving
- Energy efficiency
- Materials selection
- Indoor environmental quality



The various types of buildings that fall under the LEED Rating system are illustrated in the table:

Green Footprints in India
The ITC Green Centre is the world's largest Green Building with a space of 170,000 square feet, and is also the first non-commercial complex in the country to be awarded the USGBC-LEED Platinum Rating - the highest in the order.

India's first internationally certified Green Building that houses the

Confederation of Indian Industry-Sohrabji Godrej Business Centre spread over 16,000 square feet was set up in Hyderabad in 2003.

The West Bengal Green Energy Development Corporation (WBGEDC) has developed solar photovoltaic systems, through which people can generate electricity, by trapping the solar energy on their rooftops. While they can utilise the energy generated in their home, the excess can be sent to the state grid. This would make the consumer a power generator. The corporation has tied up with DLF to build 800 such houses in Kolkata. Accordingly, DLF will invest US$ 16.35 million, while the technology will come from WBGEDC. The houses are expected to be ready by 2010.

K Raheja Corp, one of the leading real estate and retail companies in the country, was awarded the prestigious

LEED Core and Shell Gold Level Certification by the USGBC (United States Green Building Council) for its Corporate Office building at the Bandra Kurla Complex. This is the first building in Mumbai to have been awarded this certificate. In collaboration with Canadian plastics major Nova Chemicals, **Reliance Industries** will be designing and constructing energy-efficient buildings in India. Shree Ram Urban Infrastructure - a developer - is attempting to gain the first ever LEED Platinum rating (Core & Shell) in India and will be the first ever residential building in the world to do so. It is entitled '**Palais Royale**', at Worli, Mumbai and will have an estimated height of over 1,000 ft (300 m).

Green Building Materials
With increasing adoption of Green Building materials over the years, there has been a change in the mindset of stakeholders. Earlier, there was a general perception that materials with recycled content were inferior in quality. Vendors would go on the defensive, when asked about the recycled content in their product. It had a negative connotation. However with increased awareness on green materials and their advantages, this trend is rapidly changing. The market potential of Green Building materials and equipment is estimated to be about **Rs 15000 crores by 2010.**

Many new materials and services have been introduced as a result of this movement. Some of these materials and equipments include **wall and roof insulation, low VOC paints, adhesives and sealants, CRI certified carpets, FSC certified wood, fly ash blocks, eco-friendly chemicals, waterless urinals, CO2 sensors, root zone treatment plants, wind towers etc.**

The cost of Green Building materials and equipment is also showing a decreasing trend. For example, waterless urinals, which would cost around Rs. 14000 in 2001, are today available for Rs. 6000. The cost of many other materials would also show a decreasing trend, as the movement accelerates.

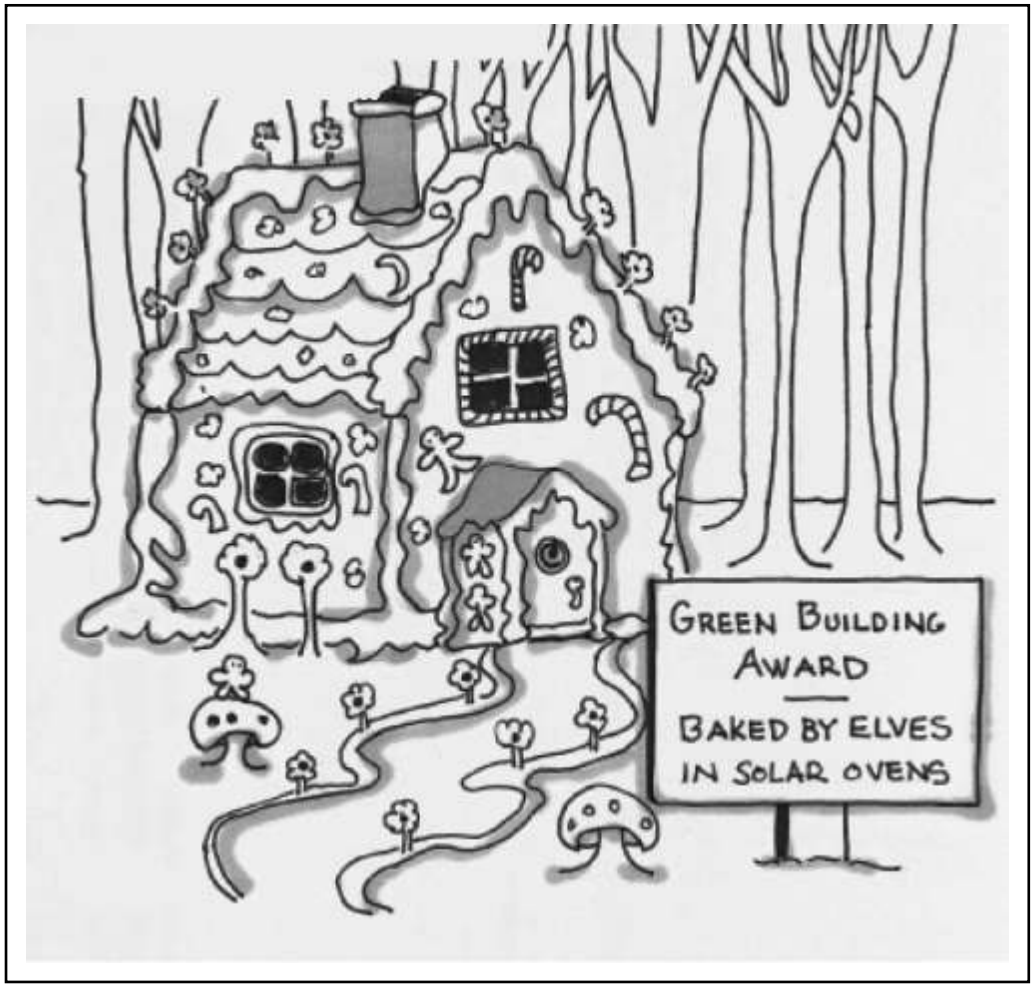
In order to propagate the idea of Green Buildings amongst the material manufacturers and suppliers in the construction Industry, the CII-Sohrabji Godrej Green Business Centre organises a Green Building Congress each year, which receives strong backing from national and international delegates. The USGBC has participated in each of these Green Business Congresses. The 6th edition of the Indian Green Building Council (IGBC) was hosted from 25th - 27th September, 2008, at the Grand Hyatt, Mumbai.

Also, the U.S. Green Building Council's Greenbuild hosted an International Conference and Expo in Boston in November 2008. A founding member of the U.S. Green Building Council (USGBC), UTC (United Technologies Corp.), showed various innovative products such as combined heat and power building systems, "green" fire suppression systems, environmentally sound refrigerants and elevators

with regenerative drives. At Greenbuild, UTC is reporting progress on its local and global programmes, to educate and raise awareness on ways to reduce CO2 emissions from buildings, which comprise 40 percent of the world's energy use.

Parting Note

The Green Building Movement spearheaded by CII Godrej GBC, since 2001, has come a long way. With a meagre Green Building footprint of 20,000 sq. ft. in 2003, today, the country has over 25 sq. ft. million square feet of a registered Green Building expanse, which is all set to touch 100 sq. ft. million square feet by 2010-12. The evangelist zeal of Green Building and sustainable design is growing rapidly in India, with an increasing number of Architects like Indigo Design & Engineering Associates Pvt. Ltd., Edifice Consultants Pvt. Ltd., Bhardwaj & Bhardwaj, RSP Architects and engineering firms like Spectral Services, Potential, etc., encouraging clients to adopt IGBC standards for all developments. It is also heartening to note that property developers such as the Rahejas, the Hiranandanis and M/s. Lavasa Corporation in Pune, have taken up the 'green' cause seriously.



Carving a Route to Sustainable Development in Rural India

Taking up the case study of Hivre Bazaar, this article goes on to deal with the basic problems that stall the growth of the rural sector and suggests various steps that can be taken to bring about the desired change, making rural India prosper.

Richa Lehar - MMS

India has 50 crore people living in rural areas, excluding well to do households. The resources available to these people are limited. From a population of 100 crore, 70% are poor. Majority of the lands owned by them are categorised as wastelands, where yields are about 0.5 to 1 ton of grain per hectare. Forests and pastures have been highly degraded and the top soil has been eroded or deprived of nutrients. Usually one crop per year (with poor yield) is cultivated in these areas, due to inadequate irrigation facilities. On the whole, the present natural resource endowment in this region appears quite bleak. Even though there is talk about privatisation, there is no real investment in agriculture, especially in the rain-fed areas, that are outside the much hyped "Green Revolution" areas. Rural India is heading for a collapse, if no rapid remedial measures are taken. The probable causes for this are:

Land

To boost agricultural production, one of the major factors is the availability of land. There is just 120 million hectare land available for food grain production in the country. There are fragmented holdings of land, the average size of holdings declined from 2.63 hectares in 1960-61 to 1.06 in 2002-03, making it difficult for farmers to come out of the poverty trap. The land laws are restrictive and outdated and do not give farmers any flexibility. There is also overdependence on agriculture for employment, due to slow growth of the non-farm sector in villages.

To control this crisis the following steps can be taken:

- Contract farming involving corporate India. For example, an agreement between the farmer and the sponsor, who can be a corporate entity. Under the terms of the contract, the farmer provides a commitment, to deliver a specific quantity of a commodity, at quality standards, determined by the purchaser. The sponsor pledges to support the farmer's crop and to purchase the commodity.
- Optimum use of land, consolidation of holdings, support to small farmers to grow high value crops and land policy reforms, such as legalisation of land leasing, throughout the country.
- Public investment in agricultural infrastructure, to make crops more remunerative to farmers and make agriculture viable.
- Diverting labour to activities like food processing.

Water

- Even 60 years after independence, 60 percent of farmlands are still dependent on good monsoons, for reasonable crop productions. India commands just 4 percent of the global fresh water resources, but supports 16 percent of the world population. There is also an adverse effect of droughts, on the production of crops. The country's rainfall is not evenly distributed, but in total, it is adequate to meet the water requirement. The water tables are receding, due to over exploitation of water, for growing rice and sugar.
- Possible solutions are as follows: Creating irrigation potential, repairing system deficiencies and inefficiency on farm water management. Adapting cropping patterns, according to water availability.
- Reducing the utilisation gap, ground water extraction, watershed development and rainwater harvesting.
- Increasing irrigation efficiency from the present level of 35-40%, completion of ongoing irrigation projects. River grid development will help ration the availability of water.

Technology

There has been no technological breakthrough in terms of high yielding varieties of food grain crops. There is soil fatigue, due to over exploitation of nutrients and organic matter in intensive cropping areas. Improper combination of fertilisers has resulted in nutrient imbalance in the soil. Non-availability of quality seeds is resulting in low seed replacement rates. There is also an inadequate or poor harvest management infrastructure at the farm level.

One can control this crisis by,

- pushing through some promising varieties of pulses and rice.
- crop rotation and replenishment of micro nutrients, to help restore fertility.
- optimal use of fertilisers with the right NPK mix, without an overdose of nitrogenous nutrient.

- development of market and infrastructure for making seeds available to farmers.
- making institutional credit available to farmers, so that they can make use of improved technology.

Energy

The basis of industrialisation is energy. One needs to identify energy needs, based on end-use.

There can be a major leap in rural infrastructure (villages and small towns), economy and livelihoods, if 5T of coal-equivalent energy supply is available to each family per year, while currently only 0.5-1 ton is available to them. However, this level of energy can be provided by drawing 50% energy from solar and other 50% from materials, such as bamboo, small timber chemical intermediates from plants (such as non-edible oils, phenols, starch, ethanol etc.). So far we have been neglecting solar energy. Currently, from the point of end-use, 40% of the energy from coal is in the form of steam (or heat). Steam can also be produced, at a low cost, by solar-thermal systems. The main point is that one needs to look at the various approaches that can be resorted to, for using traditional resources, to meet our energy needs. Fortunately, there is a small but important segment of people, who do want to look at eco-friendly resources for alternate energy needs. The question to ask is, if we can not provide something do we have the right to use it? Science has given us the ability to make otherwise worthless material into valuable products. For example, silicon for computer chips, optical cables in stead of copper as a medium. After all, all mining activity basically involves converting mud or rocks into materials, to which we attach greater value. If one can use modern knowledge properly, half of the energy needs, in rural areas and small towns, can come from solar-thermal energy, while the other half can come in the form of high-value materials and chemical intermediates from biomass.

If one follows the above mentioned remedies, farming can be considered as a viable occupation, but the questions which arise are

Who Will Do It?

Corporate India can be involved, as mentioned earlier. Banks can be involved in making institutional credit available to farmers, so that they can make use of improved technology. Therefore, anybody who wants to take the initiative can do it.

One such example is that of an enterprising sarpanch - Popat Pawar, who brought water, prosperity and respect to his village Hivre Bazaar, in Ahmednagar, Maharashtra. With the support of the village youth, Pawar transformed his village, from a 'punishment zone', to the one that got Maharashtra its first National Productivity Award, for the best watershed work.

What Will Be The Cost?

These methods or steps are very cost effective and are basically introduced, to reduce the amount, which our government is spending, in schemes like The Rashtriya Krishi Vikas Yojana, Seed Village Scheme etc. The steps mentioned above are cost effective and very economical and need to be used in such projects.

Examples of villages which have changed tremendously by following a similar model are **Hivre Bazaar and Ralegan Siddhi.**

A Case Study of Hivre Bazaar

Hivre Bazaar village, in Nagar taluka of Ahmednagar district, has emerged as a role model. The recognition has spread far and wide – the DRDA is extending financial assistance for the construction of a training centre for the sarpanch. The State got its first National Productivity Award, due to the work done in Hivre Bazaar.

An M.Com with profound interest in cricket, Popat Pawar, is the force behind all the changes that transformed Hivre Bazaar, since 1989. 22 liquor shops and the bad habits of gambling and fighting, eclipsed the village and its progress, restricting the inhabitants. The adverse impact was visible in the form of migration of families, to meet their basic survival needs. Agriculture and all the allied activities were unprofitable.

The day dawned, when a group of young people decided that things have to change for the better. They asked Popat Pawar to stand for the position of sarpanch, as he was not only literate but was also aware of the issues. Despite opposition from the family, he fought the elections and became the sarpanch for a year. During this period, he worked to improve the village's moral environment. Due to the village's bad reputation, the administration and deputed teachers to the village school, considered their posting there as a punishment, creating an unfavourable learning environment. As a result, the school was locked by the villagers, for two months, with a demand that the gates would reopen, only when the district administration deputed good teachers to the village school. This was their first step in the right direction. In the following years, concrete steps were taken by the villagers, to improve the standards of education and the environment, in which it was being imparted.

Today, out of 217 households only 12 are landless. The total geographical area of the village is 976 ha [about 500 ha is arable], which is divided into three micro watersheds. Of this, 70 ha is forest land, which has been developed, by working in close cooperation with the forest department. Presently, its entire management is the village's responsibility. The department does not even have their guard to protect the reserves. This relationship between the department and the villagers was painfully developed. In 1992, the forest department rejected the request of the villagers, as free grazing ruined the departments' earlier work. However, the villagers' persistence made the department reconsider, in 1994, bringing in the Joint Forest Management (JFM) programme, to the village, and the results are evidently visible, to

everyone. Under the JFM and EGS schemes, water and soil conservation work was taken up in the upper reaches.

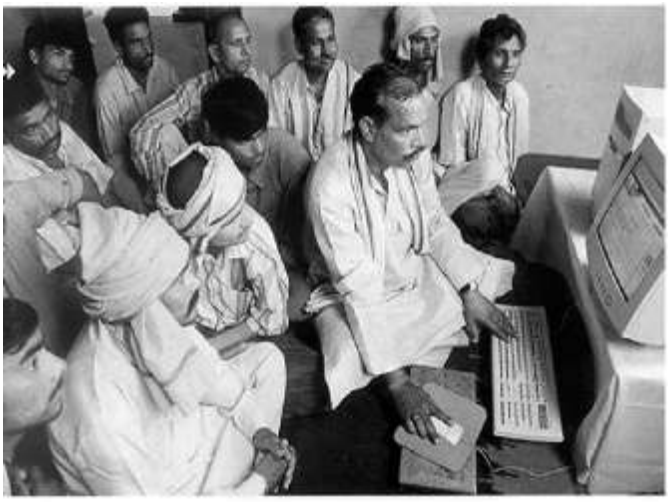
In 1995, the Adarsh Gaon Yojana was launched. Hivre Bazaar was selected as the village that could be developed as the model village in the taluka. Under this programme, about 52 earthen bunds, two percolation tanks and 33 loose stone bunds were constructed. About nine check dams have also been constructed, in a series on the downstream nallah.

The crops grown are jowar, bajra, wheat, onion, potato and vegetables, along with floriculture and horticulture. The dairy sector has also registered remarkable improvement. In 1995, the village's daily milk production was 250 litres, which is 2,600 litres, today. The 35 families, who had migrated to Mumbai and Pune, have returned. The most remarkable change is during the 'Ganpati Utsav', instead of many idols, the entire village got one idol, thus saving about Rs 21,000/-, which were gifted to the wife of a Kargil martyr, living in the neighbouring village. Attitudes have undergone drastic change. Another instance of such a change is the example of 'samodayik kheti' (people normally don't employ labour - two or three families work collectively in each others' farm; thus, solving the problem of labour and creating an environment of social cohesion, where people readily come together and work together), which is prevalent in the village, primarily due to non-availability of labour. The village is also maintaining a patch of land, where 100 different species of plants are duly preserved.

Popat Pawar's personality and willingness to take action in a time bound manner, was most impressive. His interest and efforts to see Hivre Bazaar survive without him left many satisfied that the work and attitudes would sustain, as the entire village is now involved mind, body and spirit, in the developmental work.

This goes on to show that a village, which followed the proposed model, has changed its face completely, which proves that the developmental ideas are very much applicable.

In itself the prospect of changing the face of rural India appears to be gloomy but one can change the situation in five years, if one goes ahead with these remedies. There is a policy fatigue, with too much bureaucratisation of key missions. On the rocky road ahead, states will have to take initiatives and play a key role, in reviving rural India, before it's too late.



A vision without a plan is just a dream. A plan without a vision is just drudgery. But a vision with a plan can change the world.

- Proverb

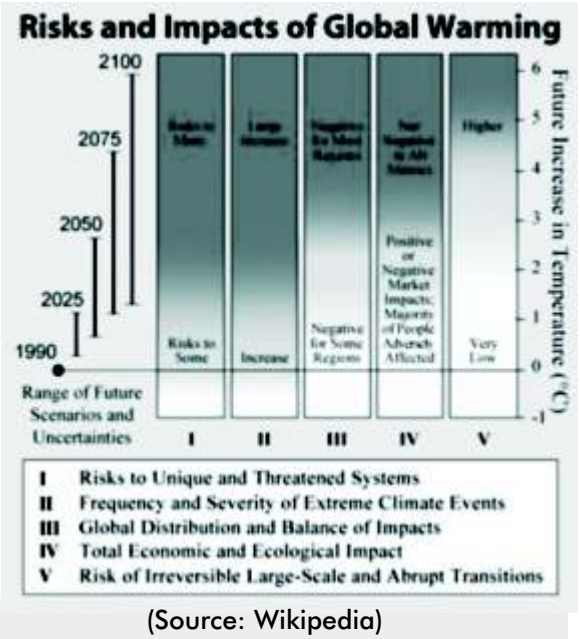
Combating Global Warming

Taking up a core concern that has been a by-product of modern development, global warming, this article discusses at great length, the various causes and effects, touching briefly upon the measures and the need to combat it, in order to ensure that development is actually an informed and sustainable act.

Pankaj Patil - PGDM

Global Warming is a global phenomenon of increase in the average temperature, near the surface of the earth, air and oceans. The Intergovernmental Panel on Climate Change (IPCC) concludes "most of the observed increase in globally averaged temperatures, since the mid-twentieth century, is very likely due to the observed increase in man-made greenhouse gas concentrations", resulting in an enhanced greenhouse effect. The average global air temperature near the Earth's surface has increased 0.74 ± 0.18 °C (1.33 ± 0.32 °F). The increasing global temperatures will cause various problems like

- Ice cap melting
- Increase in the sea level
- Extreme weather
- Species extinction and
- Desertification



(Source: Wikipedia)

The effects of global warming on the environment are numerous and varied. Scenarios studied by the Intergovernmental Panel on Climate Change (IPCC) predict that global warming will continue and get worse much faster than was expected even in their last report. The IPCC reports attribute many specific natural phenomena to human causes. The expected long range effects of recent climate change can already be observed. Rising sea levels, glacier retreat, Arctic shrinkage and altered patterns of agriculture are cited, as direct consequences of human activities. Predictions about secondary and regional effects include extreme weather events, an increase in the type of tropical diseases, changes in the timing of seasonal patterns in ecosystems and an overall economic impact.

Agriculture

Positive as well as negative effects of global warming are expected in the context of agriculture. On the one hand through agriculture it is believed that produce will increase whereas on the other there is an expectation of heavy droughts.

For some time it was hoped that a positive effect of global warming would be increased agricultural yields, because of the role of carbon dioxide, in photosynthesis, especially in preventing photorespiration, which is responsible for significant destruction of several crops. In Iceland, rising temperatures have made possible the widespread sowing of barley, which was untenable twenty years ago. Some of the warming is due to a local (possibly temporary) effect via ocean currents from the Caribbean, which has also affected fish stocks. Moreover, the region likely to be worst affected is Africa, both because its geography makes it particularly vulnerable, and because seventy per cent of the population relies on rain-fed agriculture for its livelihood.

Climate change may be one of the causes of droughts and desertification. Tanzania's official report on climate change suggests that the areas that usually get two rainfalls in a year will probably get more, and those that get only one rainy season will get far less. The net result is expected to be that 33% less maize, the country's staple crop, will be grown. The scale of historical climate change, as recorded in Northern Darfur, is almost unprecedented - the reduction in rainfall has turned millions of hectares of already marginal semi-desert grazing land into desert. The impact of climate change is considered to be directly related to the conflict in the region, as desertification has added significantly to the stress on the livelihood of societies, forcing them to move to find pasture. While local benefits may be felt in some regions (such as Siberia), recent evidence is that global yields will be negatively affected. Large-scale experiments have shown that rising atmospheric temperatures, longer droughts and numerous side-effects of both, such as higher levels of ground-level ozone gas, are likely to bring about a substantial reduction in crop yields in the coming decades. As of December 2007, 37 countries faced food crises and it is feared that this may lead to food riots and even cannibalism. Changes in water quantity and quality, due to climate change, are expected to affect food availability, stability, access and utilisation. This is expected to lead to decreased food security and increased vulnerability of poor rural farmers, especially in the arid and semi-arid tropics and the Asian and African mega-deltas.

Food Resources

Fisheries are central to the lives of the people, particularly the rural poor, who live in the lower Mekong countries. Two-thirds of the basin's 60 million people are in some way active in fisheries, which represent about 10% of the GDP of Cambodia and the People's Democratic Republic (PDR) of Laos. Direct effects of climate change will occur due to changing patterns of precipitation, snowmelt and rising sea levels, which will affect hydrology and water quality. Indirect effects will result in changing vegetation patterns that may alter the food chain and increase soil erosion. Increased flooding would positively affect fishery yields, while a reduction in dry season habitat may reduce the survival of some species.

Models indicate that even a modest rise of 20 cm in the sea-level would cause contour lines of water levels in the Mekong delta to shift 25 km inland, during the flood season and saltwater to move further upstream (although confined within canals) during the dry season. So too, the inland movement of saltwater would significantly alter the species composition of fisheries.

Water Scarcity

Sea level rise is projected to increase salt-water intrusion into groundwater, in some regions, affecting drinking water and agriculture in coastal zones. Increased evaporation will reduce the effectiveness of reservoirs. Increased extreme weather means more water falls on hardened ground, unable to absorb it, leading to flash floods, instead of a replenishment of soil moisture or groundwater levels. In some areas, shrinking glaciers threaten water supply.

Effects of warming on river-line systems may be strongest in humid regions, where flows are less variable and biological interactions control the abundance of organisms. Drying of stream-beds and lakes for extended periods could reduce ecosystem productivity, because of the restriction on aquatic habitat, combined with lowered water quality via increased oxygen deficits and pollutant concentrations. In semi-arid parts of the world, reductions in seasonal stream-flow and complete drying up of lakes (such as in Sahel, Africa) can have profound effects on ecosystem services, including the maintenance of biodiversity.

Insurance

Increase in natural disasters will have an overall adverse effect on the insurance industry. An industry very directly affected by the risks is the insurance industry; the number of major natural disasters has tripled since the 1960s, and insured losses have increased fifteen fold in real terms. Climate-related insurance claims have increased rapidly over the past two decades or more. While climate sceptics and some governments continue to question the links between climate change and climate disasters, many global insurance companies are drawing the opposite conclusion. According to one study, 38–42% of the worst catastrophes have been climate change related. Over the past three decades, the proportion of the global population affected by weather-related disasters has doubled in linear trend, rising from roughly 2% in 1975 to 4% in 2001. According to a 2005 report of the Association of British Insurers, limiting carbon emissions could avoid 80% of the projected additional annual cost of tropical cyclones by the 2080s. It noted that weather risks for households and property were already increasing by 2-4% per year due to changing weather, and that claims for storm and flood damages in the UK had doubled to over £6 billion over the period 1998–2003, as compared to the five previous years. In the five years, leading to 2004, insured losses from climate events averaged US$17 billion a year, signifying a five-fold increase. Each year, climate change could eventually cost the equivalent of between 5 to 20 percent of the global Gross Domestic Product.

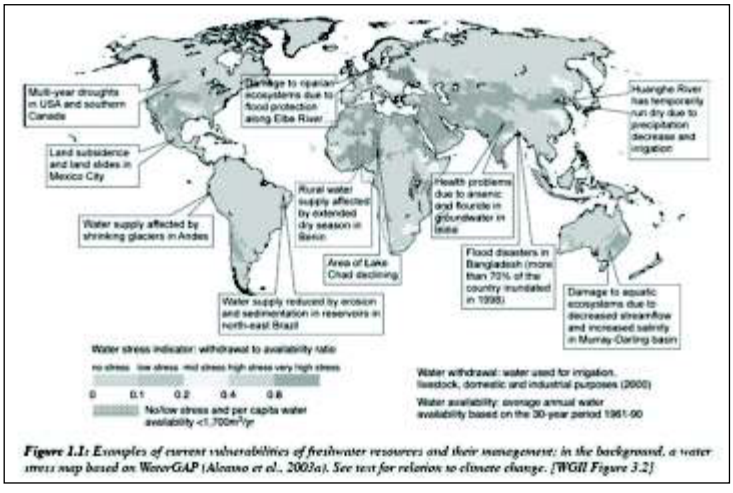


Figure 1.1: Examples of current vulnerabilities of freshwater resources and their management; in the background, a water stress map based on WaterGAP (Alcamo et al., 2003a). See text for relation to climate change. [WGII Figure 3.2]

Infrastructure

Roads, airport runways, railway lines and pipelines (including oil pipelines, sewers, water mains, etc.) may require increased maintenance and renewal, as they become subject to greater temperature variation and are exposed to weather, that they were not designed for. This may lead to the use of various maintenance programmes to keep them up to date and in proper form. Infrastructure breakups may also have a greater economic impact on growing economies like India.

Spreading of Diseases

Favourable zones for vectors, conveying infectious diseases, such as malaria, will increase. In poorer countries, this may simply lead to a higher incidence of such diseases. In richer countries, greater spending on preventive measures will be required.

The world's oceans soak up much of the carbon dioxide produced by living organisms, either as dissolved gas, or in the skeletons of tiny marine creatures, that fall to the bottom to become chalk or limestone. Due to an increase in the acidity of the sea water, marine animals will face extinction and at a faster rate. The World Health Organisation (WHO) estimates 150,000 deaths annually, due to climate change, of which half will be in the Asia-Pacific region. In April 2008, it reported that, as a result of increased temperatures, malaria is appearing in the highland areas of Papua New Guinea, where it has always been too cold for disease spreading mosquitoes.

Bird flu is another example of a disease that is likely to spread more quickly as the earth warms up, but for a different reason. A United Nations study found that global warming along with excessive development is contributing to an increased loss of wetlands, around the world. This trend is already forcing disease-carrying migrating birds, who ordinarily seek out wetlands as stopping points, to instead land on animal farms, where they mingle with domestic poultry, risking the spread of the disease via animal-to-human and human-to-human contact.

A congressionally mandated assessment of climate change and health, conducted in 2001 predicted that global warming will cause increased incidences of malaria, dengue fever, yellow fever, encephalitis and respiratory diseases, throughout the world, in the coming decades. The assessment also concluded that insect and rodent borne diseases would become more prevalent, throughout the US and Europe. The news isn't good for less developed parts of the world either. Researchers have found that more than two-thirds of waterborne disease outbreaks (such as cholera) follow major precipitation events, which are already increasing due to global warming.

Glacier Reduction

Global Warming is melting glaciers in every region of the world, putting millions of people at risk from floods, droughts and lack of drinking water. Continued, widespread melting of glaciers, during the coming century will lead to floods, water shortages for millions of people and sea level rise, threatening and destroying coastal communities and habitats.

Low lying areas near the sea-shore will submerge under the water. This will directly lead to the migration of people and reduction of per capita land for people. Partial loss of ice sheets on polar land could imply meteres of rise in the sea level, major changes in coastlines and inundation of low-lying areas, with greatest effects on river deltas and low-lying islands.

Regions at Risk

- Ecuador, Peru and Bolivia, where shrinking glaciers supply water round the year and are often the sole source of water, for major cities during dry seasons.
- The Himalayas, where the danger of catastrophic flooding is severe, as glacier-fed rivers supply water to one third of the world's population.
- Small island nations such as Tuvalu and some of the Solomon Islands, where rise in the sea level is submerging low-lying land and saltwater is inundating vital groundwater reserves.

Nature at Risk

- The Royal Bengal Tiger – Endangered tigers that will lose a large portion of their worldwide habitats, like the Sundarbans, which will succumb to a rise in the sea level.
- Kittlitz's Murrelet – Rare birds specialised to hunt in cloudy glacier water and nest on top of ice are likely to face extinction.
- Coral Reefs – Unique organisms, which will be starved of energy from the sun, when sea levels rise.

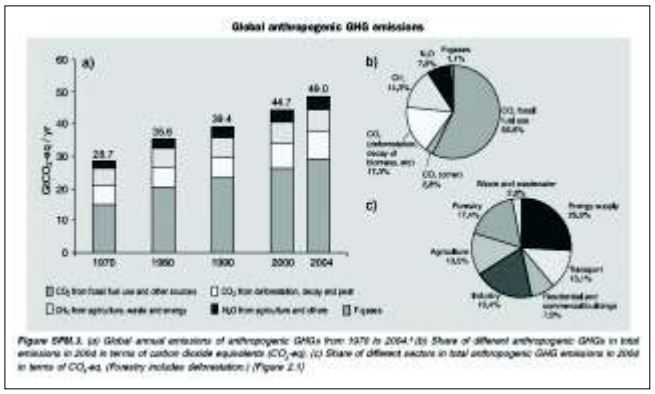


Figure SPM.3. (a) Global annual emissions of anthropogenic GHGs from 1970 to 2004.1 (b) Share of different anthropogenic GHGs in total emissions in 2004 in terms of carbon dioxide equivalents (CO_2-eq). (c) Share of different sectors in total anthropogenic GHG emissions in 2004 in terms of CO_2-eq. (Forestry includes deforestation.) (Figure 2.1)

To counter all these global warming effects, each individual must try to reduce the green house gases in the atmosphere, for which it is important to examine what contributes the most to green house gases.

From the graph, it is clearly seen that energy generation contributes to one-fourth of the production of green house gases, to which electricity, manufacturing, construction and transportation are some of the major contributors.

Electricity today is generated either through thermal power plants or nuclear power plants or using any other source. Thermal power plants generate a good amount of green house gases; and replacing these power plants, with sustainable power plants, like either wind or solar energy harnessing plants, will be the best option. However, this option, though sustainable, is costlier than a thermal power plant. Right away, existing technologies should be put to use for the production of cleaner cars and more modern electricity generators, which could be brought into widespread use. So too, one can increase reliance on renewable energy sources, such as wind, sun and geothermal energy, along with manufacturing more efficient appliances, that conserve energy.

Manufacturing and construction are the second main users of energy. They use energy to produce raw materials needed for the construction industry, like cement, which is produced by heating or blasting, which results in the emission of green house gases. The use of materials that are by-products, to replace natural raw materials is a key element in achieving sustainable development.

Planned water-management interventions, primarily dams, are expected to have the opposite effects, on hydrology, namely marginally decreasing wet season flows and considerably increasing dry season flows (World Bank, 2004b).

Transportation is also one of the sources contributing to global warming, through release of various green house gases. This can be taken care of by using simple methods:

- Promoting the shift to higher efficiency vehicles, lower carbon fuels and advanced technologies, through the use of incentives and education.
- Promoting compact development and transit/pedestrian development and other 'smart growth' measures, to encourage local communities, to consider the impact of development and infrastructure construction on energy.
- Undertaking programmes designed to manage and reduce transportation demand in communities.
- Examining opportunities in freight transportation that would improve the energy efficiency of the movement of goods, across the regions.
- Supporting the development of interconnected regional, state, provincial and local greenway and bicycle/pedestrian pathway systems, to promote non-fossil transportation alternatives.
- People can be taught or can be made aware of the various problems using various means:

In villages, where literate and illiterate people are equally present, one can make use of street plays, Panchayat talks, write ups on fertilisers/pesticides, involving Corporate Houses, like M&M, ITC to spread the message.

In cities, on the other hand, one can resort to education, street plays, promoting and providing incentives to people, who save electricity, in addition to using the Media to spread the message of Global Warming, strict rules and their enforcement on industries, strict rules as regards automobile emission norms.

Global warming effects can be reduced, by adopting a plan that leads to sustainable development. Sustainable development is a pattern of resource use that aims to meet human needs, while preserving the environment, so that these needs can be met, not only in the present, but in the indefinite future. Sustainability techniques of energy production will have less CO2 emissions and thus reduce the effects of Global Warming. Improving waste recycling methods will also help in resource maintenance and resource recycling on the earth, thereby helping in sustaining earth's resources. As a consequence reliance on 'sustainable energy' will lead to the betterment of the earth, which can in fact be made a viable option, with continuous yet sustainable development.

Commodity Markets for Sustaining Development in the Agricultural Sector

The article puts up a strong case for the strengthening of commodity markets, in the context of the agricultural sector, analysing how the current manner of sale of farm produce works against the farmers, while also touching upon initiatives that are being taken up in this area.

Yogesh Kalinge - PGDM

India is endowed with approximately 141 million hectares of arable land, all the 20 types of agro-ecological regions, long hours of sunshine and incredible genetic bio-diversity. The agricultural sector in India is highly diverse, based on which 60% of the population earns its livelihood. However its contribution to the National GDP is only 17%. This is such a vital sector of our economy that without improving its development, it is not possible to achieve the desired growth level of 9 or 10% in our National GDP. Most of our farmers belong to the small and marginal categories. Therefore, suitable market access for their produce and assurance of remunerative prices, continue to be the major challenges our agricultural system faces. Without improving marketing opportunities and competitiveness, it would be difficult to achieve the targeted annual growth in Agricultural GDP. Thus, the viability of small holdings is an important issue and promoting agricultural diversification towards high value crops, through an efficient marketing system, is considered to be one of the means, through which the set goals can be achieved.

Important Facts Pertaining to the Agricultural Sector

Agriculture Has Been a Neglected Sector So Far

The growth in India's agricultural sector decelerated to an annual average of 2.4%, over the period F1996-F2006, from 3.5% during the five years ending F1995 and 4.6% during the1980s. The agricultural sector, which provides employment to approximately 60% of the workforce (220 million people),continues to be dependent on the monsoon, as only about 40% of the cultivation area is irrigated. Crop productivity growth has gradually decreased, over the last ten years. In fact, productivity levels for cereals in India are 60% lower than in China. The sector also suffers from huge inefficiencies, on the distribution side, in terms of lack of organised pricing information, inadequate storage and transport infrastructure and a high level of intermediation. Cumulative wastage in this supply chain is estimated to be about US$11 billion, or 9.8% of the agriculture component of the GDP.

The APMC Act

Most states control the marketing of agricultural produce, through the Agricultural Produce Marketing Committee (APMC) Act. Currently, most of the agricultural produce is sold by farmers, primarily via government regulated mandis. Until recently, the private sector was restricted from directly purchasing agricultural produce from farmers. The mandis serve, at an average, a very high radius of almost 459 square kilometres (177 square miles), owing to which farmers have to travel long distances to sell their limited produce. Additionally, the mandis are mired with inefficiencies. There is considerable malpractice, which results in farmers realising less than the market value. Transactions tend to favour traders. Often traders, who buy produce from farmers, operate in a coordinated manner, resulting in lower realisations for farmers. The marketplace lacks infrastructure in terms of efficiency, thereby, frustrating the farmers.

To summarise, the current market structure has many problems, including:

a) Large number of farmers with fragmented holdings and multiple levels of intermediation;
b) A restrictive regulatory environment;
c) Large mark-ups between farmers' realisations and final consumer prices;
d) Lack of transparency in price determination;
e) Lack of infrastructure; and
f) Lack of encouragement, in improving the product mix towards higher-value-added items, as there is a lack of standardisation, gradation and certification.

The Recent Proposed Changes

In view of liberalisation of trade and emergence of global markets, it became necessary to promote development of a competitive marketing infrastructure, in the country, and to bring about professionalism in the management of existing mandis and market fee structure. While promoting the alternative marketing structure, however, the Government needs to put in place adequate safeguards, to avoid any exploitation of farmers, by private trade and industries. The Ministry of Agriculture had accordingly formulated a Model Law, on agricultural marketing, in consultation with the State Governments, in 2003, and sent it to them for further action. The draft Model

Legislation provides for the establishment of Private mandis, Direct Purchase Centres, Consumer/Farmers Markets for direct sale and promotion of Public-Private Partnership in the management and development of agricultural markets in the country.

A favourable regulatory environment has attracted the interest of several large Corporate Houses of late. While corporate intervention in upstream agricultural activities was limited largely to the Agri-input players, the recent times have witnessed a spurt in business initiatives, by other industry players as well. ITC's e-Choupal is such an initiative that endeavours to offer an integrated bundle of services, ranging from technical help on agricultural packaging and practices, supply of inputs, market information in rural areas and such others, to the farming community. The impact of such integrated services at the grassroots has been very positive and has encouraged even the small firms to divest innovative models, to deliver services and products at the farmers' doorsteps.

The emergence of direct retailing in recent years and creation of quality retail space has led to an increased demand for quality produce and thereby investment in supply chain infrastructure, including the cold chain. Modern food retailing will offer the prospect that lower marketing costs could lead to lower prices for consumers and higher realisation for farmers. The corporate investment in the farming sector has increased substantially, in the recent years, and has reached the inflection point, with several large corporate sector companies like the ITC, the Tata Group, Ambanis, Godrej et al., who are ready to make significant investments. The entry of large business conglomerates, such as Reliance Industries, is likely to attract more investments and is expected to create a cascading effect, across the SME segment of the food and agri-space.

Despite several initiatives undertaken by the Central Government, it is seen that the response for market reforms from certain State Governments is lukewarm. The arrangements in the context of direct marketing and contract farming are being seen with suspicion by some. The impact of the growth of the organised retail is being perceived as a threat, by certain sections of the agri-business sector. While State Governments have made certain amendments, they have not fully adopted the widely accepted provisions recommended through the model APMC Act.

Typical Problems Faced by a Small Farmer

Although there could be alternative marketing channels for the smallholder farmers, there are some technical constraints, which need to be addressed, before these farmers can fully benefit from any market outlet.

Storage

Smallholder producers should be able to store some of their crops, in order to benefit from the present market opportunities. In a liberalised market, prices are market based, that is, prices of commodities are determined by the supply and demand conditions of the market. Thus, in the case of agricultural commodities, prices tend to be very low just after harvesting, which calls for farmers to store their commodities for later sale. However, the storage facilities of most smallholder farmers are not good and big enough, to store commodities for later sale. Therefore, there is a need for smallholder farmers to make improvements in their storage structures, to benefit from this market opportunity

Road Infrastructure

Most roads in rural areas, where smallholder producers live, are in a bad and chaotic condition. This results in charging exorbitant transport costs to producers, thus reducing the final margin. This situation forces producers to sell their commodities, to private buyers, who give them very little money. It is thus important to have these roads regularly maintained.

Quality

Most smallholder producers lose a lot of money, due to the quality of their products. There is need to teach farmers, how to handle their crops, from the time they mature, to the time they go to the market. Farmers should also be trained in grading and should know all the grades for the commodities they sell, to avoid being cheated by buyers.

Attitudes and Behaviour

Smallholder producers' attitudes need to change. Farmers should change their behaviour, from being sellers of surplus produce, to being market-oriented. This will help in the decision taken by a farmer in selling his/her produce. This idea of being a seller of surplus is leading to farmers selling to private buyers, who give them very little money or exchange commodities with consumables at unreasonable rates.

Commodity Markets as a Viable Alternative

The second green revolution is unlikely to come by seeds alone. It will also need a strongly improved marketing structure, risk management and finance infrastructure. Commodity exchanges can play a critical role in this regard. One such possibility is the 'spot commodity market', a commodity market in which goods are sold for cash and delivered immediately.

Role of Commodity Exchange in Improving the Marketing Structure in the Country

Commodity exchanges are a catalyst for inclusive growth. In developing countries, small farmers tend to have little access to information and are restricted, in their marketing opportunities. Commodity exchange empowers them. Because of better access to price information, even small farmers are able to negotiate better prices, with their buyers. Farmers also change their cropping pattern, making decisions, on the basis of futures prices, rather than past prices. Processors of products, such as cotton or sugar, can use commodity exchanges, to

safely offer minimum prices to farmers, which (as practice has shown) can lead to a revival of crop production. An electronic spot exchange offers new marketing outlets. A commodity exchange ecosystem also brings better access to post-harvest finance. The entire nation will become a common market. Whosoever will offer the price, will get the commodity. Similarly, whichever farmer offers the lowest price; his commodity will be sold first on a pan India basis. The key advantage that Spot Exchange offers to farmers is a transparent price, at the time of sale of their produce, something that is not available to them today at the mandis.

Advantages of Commodity Exchanges

- Prices are market based, that is supply and demand determines prices
- All deals are transparent.
- Prices are real time and both producers and consumers can be assured that they are getting the best price possible at the time
- Payment is prompt.
- Access to regional and international prices, giving opportunities to raise prices

There is a scope however for further improvement of this sector

Issuing of Warehouse Receipts

Currently, Warehouse Receipts is not an instrument, against which banks lend comfortably. There are number of risks associated with it. Some of them are fraudulent, with credit risk lying with the warehouse owner, as well as regards the financial strength of the warehouse, the quality of the warehouse and of course the credibility of the goods valuation.

The above problem can be solved by issuing Dematerialised Warehouse Receipts, to farmers, along the lines of the stock exchange. If Dematerialised, Warehouse Receipts issued by the commodity exchanges, would be recognised by the Depository Act, which will give credibility to the receipt and will provide an ease for banks to lend against WRs. Farmers can get finance, through the pledged Dematerialised Warehouse Receipt of an accredited warehouse of the Exchange. This value addition can boost agri-lending, thereby strengthening the agricultural development process. At the same time, it will mean a better business for the banks, which are lending around Rs 9000 crores, against commodities. The potential can be seen to be in the region of at least Rs 150,000 crores. This alone could revolutionise the way farmers fund their produce and will have significant impact on the growth of this sector. Further WRs can be given authentication by all government bodies as well as local co-operatives, in order to make the process hassle free.

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- Distress sale due to inadequate storing facility can be avoided
- As there will be a proper authority for authentication, the quality of the goods will be ensured.

Transportation

The exchange will have multiple contracts available on the system. For instance, one can have multiple contracts for tur and these can be for delivery to different locations - Jalna, Jalgaon, Latur and so on. Farmers in Latur will sell in the Latur delivery contract, deliver to the Latur warehouse of the spot exchange, while the buyers could be mills located in Jalgaon, Jalna, Nagpur or anywhere else. Trading will happen through the electronic platform, which would be available with brokers, sub-brokers, franchisees etc. Farmers can trade through the members of the exchange or become members directly. The pricing will be on an ex-warehouse basis. The buyer would also come to know, that s/he is buying tur at ex-Latur basis and has to incur the transportation cost.

Major Hurdle

The major obstacle to be overcome here is the unfamiliarity of farmers, with this new direction, to agriculture marketing. Some farmers' organisations have hailed the move to electronic exchanges, but the real test will lie in getting individual farmers, to bring their produce, to this route, for marketing. Lack of familiarity can completely thwart the potential benefit that can be achieved, through this form of marketing. A great deal of work will need to be done to familiarise farmers with the modalities and the advantages of the spot exchange. Once the farmers see the advantages, they will take recourse to the new system. Some farmers will still like to sell only to their familiar local trader, and it is only when they see other farmers making more profits or getting a better price from the exchanges, that they are likely to change and this will induce a healthy competition for the mandis.

To conclude, if exchanges are able to prove that the farmers' price realisation has increased, without increasing the prices that consumers pay, and that there has been improvement in marketing efficiency, even in few centres, then the entire country will realise the advantage of this option, and then the process of replicating this model in the entire country will be faster and simpler.

Corporate Social Responsibility










Citing detailed examples of four companies and the projects they have undertaken by choice and with dedication as a part of their Corporate Social Responsibility, this article builds up a strong case illustrating why and how CSR initiatives can actually ensure sustained and equitable development among all social sectors.

Drupad Raja, Hemal Shah, Aniket Vakharia, Devang Shah, Jaimin Doshi, Hetal Shah, Zeenal Shah, Sahil Malkan, Prashant Seetharaman, Chintan Sanghvi - eMBA

'If men could combine thus earnestly, and patiently, and harmoniously to some really worthy end, what might they not accomplish?. . . if they could put their hands and heads and hearts all together, such a cooperation and harmony would be the very end and success for which the government now exerts in vain' -Henry David Thoreau

'Everything comes with a cost, so does economic growth'

In the last two decades, globalisation and liberalisation have increased the opportunities and wealth of corporations. At the same time they are posed with a great challenge, that of sustainability and viability. They control much of earth's resources. Society and environment are indispensable elements for their growth. Thus giving back a part of the benefits they have earned, to the society and environment is a responsibility not a service.

Ironically however, CSR is seen as green wash to clean the sins of social cost and facelift the company's public image. CSR has been used more as a marketing tool by companies, mainly for tax benefits and higher profits. Most companies make token gestures towards CSR. They equate charity and philanthropy with CSR; in fact, very few companies make use of their core competence to benefit the community. On the other hand, ethical business is the emerging trend, which thrusts on social values and benefit of its stakeholders.

Some of the factors that are pushing companies or industries towards CSR include:

The decreasing role of regulatory bodies and the government

Government bodies have tried to lay emphasis on CSR, in the past, with the help of legislation being imposed but this wasn't effective because CSR is something, which should come from within and should not be imposed. Depleting government resources, coupled with a lack of trust in regulations, has led to the exploration of voluntary and non-regulatory initiatives instead.

Rise of customer concern

It has been viewed in the past that companies, which follow ethical practices in business not only grow well but also have people's backing and can become a model for other companies. People generally try to associate themselves with companies, which are clear in their functioning and follow ethical business policy.

The need for greater transparency

There is a growing concern for corporate disclosure from stakeholders, including all the parties related to a company which include customers, suppliers, employees, communities, investors and activist organisations.

Competitive labour markets

Employees are now looking beyond salary, pay cheques and monetary benefits, and are looking out for employers whose philosophy and operating practices match their own principles. In order to retain skilled employees, companies are being forced to improve working conditions.

Growing investor pressure

Investors are changing their perception about companies. The way in which they assessed a company's performance, previously and now are drastically different. Profit is not the only motive, they are also making decisions based on criteria that include ethical concerns.

Supplier relations

As investors and shareholders are becoming increasingly interested in business affairs, many companies ensure that their partners conduct themselves in a socially responsible manner. Many companies are now stressing on their suppliers to be ethical, so that the whole chain of business is ethical.

Some of the positive outcomes that can arise, when companies adopt a policy, which includes social responsibility are as follows:

Environmental benefits

CSR initiatives help in maintaining ecological balance, better product durability and functionality, optimum utilisation of resources, which includes both renewable and non renewable resources, greater material recyclability and better use of renewable resources. Nevertheless, many companies continue to overlook CSR in the business chain whether in supply, marketing, finance etc. The companies themselves can however make a commitment to sustainability by being more discerning in their choice of suppliers and not wait for government regulations to take action or impose penalties on offending suppliers.

CSR is a concept well beyond charity and philanthropy. It is not mandatory for companies to follow CSR, but there is a growing global concern about the implication of CSR. Traditional companies were more concerned about profitability, competitiveness and survival. But now in the modern world CSR has evolved as a major phenomenon, which companies willingly or unwillingly have to look upon. Many Indian companies have willingly taken it up. They are Tata Group, Housing Development Finance Corporation (HDFC), Infosys and Bharat Petroleum Pvt. Ltd.

The TATA Group

An Indian far ahead of time in this respect was Jamshedji Tata, who practised CSR decades before the term came into existence. His far-sightedness is reflected through the following words, “There is one kind of charity common enough among us… It is that patchwork philanthropy which clothes the ragged, feeds the poor, and heals the sick. I am far from decrying the noble spirit, which seeks to help a poor or suffering fellow being… [However] what advances a nation or a community is not so much to prop up its weakest and most helpless members, but to lift up the best and the most gifted, so as to make them of the greatest service to the country.”

Over the years, the Tata philosophy to 'Give back what you get' has been followed by all their enterprises across India. Be it relief measures, rural development, health care, education or art and culture, they have been very forthcoming. As a result every year, the Tata Group's contribution to society has been phenomenal.

Different Tata companies have been actively involved in varied areas of social work, for example, Tata Consultancy Services runs an adult literacy programme, Titan has employed 169 disabled people in blue collar workforce at Hosur, Telco is fighting against leprosy at Jamshedpur, Tata Chemicals runs a rural development programme at Okhamandal and Babrala, Tata Tea runs an education programme and Tata Relief Committee (TRC) works to provide relief to disaster affected areas.
The group's policy is to provide livelihood instead of giving money. "How long can you give rice and dal? What is required is the means to live. And that is what we do.”

During natural calamities there are two phases of assistance - relief measures and rehabilitation programmes. After the Gujarat earthquake the TATAs built 200 schools in two years and rendered help during the Orissa floods, when people lost their cattle. Even after the Tsunami disaster, members of TRC immediately reached the affected places and figured out what was required.

Moreover, it proudly claims that none of the Tata Board of Directors will ever be in the list of rich people. They have a trust that accumulates the profits of the company, which are then disbursed for various social causes.

The Tata Group as a whole spends some Rs 800-1,000 crores on CSR per annum

As per the information available on the company's website, the Tata Trusts control 65.8 per cent of the shares of Tata Sons, the holding company of the Group. The combined development-related expenditure of the Trusts and the companies amounts to around four per cent of the Group's net profit. These philanthropic trusts have created national institutions in science and technology, medical research, social studies and the performing arts. Tata companies also extend social welfare activities to communities around their industrial units. The Salt-to-software Group has 27 listed entities and another 69 unlisted firms, making it one of the largest business houses in the country.

Jamshed Irani, Director, Tata Sons Ltd, says, "The Tata credo is that 'give back to the people what you have earned from them'. So from the very inception, Jamshedji Tata and his family have been following this principle." Moreover he says that for any business to sustain in the long run they have to look beyond business. Ages ago, when Corporate Social Responsibility was either the government's, or charitable organisations' headache, the Tatas aggressively worked for the upliftment of the community.

Infosys

Since its inception in 1981, Infosys has created multiple frameworks for corporate governance, education, infrastructure and inclusive growth. They believe that corporations must reach out to the society and help by improving the quality of education and healthcare through various community development programmes.

Infosys Corporate Social Responsibility (CSR) activities are carried out at four different levels:

- Global initiatives to develop human capital by creating sustainable frameworks with educational institutes for training students and faculty
- The Infosys Foundation has a dedicated team to reach out to the underprivileged and enrich their lives
- At the Board level, members lead by example by participating in the advisory councils of NGOs and civil bodies, and donating their time, money and effort to various causes
- At the employee level, location-wise, CSR teams address local requirements
- Infosys' five key CSR themes are education, healthcare, art and culture, rural upliftment and inclusive growth. They identify partners and beneficiaries based on their goals, credibility, performance and alignment with their vision and values. The initiatives in education, inclusive growth and pro bono engagements are detailed here, while initiatives in healthcare, art and culture, and rural upliftment are detailed in the report on Infosys Foundation.

Corporate Social Responsibility in Education

The Infosys Extension Programme (IEP) consists of an Infosys Fellowship Programme, a Rural Reach Programme, Catch Them Young and Train the Trainer. The Infosys Fellowship Programme, instituted at 12 premier academic institutions in India, supports research work leading to a Ph.D. The well-received programme, at present, has 58 Infosys Fellowship awardees undergoing Ph.D. programmes in various institutions. 18 Infosys fellows have submitted their doctoral research, while many have already been awarded a Ph.D., by the respective institutions. The Rural Reach Programme is a one-day programme, delivering basic knowledge of computers to students of classes 5, 6 and 7, in rural schools. This year, about 7,742 students, from 56 schools across India, benefited from the programme.

Catch Them Young

Catch Them Young and Watch Them Grow is aimed at students of Standard 9, Catch Them Young (CTY) focuses on encouraging students to dream big and aim high. It opens up a world of knowledge on computers and how friendly and useful they can be. Written tests are conducted for Standard 9 students, wherein 30-40 students are selected each year. The selected students are trained in computer languages like C. Out of these two are further selected and are allowed to do a small real-time project with the company. In 2007-08 CTY was conducted in eight development centres and covered about 3,552 students from 466 schools across India.

Train the Trainer

The Train the Trainer Programme (TTT) is organised to reach out mostly to faculty and professors in various engineering institutions. The objective of TTT is to provide college faculty, with industry based experiential knowledge, that focuses on the latest trends and technologies in the IT industry, so that they can in turn share the knowledge, with their students, during the appropriate course curriculum. This year, six such programmes were conducted at various development centres of Infosys, attracting 231 faculty members from renowned engineering institutions in the country.

Corporate governance

Infosys continues to be a pioneer in benchmarking corporate governance policies with the best in the world. Its efforts are widely recognised by investors in India and abroad. They have undergone a corporate governance audit by ICRA and CRISIL. ICRA has rated its corporate governance practices at the CGR 1 level. CRISIL has assigned CRISIL GVC Level 1 rating to the company.

Employees Welfare Trust

In 1994, Infosys had issued 7,50,000 warrants to the Infosys Technologies Limited Employees Welfare Trust (the Trust), for the benefit of the employees, by creating a stock option plan. The Trust has successfully completed 28,33,600 shares, which are unutilised. These shares have been irrevocably granted to the Trust and are to be used for the benefit and welfare of the employees.

Infosys Foundation

The corporation is committed to contributing to the society and has established the Infosys Foundation in 1996, as a not-for-profit trust, to support their social initiatives. The Foundation supports programmes and organisations devoted to the cause of the destitute, the rural poor, the mentally challenged and the economically disadvantaged sections of the society. The Foundation also helps preserve certain cultural forms and dying arts of India. Grants to the Foundation aggregated Rs. 19 crore in the previous year.

Community service

Through the Computers @ Classrooms initiative launched in January 1999, Infosys has donated 2,567 computers to various institutions across India. The Microsoft Corporation participates in this initiative by donating the relevant software.

HDFC

HDFC (Housing Development Finance Corporation Limited) has joined Smile Foundation, as one of its exemplary partners under the

Corporate Social Responsibility (CSR) programme.

HDFC has thus set a rare example of taking CSR to the outreach. Under this partnership, HDFC has joined hands with Smile Foundation, to work for the welfare of orphans through an education, health care and holistic development approach, in a remote western part of Orissa.

Smile Foundation has been supporting four orphanages in the Sambalpur region of Orissa, reaching out to around 158 orphan children, by providing them with residential facilities. Established by individuals/ freedom fighters, these orphanages were finding it difficult to sustain themselves financially on their own or with government assistance.

Lending Operations in Weaker-Section Housing

HDFC has continued to utilise the Kreditanstalt für Wiederaufbau (KfW) scheme by providing loans to Non Governmental Organisation (NGO) intermediaries and state government agencies, towards low-cost rural and urban EWS housing projects. Under the second line, HDFC has drawn the full amount from KfW equivalent to Rs. 67.98 crore and all sub-projects have now reached completion. This includes loan disbursements of the amount of Rs. 56.91 crore, while the balance has been released as grant funds towards rehabilitation housing projects, in response to natural calamities.

The third line is split into two components – the smaller component of Euro 6 million is towards the Micro-enterprise Finance Facility (MFF), whereas Euro 9.34 million have been earmarked towards the EWS housing component.

MFF Lending and KfW Lines for Micro-Finance

During the year, HDFC has approved 11 income-generation projects, under the Micro-enterprise Finance Facility i.e. MFF component of HDFC III. On a cumulative basis, HDFC has approved 51 livelihood projects with a disbursement of Rs. 12.16 crore. The borrowing agencies, which act as social and financial intermediaries, range from professional micro-finance institutions (MFIs), to development NGOs, to Self Help Group (SHG) federations. Until 31st March, 2003, HDFC had covered over 35,000 EWS households, and had yet experienced near 100% recoveries under the scheme.

Shelter Assistance Reserve

A broad spectrum of social causes, involving over 110 development agencies and NGOs, were supported, under the Shelter Assistance Reserve, during the year. HDFC extended grants towards several Social Initiatives and the overall utilisation from the reserve stood at Rs. 2.94 crore for the year 2002-03. Cited below are a few examples of such NGOs and institutions, which are committed to different social issues, reflecting the general application of the reserve.

Association for Cricket for the Blind in India

Focusing on their 'abilities' rather than their 'disabilities,' this association has been promoting cricket for the blind in India. They organise Zonal, State and National level tournaments, wherein several teams from across the country participate. HDFC was approached to sponsor the 2nd World Cup Cricket for the Blind, which was played in Bangalore and Chennai in December 2002. The tournament provided an opportunity to over 100 participants to compete at an international level.

Sir Shapurji Billimoria Foundation

The Sir Shapurji Billimoria Foundation was established in 1998, with the objective of undertaking research and training for the promotion of integrated education — the concept being that mainstream schools should accommodate children of varying abilities. Since its inception, the Foundation has addressed the needs of children of different capacities and redesigned teacher education. This has enabled teachers to enhance the optimal development of these children. The Foundation's research and training programmes have been supported by HDFC by providing them with financial assistance.

The Family Planning Association of India (FPAI)

The FPAI is currently the country's leading voluntary family planning organisation, supported by the government as well as international donors. It runs projects all over the country with a network of over one lakh volunteers trying to reach vital health information to the most marginalised communities. HDFC teamed up with FPAI, in supporting their projects dealing with promoting the knowledge of family planning and population policies and improving the health status of adolescent girls.

ChildLine India Foundation

The ChildLine India Foundation is India's first national, 24-hour, free emergency phone outreach service for children in need of help. The Foundation has emerged as a unique example of co-operation between government and nongovernment agencies, with child welfare being the key focus. Through a network of NGOs in each city, the Foundation responds to the immediate as well as long-term needs of urban street children. HDFC has extended financial support to ChildLine towards its operational costs. These services have now expanded to 39 cities across the country.

BPCL

At BPCL they believe that it's equally important to return to the society, what is drawn from it. Which is why, they believe that some of their finest achievements aren't those found in their balance sheets but those, in small towns and villages, spread across India. Their

involvement in sharing this wider responsibility dates way back to 1984, when in pursuance of their philosophy "to give back to the society/community our best", they aimed at helping people enrich their lives, be it their employees or their families, also extending the scope of definition of families, to those that they saw beyond their glass cabins in these rustic surroundings, and thus started their romance. Today, they term these villagers as their extended family.

As a corporate responsibility, today 37 villages across India have been adopted. This includes making substantial investments, for nearly a decade and a half in them, to make them fully self reliant, providing them with fresh drinking water, sanitation facilities, medical facilities and enhancing their income standards, by imparting vocational training and agricultural innovations. However, BPCL also firmly believes that the only vehicle for raising the villagers from their present state is by educating both young and old, through a focus on providing grants for opening schools and adult literacy camps. BPCL has also sought assistance, from NGOs working around these centres in fulfilling its dream, which to many of BPCL employee's still remains incomplete, on account of the magnitude of the work involved.

Livelihood Support Programmes

In the year 2007-08, groups of women/youth from various communities in India were imparted training for livelihood support through activities like zardosi work, sericulture, candle and incense stick making etc. All the trained women are now supplementing the family's income, through their newly acquired skills. A lot of emphasis has been laid on the formation of Self Help Groups (SHGs) in the communities. In a few villages in Orissa, through such SHGs, banana and papaya fruit saplings were given to the villagers, who were also provided market linkages. BPCL also supported the construction of a female maternity ward, along with an ultrasound machine in the Vivekananda Tribal Hospital in Jagdalpur, Bastar, Chattisgarh, which caters mainly to the tribal population residing in the area. This effort led to the bettering of pre-natal and post-natal care there.

Project 'Boond'

Under Project 'Boond', BPCL, in collaboration with the NGO, 'The Bridge Trust' and with the financial assistance received from the Oil Industry Development Board, has transformed 9 villages near Kasara Ghat in Thane District, Maharashtra, converting them from 'water scarce to water positive'. The work mainly comprised repairs/deepening of wells, building bunds to capture and store rainwater, repairs and leak proofing of existing bunds, building water tanks, construction of underground bunds, construction of Kolhapur Type (KT) weir dams, construction of gabions etc. The project was executed through complete village participation. For this project, BPCL received the 'Excellent Water Efficient Unit Award - Beyond the Fence' at the National Awards for Excellence in Water Management 2007, from the Confederation of Indian Industry (CII).

Promotion of Sports

BPCL sportspersons continued to excel in the national as well as international sports arena in the disciplines of Cricket, Hockey, Badminton, Chess, Table Tennis, Kabaddi, Volleyball, Billiards, Snooker, Bridge and Golf. BPCL's sportspersons have won several distinctions and plaudits. G. N. Gopal and Abhijit Gupta achieved the Grand Master norm in chess. BPCL continues to contribute to the national sports contingents by way of adding players to national teams. S. Sreesanth and Pragyan Ojha in Cricket, Tushar Khandekar, William Xalxco and Ravi Pal in Hockey, Poulami Ghatak and Neha Agarwal in Table Tennis, Saina Nehwal, Anup Sridhar, Arvind Bhat, Jwala Gutta, Shruti Kurian and Aditi Mutatkar in Badminton, and Marianne Karmarkar in Bridge represented India in various international events and won accolades. BPCL also boasted of a presence in the Beijing Olympics with Anup Sridhar and Saina Nehwal in Badminton and Neha Agarwal in Table Tennis, as a part of the Olympic contingent. Jitesh Joshi, Nilesh Shinde and Nitin More were members of the Maharashtra Kabbadi Team, which won the National Championship title after 28 years. Manan Chandra won the Bronze Medal in Snooker at the Asian Indoor Games held at Macau in October 2007. The recently concluded Indian Premier League T20 cricket tournament saw BPCL's Abhishek Nayar, Pragyan Ojha, Uday Kaul, S. Sreesanth and Anup Revandkar in action. BPCL was awarded the President's PSPB Trophy as the Second Runner-up during the year, by virtue of the points obtained in various Petroleum Sports Promotion (PSPB) tournaments.

Persons with Disabilities

BPCL has been providing reservations and concessions for Persons with Disabilities since 1981, based on Government instructions. The reservations were earlier provided for Group C and Group D posts. However, after the enactment of 'The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation), Act 1995', the reservations have been extended to posts in Group A and Group B with effect from February 1996. The company has identified positions in Group A and B, which could be reserved for filling up by persons with disabilities. It is the Company's endeavour to achieve the desired percentage, for persons with disabilities, during direct recruitment. BPCL has 210 persons with disabilities employed in the organisation as on 31st March, 2008. Various concessions and facilities are extended to persons with disabilities, including age relaxation, giving them a sympathetic consideration during interviews, provision of hearing aids for hearing impaired employees, appropriate equipment for persons with orthopaedic challenges and special 'talking' computers for the visually handicapped staff. Besides, the Company has made special efforts for implementation of the National Policy for persons with disability.

Corporate Social Responsibility is an integral part of the overall development of our country. In fact, for development to be sustainable every Corporate House has to ensure uniform growth of all its divisions. Any business must make sure that all their stake holders are provided with maximum value and ensure transparency.

Creation of Special Agricultural Zones (SAZs)

The article builds up a case for the setting up of Special Agricultural Zones, as an answer to the current issues being faced by farmers, making a detailed analysis about the manner in which this could be done, as well as the advantages that this would result in.

Vyankatesh Pathre - PGDM

Sustainable development is an act of retaining our natural habitat and environment, while simultaneously satisfying the needs and desires of human beings. The Brundtland Commission, which was created to address the growing concern of accelerating degradation of the human environment and natural resources, has defined sustainable development as "the development which meets the needs of the present without compromising the ability of future generations to meet their own needs."

From the above excerpt, ne can roughly make out that the need of the hour is a certain kind of mechanism that will retain us on the planet for eternity and still entertain our whims and fancies. The creation of such a prototype may seem impossible in the first place but an attempt could definitely be made to develop such a model. The primary human needs comprise food, clothing and shelter. Even though, the human race has gone far beyond these, everything ultimately boils down to these three, if mere survival is taken into consideration. Assuming that the field of sustainable development can be conceptually divided into economic, environmental and social sustainability, the creation of Special Agricultural Zones (SAZ) may to some extent address our need of 'infinite continuity'. The premise for putting forth such an idea is that, the mismatch between need and the means to satisfy it forms the core reason for instability of any kind.

Not because charity begins at home, but our homeland, India is an almost perfect contender, to undertake development of Special Agricultural Zones (SAZ). There are a number of reasons to complement the same. India has a 2.7% share in the world agricultural production and is ranked sixth in the world. About more than half (54.7%) of the total land area in the country is arable and groundwater resources are in abundance. And finally, agriculture is the single largest source of employment in India.

The term 'Special Agricultural Zones' has been coined by agriculturists, on the lines of the 'Special Economic Zones (SEZs). The SEZs have been much debated and opposed at some places, while they have been successfully implemented in other areas. Creation of SAZs, on similar lines, may safeguard the fertile land from being encroached upon by industries and at the same time bring large areas of land under cultivation. The creation of SAZs would create a favourable environment for farmers, to undertake agricultural production with a scientific and professional approach, similar to an ITES industry in a SEZ. SAZs could also see privatisation of the agricultural sector or a public-private partnership, whereby cultivable land could be leased, from the owners/farmers, for a large number of years, making it enticing enough for private players, to foresee the returns. On the other hand, agricultural co-operatives can be formed, with farmers working on a single large swath of land.

A lot of opposition, violence and bloodshed have followed in the past, while acquiring arable land, for setting up a promising but 'non agricultural' enterprise. Comparatively, less or no hindrance is likely to be expected in land acquisition for SAZs. This is because the land acquired would be used for the same activity as earlier i.e. cultivation, albeit in an efficient manner. Few of the other direct or indirect advantages can be stated as follows:

- Availability of manpower on the spot in the form of farmers, whose lands have been acquired.
- Access to huge amount of funds and better technology, with the entry of private players.
- Employment and assured incomes for farmers, along with creation of indirect jobs.
- Increase in the quantity of food production, to meet the ever rising demand.
- Retention of people in the rural areas, preventing migration to already congested cities.
- Increase in the quantity of bio-degradable residue that could be diverted to produce fuel.
- Price check on essential commodities, due to the economies of scale.
- Less pollution and ecological benefits, due to the green nature of SAZs.

A number of agriculturists, including renowned scientist M.S. Swaminathan, have voiced the need for such zones, to boost food production and help the crisis-ridden agricultural sector in India. Not that no initiatives have been taken by the government so far. The ruling governments of different states have worked upon the problem, to offer isolated solutions in the form of subsidies in fertilisers, seeds and farm equipments, free electricity, bank loans for tractors and water pumps, exemption from taxation etc. However, these policies and programmes, implemented in bits and pieces have failed to provide a holistic and an all inclusive solution, to the problems faced by the agricultural sector.

The closest step by far taken by the Indian Government has been the announcement of the creation of Agri-Export Zones (AEZs). The AEZ

is expected to offer direction for exports of key agricultural produce, from the country. In this context, the State of Maharashtra has approached its nodal agency, the Maharashtra State Agricultural Marketing Board for coordination. The agency has identified areas for setting up an AEZ variety of crops. The agency is to receive support from the Department of Finance, the Maharashtra State Electricity Board (MSEB), and various state-owned co-operative banks, in a time-bound and effective manner.

A list of few prominent state-wise Agri-Export Zones planned is given below:
The concept of Special Agricultural Zones (SAZs) goes far beyond the AEZ, in terms of ideas, imagination and magnitude of implementation. The outcome of majority of all cultivation has been primarily dependant on the vagaries of nature. SAZs would aim at making agriculture independent of weather or climatic conditions, in addition to making it effective, efficient, professional and competitive, like any other organised sector, technology and management driven and above all knowledge based. SAZs would not only produce food but create a holistic system, encompassing a vibrant township of people and offering a one stop solution in the field of agriculture.

The blue-print for such a system needs to take care of all aspects of agriculture starting from production, research, development, extension, post-harvest management, storage and marketing. Few building blocks that could be envisioned in creating such an entity are:

Construction of Greenhouses, Polyhouses and Polytunnels

These artificially created structures, offer a favourable environment for plant growth. Moreover, the crops grown under the polyhouses and polytunnels are safe, from unfavourable environment and hailstorm, heavy rains or scorching sunshine etc. The crops can also be saved from wild animals and birds. The polyhouse humidity is not affected by evaporation, which reduces the requirement of water. The insect and pest control is also easy and inexpensive, in the limited area of the polyhouse.

An important development, worthy of note, is the development of the Arid Area Greenhouse (AAG). This cultivation technology has been designed by Dr. Girija Sharan, a professor at IIM-A. He struck on an idea to develop AAG and further incorporated the ETHE (Earth Tube Heat Exchange) technology, in the greenhouse, for providing a cooling effect. Here, pipes are laid under the greenhouse and are connected to the greenhouse at both ends. At one end, a blower sucks out hot air from the greenhouse and transfers it to the pipes beneath. The air then cools down and is pumped back into the greenhouse.

Presently, the authorities in the Kullu district of Himachal Pradesh are trying to popularise polyhouse cultivation among farmers, for prompting them to undertake off-season farming. The State Government is planning to install 20,000 polyhouses. The cultivation of exotic vegetables and flowers in polyhouses is expected to add to the Rs. 2500 crores, which the state presently earns from cultivation of fruits and vegetables. Similar initiatives are also being undertaken in Haryana. The crops that are to be cultivated include tomato, capsicum, cabbage and brinjal.

ICT in Water Supply and Irrigation Management

The water consumption required for food production has been steadily increasing, even though the sources of supply continue to remain more or less the same. Information and Communication Technology (ICT) in water supply and irrigation management is one of the promising methods of enhancing the availability of fresh water resources. Adoption of ICT in countries with high water scarcity has led to a 10% to 50% increase in water use efficiency and about 20% to 100% increase in yield per land and water unit.

Although automated irrigation facilities are available in India today, the incorporation of ICT, in automation facilitates will lead to the total exploitation of automation potential. The early devices were composed of mechanical gear interfaces that were mounted on ordinary flow metres. These were then converted to timers that controlled the automatic valves hydraulically or electrically. As against this, the use of ICT increases the sophistication of automation and reduces the operating cost.

In ICT, programmable logic controllers and industrial microcomputers facilitate the usage of software for management of irrigation. One central unit is capable of controlling hundreds of local satellite field units. ICT also provides real-time troubleshooting, failure identification capability and correction by remote control. The flow rate and pressure of water can also be pre-defined in the system. Any variation from the accepted range generates an alert signal and auto-corrects the malfunction in the water system.

Vertical Farming is a proposal to undertake cultivation of specific types of vegetables and fruits in high rise buildings. Though not implemented practically, on a commercial basis anywhere, the concept of vertical farming has caught the fancy of the people concerned with the subject of food sufficiency. Despite the fact that the concept exists only in the form of skeletal computer generated designs, a number of experts around the globe are optimistic, about turning this idea into a workable reality.

It is estimated that by 2050, about 80% of the global population is to reside in urban centres. The concept of indoor farming has already been tried and tested successfully, at the ground level, in the form of greenhouses and polytunnels. Vertical farming is an attempt to take forward the same philosophy to a new 'height'.

Few of the prominent advantages that could be experienced by vertical farming are as follows:

- Elimination of weather related crop failures like floods, famines and droughts
- Minimal use of land, thereby enabling restoration of the natural ecosystem
- Ability to convert abandoned urban properties into profitable food generation centres
- It may also mitigate the possibilities of armed conflict between entities, over natural resources like land and water

If the idea of vertical farming is researched and implemented successfully, it may offer a sustainable method of producing safe and varied food supply, throughout the year, and help repair our natural habitat that has been damaged by years of traditional horizontal farming practices.

Usage of Software Technology and Embedded Systems

We have witnessed an increase in the efficiency of small and medium organised businesses, through the implementation of computing solutions. Similar type of precision agriculture services could be offered to private companies willing to invest in the agricultural sector. For example, a consultant may design, integrate and install a combination of the global positioning system (GPS), yield monitor and geographic information system for field operations. In fact, several manufacturers today have developed such kind of integrated turnkey systems. Object oriented software modules could help in the development of a variety of products as well as precise decision making.

Apart from software, customised technology made possible by embedded systems could be used for a number of control functions. Real-time embedded system could be used for artificial climate control, in the closed confines of greenhouses and polyhouses. The system could be made capable of monitoring soil constituents, concentration of nutrients, internal temperature, humidity factor, rainfall and wind conditions. Based on the analysis of the data so obtained, the system would automatically regulate a suitable climatic control, to regulate proper crop growth.

GM and Organic Methods of Crop Cultivation

BT cotton was the first GM type crop, to be released in India. There has been a lot of controversy concerning its performance, as regards the impact on the environment, biodiversity and health of the cattle, which fed on the post harvest BT cotton residue. Genetically Modified crops, though presently embroiled in an ethical dilemma, have the capacity to feed the ever increasing population. The crops can be made artificially resistant to disease, their nutritional value can be controlled, as per the requirement and the crops can even withstand long periods of draught and high salt content in the soil. Despite opposition from a number of countries, the genetically engineered crops are spreading rapidly, to millions of acres, in countries like the USA, which exports large quantities of food.

Organic farming is also gaining wide acceptance among farmers, owing to its minimal dependence on artificial chemical inputs, like fertilisers, pesticides, herbicides and other forms of agro-chemicals. As organic methods employ natural composts, the health hazard from consumption of such crops is virtually eliminated.

Incorporation of Knowledge Workers and Consultants

Perhaps, agriculture is the only sector in India, which has shied away from incorporating a professional approach, domain expertise and consultancy in its mainstream. Application of scientific methods of cultivation, through qualified professionals rather than the adherence to the age-old traditional knowledge can make a huge positive difference in terms of yield.

The need of the hour is creation of a knowledge base, in the form of documentation, containing the best practices in the field of agriculture. These practices can be readily referred to, without a need for doubtful experimentation that may lead to wastage of resources. The knowledge base can be updated from time to time, as research and development in this field progresses to find new sustainable methods. The expertise of consultants need not be confined to methods of production alone. It should also be used in changing this entity into a viable business idea to generate profits.

Probable Extensions in Special Agricultural Zones

The SAZs must not be limited to food production but should rather accommodate a wide range of ancillary activities that are directly or indirectly related to the agricultural sector. Some of the important and interesting entities that could be included in these zones are:

Water Bodies and Canals: Creation of massive water bodies, dams and canals would complement the automated irrigation facilities in SAZs and even serve an originating source of water supply to the nearby cities.

Energy and Fuel Plants: Implementation of agricultural operation on such a huge scale is bound to generate tonnes of biodegradable waste that could be diverted to generation of fuel and energy. The energy thus generated can be turned back to be used in SAZs.

Wholesale and Retail Outlets: One of the major roadblocks in the prosperity of the Indian farmer is the distribution channel, to purchase the food cultivated by the farmer. The SAZs could include professionally run, marketed and advertised retail and wholesale units. Including such units would create a food supply chain, where procurement of raw materials, production, packaging, storage and selling of goods over the counter is done in a single place.

Agricultural Schools and Colleges: Erection and expansion of such a system will continuously require a steady supply of qualified workers. To satisfy the need for qualified manpower, the SAZs could run schools and colleges that would impart agriculture specific knowledge.

Agri-Tourism: Agri-Tourism can be incorporated, with a view towards generating additional revenue. Such a massive, professional, hi-tech regulated system of food production will be an interesting sight to watch and would definitely attract people. A brand value for a SAZ entity needs to be created through this programme, which would help in generating loyal customers to sustain the SAZ.

The imagined business proposition is likely to contribute immensely to the Indian population, majority of which is dependent on agriculture. The venture will cause less pollution, as compared to manufacturing industries, as well as keep the prices of essential commodities under check. The pangs of depression and frustration that have crept in the minds of the Indian farmers, due to unpredictable weather and unfruitful government policies will cease to exist. This would impart social stability to the system as a whole. SAZs thus can be the nearest suitable approach for the sustainable development of mankind.

"Security for agriculture merits serious concern by not only the agricultural community but our nation as a whole. The risk to the U.S. food supply and overall economy is real."

- Pat Roberts

Education: The Primary Step to Sustainable Development

In India, education has been a much neglected field, that has as a result created a larger divide than it has bridged, in the light of which this article explores the meaning and need for education, as the only real step that can ensure development.
Preeti Shirodkar - Assistant Professor, Language Studies, MET Institute of Management

"Education is more than a luxury; it is a responsibility that society owes to itself." - Robin Cook

An Overview

A word that is a part of common parlance, the paradox of education lies in its being a term that has with overuse lost its essential character. While education goes beyond literacy, in ensuring the shaping of an individual's character and offering the scope for personality development, what seems to be emerging today is merely acquisition of a degree that would eventually land the person in his/her dream job. What we fail to accept is that today the system, in its entirety, has largely failed, whether in approach, shown by the policy makers, the deliverers, the recipients or the stakeholders, or the results, that emerge as a consequence. And so, despite the fact that capability for fulfilment of potential lies both in the system and its recipients, neither is really able to fulfil it, given the state of affairs. As a consequence what is witnessed is the usual blame game or resignation that can neither alleviate the situation nor offer a way out of it. What is needed is an evaluation of the present and the will to change the future.

To say however that nothing is being done in the field of education would be to offer a lop sided perspective. There is no denying that the Government, as well as the deliverers of the system, are taking up numerous initiatives and bringing about varied innovations, to infuse the educational system with a new life. However these sops do not seem to be reflecting the desired effects, as a result of which we see a high dropout rate at the primary level, with a large chunk of essentially young population remaining illiterate or at the other extreme witness a minority of the population with a large number of degrees, but very little 'employability'. The people, who lie in the huge range, between the two ends of the spectrum, are found to be few and far between.

If one were to cast a dispassionate look at the situation, one would be forced to admit that this is a trend that has emerged somewhere at the end of the last century, has taken a turn for the worst and now remains static at the deep end of stagnation, waiting for new life blood to be infused into the system, so that it can serve the actual purpose, for which it has been set.

The initiatives that have been in place in the recent past have covered both the deliverers of the system and its recipients and have been offered across various levels, from the primary to the professional. Yet they have failed to achieve the desired results. And while it would be naive to believe that there is a simple solution that can remedy the entire situation, it is time to take a close look at the faults within the system as well as its strengths, if only to address what can and needs to be changed.

The Primary and Secondary Sections

The education of a child begins at the primary level, and is perhaps the most important level of education, as it shapes the entire course of a child's understanding and growth, laying the foundation of his/her development and approach towards education; and while there is no denying that this level has witnessed an immense change for the better, what is disheartening is that most of the problem in the educational system lies within this level.

With the coming of new techniques in education, private institutions have brought in a healthy change, by bringing in numerous innovations in the approach to education at this level. The manner of teaching has been made more interactive and interesting for students. However this manner of teaching reaches only a few, as the lack of infrastructure, the dynamics of numbers and the poor payment offered to teachers at this level, except in private institutions, makes it impossible to reach this facility, to the large number of students, who either resort to government schools or study under the government board.

The structured nature of the syllabus, at this level, is no doubt essential, as regards exposing a child to holistic development, by offering him/her at least minimal skills in all areas, so as to make him/her a well rounded individual. However the manner of delivery and the attempt to integrate children, with diverse interest patterns, into a predefined system is what lays the foundation for all the problems that develop later. No doubt the government is offering sops to children, especially of the poor and rural sectors, but these seem to be proving futile, and if one takes a close look at the reasons for this failure, it would not take one long to realise that the basic changes that are needed at this level are relevance and delivery techniques, on the one hand, and an assessment of the feasibility of sops on the other. For example if one were to assess two of the government schemes in this light, i.e. mid day meals and payment for attendance scheme, it would not be difficult to realise why they have failed. As regards the former, the food given is either unattractive, inadequate or in the worst

case is not seen to reach the target group, while in the latter, where one rupee per day is being offered for attendance, the scheme offers too little, as children earn much more, by working or doing odd jobs, making it thereby unattractive for both the parents and students. Moreover as regards the teachers and teaching techniques, except in private schools, which make up for it by charging huge fees, making it unaffordable for most, the government and aided schools, often fail miserably, as the payment is poor, due to which school teaching rarely attracts talented teachers, in addition to which the infrastructure is absent.

While the same problems continue at the secondary level, at the worst getting crystallised by the depth they acquire, additional issues that crop up, include the predictability of the tenth standard papers, the problems with assessment that can be accorded to the sheer magnitude of numbers, an attempt to homogenise the difference of standards that are brought in due to the varied levels of the multitudinous boards and the immaturity and lack of awareness, within which students are forced to choose their area of specialisation, relying on numerous factors other than their innate abilities and talents.

The Higher Secondary Level and The Undergraduate Programme

The first level that separates students into their areas of specialisation sets aside the routine pattern of school education, affording students the scope to choose between areas of specialisation and among the various subjects that each stream offers. Here too, there is often a complete lack of awareness, about long term goals and benefits, that the chosen field may offer, as a result of which choice is often made on the basis of peer, sibling or parent pressure, trends in education or personal dislikes, rather than talent. This in turn leads to disinterest, failure, frustration, changing of streams and/or long term dissatisfaction with one's job.

Moreover, the abrupt bringing together of people from different levels (boards) and different language competency levels (the native and English medium) creates its own level of problems both for the teachers and students.

This also in fact affects the evaluation process, which faces dilution on the one hand and predictability on the other, alienating thereby the thinking minds, a malady that plagues the system right from the primary to the postgraduate level.

Additionally the intense competition faced for admission, to certain technical and professional courses, further complicates matters, with the added dimension of paid seats and private colleges. As a result of all this there is complete lack of standardisation, even within a city, let alone the rural areas, the state or the country at large.

So too, due to lack of special educational facilities for the differently abled (both physically and mentally) that are easily accessible and affordable, though this number is small, an attempt to integrate them into the main stream is made at this juncture, which often results in more harm than good, as the students get frustrated while the teachers feel helpless, due to their lack of expertise in handling such cases.
The main issue plaguing the undergraduate programme however is the lack of vocational courses, which could actually provide people with jobs, at the end of the course, by giving them direct training in applicable skills. This comprises the need of the hour, as a large percentage of the student population does not go in for post graduate courses. Moreover the industry is in need of people for back office jobs, which require training in certain functional skills rather than basic knowledge of a particular discipline/subject.

Finally, most of the courses being offered are traditional courses that have been followed, since times immemorial; what is rather needed is the launching of new courses with a focus towards providing people with jobs, in upcoming fields. No doubt certain steps have already been taken in this direction, but these too are largely in what could be labelled as 'savvy' fields, rather than in areas that could provide people with functional skills required for localised jobs.

The Postgraduate Programme

The number of people pursuing post graduate programmes is far less, as compared to the magnitude of the figure in the context of school education. Moreover, this is a programme pursued by choice or then one that is an extension of what one has learnt, during the undergraduate course. However here too we come across people changing subjects or streams, which can be largely attributed to their disillusionment with the undergraduate programme. So too, often these programmes turn out to be mere extensions of what has gone before, creating a sense of stagnation among bright students. Additionally, these courses usually lack flexibility and attractiveness, hampering the growth of bright students. This is usually what results in the brain drain at this level, as students seek foreign lands for the variety and flexibility of the courses and the infrastructure they offer.

Research Programmes

One may like to believe that at least at the final level of education, i.e. research, which is supposed to afford flexibility, the situation would be different. However, here too lack of transparency, support and quality affects the system; with doctorates being churned out in numbers that are larger than the strictly deserving. On the other hand numerous considerations often deter capable students from pursuing serious research, which can at a basic level serve as an indicator of change and experimentation that needs to be brought about, in different walks of life and the industry.

Professional Courses

Unlike what the name suggests, professional courses too lack professional attitude among the students. While in the medical field students are not willing to serve in the rural areas, by way of interns, in management, medical and engineering courses, the system is

plagued by the dynamics of numbers, in addition to an unwillingness to participate in overall personality development, rather than strictly working within the confines of the course, an attitude which seems crystallised, by a belief in being the cream.

Some Deliberations

The major areas that need radical change in the educational system include infrastructure, teaching content, teaching methodology, evaluation processes; selection, employment and payment of teachers; administrative changes and most importantly attitudinal changes among all concerned and affected groups.

No doubt each of us, right up to the companies employing the people, needs to do our bit, but what is a step in the right direction is the setting up of the National Knowledge Commission by the Government, which despite all else becomes an embodiment of its resolve, to make a difference. It is now left to us to participate, in its recommendations, in the manner possible; while also putting pressure on the concerned bodies to act upon its recommendations, wherever they seem feasible and dynamic.

To say that the situation is hopeless would be giving in to helplessness and attempting to push away the sense of responsibility for the failure of which each one of us is an advertent part.

What needs to be driven home at all levels is that education is in fact delinked from literacy. What most aim at today is mere acquisition of a degree, which in no way equips oneself to function effectively.

This might possibly take us to the essentials of what needs to change in the entire system, which is the approach adopted by all those affecting and getting affected by it, whether the government, the management of various institutions, the teachers, the support staff, the parents and most importantly the students, for without efforts from each of these quarters the vicious circle, in which the system has been caught, cannot be broken. And rather than waiting for an overhauling of the system, from each of the quarter, what is needed are individual efforts, which even though they may not change the system would no doubt bring about a difference in the life of individuals, thereby bringing about a basic attitudinal change, which is the need of the hour.

The approach required is - make the individual difference than you can and eventually the systemic change will follow.

"Education: That which discloses to the wise and disguises from the foolish their lack of understanding."

- Ambrose Bierce

Ensuring Sustainability in Business

Considering that companies usually focus on profits and therefore may not look positively at sustainable development, a term which is often misconstrued by them, this article talks about the how and the why of it, citing examples of companies, which have progressed by being able to perceive sustainability in the right manner.

Rohit Vaswani - eMBA

While contemplating on the various schools of thought, regarding the purpose of businesses, the common thread of thought, running through most business philosophies, is the notion of protecting the organisation's capital base. It is of utmost importance to most business leaders and it surpasses even the cliché thought of profit maximisation and cost effectiveness. To say that the most important purpose of business is the preservation of its capital base leaves a bitter taste in the mouths of those stalwarts, who have seen the missed opportunities, due to the evolution of preservation as parsimony. However, the thought of protecting the capital base, along with the simultaneous expansion and development of it, is certainly more appealing.

From the above example, it can be gathered that businesses know more about sustainable development than any environmentalist does, simply because the existence of a business, depends on those very principles. Also, one must make businesses realise that the concept of sustainable development of resources should extend to the natural and human resources and not solely to the resources of the business. It is therefore important to redefine sustainable development from the business perspective.

The common misconception that businesses today have of sustainable development is that it is a hindrance to economic growth. For example, it is commonly believed that economic growth is directly proportionate to environmental problems. Sustainable development is seen as a moral obligation, which is enforced by environmental regulations, which inhibit growth. To avoid these types of misunderstandings, it is important that rather than just talking about the economic benefits of sustainable development, one should articulate it in business terms.

The most suitable definition, for a business enterprise, therefore, is 'sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stake holders today while protecting, sustaining and enhancing the human and natural resources, needed in the future'.

With this definition it also needs to be stressed that sustainable development cannot be achieved by single enterprises in isolation, they need the cooperation of the entire business community. Moreover, sustainable development should also be regarded as a pervasive philosophy, which should be adopted by every participant, in the economy.

From a macroeconomic view point, sustainable development encompasses all forms of development, which are both environmentally and socially sustainable and which do not strain the environmental capital. The above perspective defines the purpose of sustainable development, as environmental protection, social well being and economic development, all of which appeal to businesses that mainly focus on the economic impetus and show how these efforts are reflected in their bottom line.

When presenting the case for sustainable development, as a viable business proposition, it is important to state the companies, which will benefit the most from it. They are the suppliers of green consumers, developers of environmentally safer materials and resources, firms that invest in eco-efficiency and firms that engage in social development. For the businesses that don't fall into the above categories, one can cite the below examples of businesses, which have incorporated sustainable development, in their business strategies. For example, a 3M manufacturing plant scaled down a waste water treatment operation by half, simply by running cooling water, through its factories, repeatedly, instead of discharging it after a single use.

Pacific Gas and Electric decided that energy conservation was a more profitable Investment, than nuclear power, and McDonalds made a well publicised move from plastics to paper, the cornerstone of a much broader, but less visible waste reduction strategy.

It is also important for businesses to realise that many consumers are now prepared to pay more, for environmentally responsible products. And the emergence of ethical investment funds has thrown the spotlight onto corporate environmental performance.

Doing business has become a lot more complex, in the last twenty years. A major aspect of this is the attainment of approval, cooperation and satisfaction of a range of stakeholders, including customers, suppliers, owners, employees, financiers and regulators. These groups are demanding a broader set of performance outcomes, than just profit. In the past, it has been possible to be anything from reactive to minimalist, in dealing with these requirements, which has evolved to being proactive, strategic and therefore ahead of the pack. Technology, globalisation and rapid changes in the business environment mean that firms must find strategically sensible ways, to get

ahead of the stakeholder requirements.

From a practical perspective, in order to engage in sustainable development, businesses and their executives must make concrete decisions about why, what, when, how and how much?

Businesses should work to limit the downside and expose the upside of their strategic opportunities, by including sustainable development practices, for consideration, in their business practices choice set. They can substantially assist, in delivering the business' complete strategy and satisfying a variety of stakeholders, at a higher level, than would otherwise be the case. Indeed, the most advanced companies have been proactive and innovative, in leading stakeholder expectations, and creating new and different forms of value, for all players. The motivation need not be, in fact in advanced companies it is not, born of altruism, voluntarism, and so on. Rather, it is a deep-seated set of principles that guide the organisation, to develop interdependence with its stakeholders, and grow through successive implementation of sustainable development practices. This is called the guiding set of principles or 'sustainability orientation', comprising breadth of vision, stakeholder empowerment and being progressive, as outlined below. The sustainability orientation of a company helps business leaders make the connection between their sustainable development practices and pursuit of the distinctive character and strategic advantage of their business.

The problem that now arises is how to bridge the gap between sustainable business practices and long term business success. This has been shown through the sustainability orientation model, proposed below.

Before a deeper analysis of this model is made, one has to first define sustainability orientation, sustainable business practices, as well as long term business success.

Sustainability Orientation

Sustainability orientation describes the degree to which the organisational culture and its set of sustainable development practices are efficient and effective, in meeting economic, environmental and social needs, and in supporting the strategic direction of the business, thereby providing greater opportunity, for long term, superior business success.

Business strategy is informed and influenced by a firm's sustainability orientation. Sustainability orientation is not dictated by the business strategy, but is a guiding cultural characteristic.

In all firms, business strategy, whether explicit or not, determines all business practices, including sustainable development practices. The relationship between practices and performance is clearly not fully deterministic, since every firm faces many uncertainties in its business environment. Through market mechanisms and the competition involved in markets, the success of practices can be measured, by a range of key performance indicators, including operational measures, financial measures, industry comparative measures, market measures and stake holder satisfaction, as well as long term economic, social and environmental outcomes.

Sustainable Development Practices

The whole range of activities, undertaken by an organisation, can be described as a set of practices. These might be operational or strategic, short term or long term, one-off or repeated, structured or informal and so on. There is no specific set of common sustainable development techniques that work, across a wide range of industries and businesses in our economy. However, individual practices that work, tend to have the following characteristics:

Practices, which are focused, on delivering Specified Performance Improvement

These are practices, which are distinguished by their outcomes rather than by their origins and processes. Many of the larger companies benchmark their efforts in sustainability, by comparing the progress between different sites and the wide progress over time. Rather than compiling an account of the effort or budget spent, from a sustainability point of view, these companies make a subjective ranking, of the relative progress, of different sites, against a detailed set of company objectives, related to sustainability.

Practices, which are integrated with, the broad set of business practices

Businesses initiate practices, for many different reasons. Performance improvements related to sustainable development may be secondary benefits that flow from these practices. At a day to day operations level, many sustainable development practices are classified, under a different purpose, such as security or customer service, although they also satisfy the sustainability agenda. By making the link between all business practices, with a sustainability component, and the sustainable development agenda, leading companies achieve the necessary integration, to avoid overlap and increase efficiency. For some businesses, their central business purpose is closely aligned, to the sustainable development agenda. For example, the pharmaceuticals industry is working, to improve community health and the renewable power industry is working, to reduce the reliance of communities on fossil fuels and the associated green house emissions. These businesses, in particular, find it hard to rework their core practices, as a sustainable development overlay. Businesses that make this separation between sustainable development practices and the fullness of their business practices lay themselves open to be accused of green wash. That is the application of a thin film of goodness, across the surface of the business, rather than making significant changes, at the core.

Business practices, which are reshaping, within the organisation, until they achieve depth and effectiveness

Some companies undertake sustainability in a minimalist way, while others undertake the same activity in a whole-hearted, comprehensive manner. The same practice applied in different organisational settings can describe a different activity, in terms of its depth and outcome.

An example of this is Electrolux and CFC replacement. In 1994, the pressure to replace CFCs, used for refrigeration, resulted in many companies adopting the replacement chemical HCFC. Although still harmful to the ozone layer, HCFC was seen as an acceptable short term fix. Electrolux recognised the need for further changes and identified the likely long term solution as isobutane. This technology was not yet fully developed. Electrolux selected the replacement chemical R314a, as it was a better interim step to the ultimate zero-harm solution they had identified. The company was the first major white goods manufacturer to market CFC-free refrigerators.

The features of sustainable development practices are therefore either one or all of these:

1. A possible component of any business practice.
2. Defined by their outcome; that is, re-balancing and making progress on the combination of economic, environmental and social effects of the company's activities.
3. Context-specific, in that, they depend on the strategic characteristics of the industry and the enterprise within it.
4. Defined by contemporary community concerns - currently socially responsible investment funds are partly relied on, to communicate these concerns within the business.
5. Company specific at the operations level.
6. Derived from a generic set of high-level principles that define a sustainability orientation

From the above analysis of sustainable development oriented business practices, one can further plot them in terms of four distinct categories of practices.

- Compliance: Simply means meeting all regulatory requirements, avoiding fines and penalties.
- Conformity: Satisfying the accepted norms of one's industry, for example, triple bottom line reporting, environment management systems and so on.
- Performance: Capturing opportunities to improve the balance sheet, through activities such as waste minimisation, employee commitment and community support, for example, Rio Tinto and their decision to abandon the Jabiluka project
- Transformation: Achieving major gains on sustainable development concerns, by changing the business model in a major way.

However, simply stating the above is not sufficient to convince businesses, to adopt sustainable development practices or understand the benefits from it. There is no direct equation, to connect sustainable development, to long term business success. What can be suggested is the most conducive strategy that can be adopted.

Businesses derive long-term success from sustainable development practices, when they pursue sustainability deals that are well placed. Specifically, sustainable development practices give businesses a greater opportunity, for long term business success, when they are:

1. Strategically congruent with the business, specifically by contributing to the business strategies of stakeholder support, efficiency and market edge.
2. Deep practices that achieve genuine improvements in sustainable development outcomes, rather than superficial compliance efforts.
3. Mature leading edge approaches that offer the best available proposition for the business, in the stages, from compliance to transformation.
4. Well integrated with other business practices, thus promoting efficiency and effectiveness in implementation.

Sustainable development practices that fail to contribute to business success either fail to make the link with the business strategy or are sub-optimal in terms of their depth, maturity, efficiency and integration. By suggesting that sustainable development practices relate to business success, when they are strategically complementary, one is not trying to suggest that business success either depends on or can be uniquely provided by these practices. Industries that struggle under intense competition and whose customers are reluctant to pay a margin for sustainable development, don't experience the advantages directly, for example, the printing industry has an uphill battle.

The connection between sustainable development practices and long term business success consists of two main attributes - the quality of sustainable development practices themselves and their alignment, with specific strategies of the business. The motivations for a company's adoption of sustainable development practices are many and varied. They are both practice and context specific. The leading companies don't simply adopt sustainable development practices, they continue to refine and extend their efforts, to achieve a better balance between the economic, environmental and social consequences, of their business activities, which complement their strategies. The leading companies in sustainable development share a set of high level principles called sustainability orientation that guides their strategic preferences and decisions.

Perhaps the most exciting fact is that companies do not acquire an external incentive or provocation, to embark on sustainable development practices that will generate a long term performance premium. However, the most successful efforts will result for companies that have a strong framework, for the sustainable development considerations, such as strong leadership and a robust strategic planning process. Sustainable development practices cannot fix an ailing strategy, but they can complement a promising one, by stimulating innovation and change that will deliver a premium, on long term business success.

Ethanol: A Viable Fuel

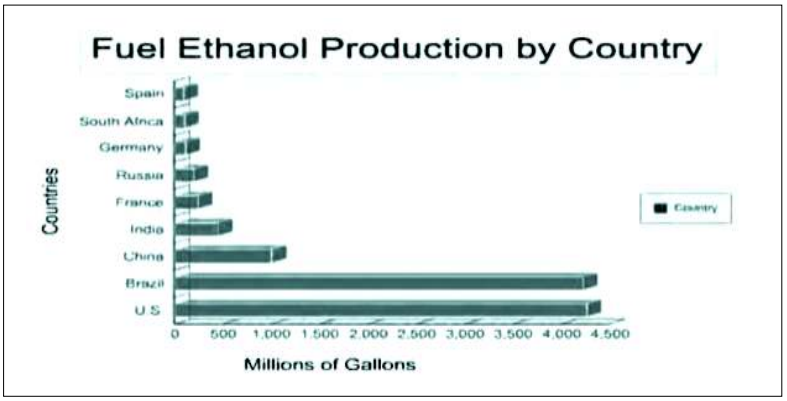
Charting the path of ethanol production and use, both nationally and globally, the article defines why India needs to put in place strong measures, to tap its potential to produce ethanol to a greater extent and ensure that measures are in place to facilitate its growth as an industry.

Shubhangi Gaikwad - MMS

When one thinks of inflation, two things, from among those that highly contribute to inflation, come to one's mind. The first among those is petroleum products, especially petrol, and the second is the growing price of food products, required on a daily basis. Sugar is one such food item. The Sugarcane-Ethanol Project will be a beneficial cooperative move, between private sectors, the government and farmers, to control inflation, by providing sugar as well as an alternative fuel viz. ethanol.

Even though sugar has not contributed to the rise in inflation in recent times, in normal circumstances, it is the first victim of the government's anti-inflation strategy. On the one hand, the sugar demand-supply cycle is expected to turn, in the new sugar year, and this will have an impact upon the industry's profits, from non- sugar business such as cogeneration, ethanol and press mud, which indirectly benefit farmers.

On the other hand, the number of automobiles in the world has been growing fast, and as of today, one quarter of the global petroleum stock has already been exhausted. This problem requires a solution like the one that Brazil has arrived at, with the Sugarcane Ethanol Programme, which was launched in 1970. The same can be replicated by other countries, in order to replace 10% of the world's gasoline consumption and the expenditure on crude purchase, which is in the range of Rs.1600 billion per year, impacting the country's foreign exchange reserves, in a big way. The petroleum industry now uses ethanol, as an alternative fuel, as it stands to benefit sugarcane farmers as well as the oil industry, in the long run. Ethanol is one of the best tools to fight vehicular pollution, as it contains 35% oxygen that helps complete combustion of fuel, thus reducing harmful tailpipe emissions. Considering the potential contribution that ethanol can provide, to the growth of the economy, by reducing oil import expenditures, to some extent, the Central and the state governments are now not only providing financial assistance, for ethanol production, but also offering tax waivers to such projects.



The dynamics of the ethanol production carried out by different countries can be summarised in the graph.

As is evident from the graph, India is the fourth largest fuel producer after the US, Brazil and China. India has been producing nearly 500 million gallons of ethanol. This means that India has a greater capacity for ethanol production in the future.

The government machinery has also been trying to create conducive conditions, to facilitate and prompt the production of ethanol. The Ministry of Petroleum and Natural Gas has agreed to recommend a uniform purchase price of Rs. 21.50 per litre, ex-factory, for the supply of ethanol, to be implemented all over the country, for the next three years. It has also suggested that the import duty on imported industrial ethanol be reduced from 7.5% to 5%, to prevent a potential shortage of industrial alcohol due to the ethanol decision, and that the department of food and public distribution should also explore options for ethanol exports.

A resolution has mentioned that the ethanol pricing should match the Import Parity Price of petrol. During the resolution, crude was $ 50 per barrel and the Import Parity Price of petrol Rs. 23 – Rs 24. The price of crude is $130 and so the price of ethanol should be in the range of Rs. 40, considering the Import Parity Price. But as tenders were only floated for 3 years, for purchasing ethanol, the price of ethanol never changed from Rs. 21.50. From this it is evident that oil companies would benefit, by blending ethanol at Rs. 21.50, as ultimately the blending of ethanol would help them in reducing the current losses. Thanks to high crude oil prices, a rush to invest in green and alternative fuels is only to be expected. But the euphoria over ethanol has ebbed out—India's sugar companies have largely put a freeze on their ethanol-related investment; other potential investors have also developed cold feet.

The price, though, was negotiated when crude oil prices were well below the $100/barrel mark. Sugar companies are demanding a 40% hike in the ethanol price. Over-the-counter market price for ethanol, in early 2008 was between Rs 26-27/litre but the industry observers

maintain that the high feedstock and crude price volatility, in the last several months has increased risks, including fears of a massive stock build-up, especially if crude oil demand in key consumer countries drops further.

The petroleum industry now looks very committed to the use of ethanol as an alternative fuel, as it is expected to benefit sugarcane farmers, as well as the oil industry in the long run. Ethanol (Fuel Ethanol) can also be produced from wheat, corn, beet, sweet sorghum etc.

As per the above table, ethanol is the net energy gainer, as compared to gasoline and diesel. Though biodiesel is a greater energy gainer than ethanol, ethanol can be mixed in petrol for better fuel consumption.

Fuel	Energy Yield	Net Energy (loss) or Gain
Gasoline	0.805	(19.5%)
Diesel	0.843	(15.7%)
Ethanol	1.34	34%
Biodiesel	3.20	220%

Oil companies can blend petrol/gasoline with fuel ethanol and this blended fuel can be made available through petrol/gas stations. Ethanol could also be added to diesel. Usually, a 3% volume addition could be made. Tests have been conducted satisfactorily with up to 10% volume addition.

Many states in the US have been using a 10% ethanol blend with gasoline (petrol), in their cars. Brazil has been using up to 24 % ethanol with petrol. Engines of cars do not need any change to use petrol with up to 24 % ethanol in it. Fuel ethanol programmes have now been initiated in countries like Australia, Nepal, Columbia, Poland, Sweden et al. Reduced oil imports, an improved trade balance, reduced reliance on imported oil, increased ethanol production, more cane price to farmers, direct and indirect job opportunities and saving fossil fuels are some of the experiences and advantages of the use of alternative fuels like ethanol.

Countries producing Sugarcane	Production (in terms of million tonnes)	Area (thousand hectares)
Brazil	416.26	5 634.55
India	236.18	4 000.00
China	90.98	1 392.10
Thailand	64.97	1 121.41
Pakistan	53.42	1 047.50
Other Countries	286.95	3851.39
Total World Production	1328	20454

To analyse the viability of the sugarcane ethanol project, one could take into consideration the dynamics of the production of sugarcane in different countries.

India is the world's second largest producer of sugar, after Brazil, and the second the largest grower of sugar cane. Bajaj Hindustan Ltd., a part of the Bajaj Group, is India's number one sugar and ethanol manufacturer. Ethanol is produced from the fermentation of sugars, such as corn, sugar cane, grains and beet. In India, ethanol is mostly made from rectified spirit, which in turn, comes from molasses—a by-product of sugar manufacturing. Molasses comprise around 45-50% of the total sugar production.

The Renuka Sugar Industry produces alcohol from molasses (Molasses is the brown coloured residue that is obtained after sugar has been extracted from the juice. Molasses contains some quantity of sugar, which cannot be extracted by relying on simple technology) left after the extraction of sugarcane juice, which is potable and can be used as an industrial chemical. Further, this alcohol can be purified again to produce fuel grade ethanol that can be blended with petrol.

The petroleum industry is committed to utilising ethanol as a transportation fuel. Farmers too are expected to benefit. India has a sizable portion of fertile, uncultivated land suitable for producing sugarcane, which is an excellent feedstock for ethanol production. India also has a pool of low-cost labour.

Indian Sugar Mills and private stand-alone ethanol manufacturers should however cut the cost of production, by using good technology, which requires fewer resources, such as steam, water and electricity. They should also concentrate on cogeneration, by tackilng the effluent generated by sugarcane juice and molasses.

Indian ethanol technology is at par with that of Brazil. Petroleum suppliers, however, should understand the economics of blending, and frame a system, which suits the petroleum pricing mechanism and bridges the ethanol pricing mechanism. Furthermore, they should add their own margin on ethanol, as they do currently with petroleum refining and marketing, a step that is likely to make ethanol much cheaper.

The current period of ethanol development in India can be called the 'turn-around period', with a positive outlook towards ethanol manufacturers. In fact, some prospects and challenges of using ethanol in India include energy security, trade balance and risk reduction, environmental benefits, such as reducing carbon dioxide, hydrocarbons and volatile organic compounds, and economic benefits, including in-country capacity utilisation, scope for industry expansion and an additional market outlet.

The President of the Indian Sugar Mills Association, P. Rama Babu is of the view that the sugar industry wants the government to label

ethanol as a 'declared good', allowing it to be deemed as a commodity of national importance that can move freely across borders, without being controlled by states.

It is estimated that automobiles lead to the consumption of 20 million barrels of oil per day, which forms one quarter of the world's petroleum consumption. Unfortunately, petroleum is found in relatively fewer regions of the world. Exports and imports of this commodity form an important component in international trade and many countries are critically dependent, on petroleum imports. This is the case with the United States, as well as with many developing countries.

In 1993, only U.S. and Brazil were prominent producers of ethanol. India had not yet introduced 'ethanol production'. In 2003, though, there was vast difference compared to the situation in 1993, as India was listed among the largest producers of ethanol, all over the world. If one considers the future prospects for India, there would be a lot of change in the production of both food-grains and sugar. India will not only be one of the top food-grains and sugar producers, but also one of the top ethanol producers.

The Benefits of The Use and Production of Ethanol

Ethanol is a much cleaner fuel than petrol (gasoline). The use of ethanol can reduce the dependence upon foreign oil and reduce greenhouse gas emissions. There are several benefits of the use of ethanol

- It is a renewable fuel made from plants
- It is not a fossil-fuel and so manufacturing it and burning it does not increase the greenhouse effect
- It provides high octane, at a low cost, as an alternative to harmful fuel additives
- Ethanol blends can be used in all petrol engines, without modifications
- Ethanol is biodegradable and does not harm the environment
- It significantly reduces harmful exhaust emissions
- Ethanol's high oxygen content reduces carbon monoxide levels, more than any other oxygenate: by 25-30%
- Ethanol blends dramatically reduce emissions of hydrocarbons, which majorly contributes to the depletion of the ozone layer
- High-level ethanol blends reduce nitrogen oxide emissions, by up to 20%.
- Ethanol can reduce net carbon dioxide emissions, by up to 100%, on a full life-cycle basis
- High-level ethanol blends can reduce emissions of Volatile Organic Compounds (VOCs), by 30% or more
- Ethanol can cut emissions of cancer-causing benzene and butadiene, by more than 50%
- Ethanol production could enhance the technological base of the country
- The demand for ethanol is virtually unlimited and its production guarantees captive markets
- Ethanol production could also lead to the introduction of income enhancing subsidies, in the form of excise tax concessions, price guarantees and direct price support

The Various Uses of Ethanol

Ethanol was used as a fuel in early bipropellant rocket vehicles, in conjunction with an oxidiser, such as liquid oxygen. The German V-2 rocket, used during World War II, credited with beginning the space age, used ethanol, mixed with water, to reduce the temperature of the combustion chamber. Apart from being used as fuel, ethanol has other uses too. Ethanol is used in medical wipes and in antibacterial hand sanitizer gels, at a concentration of about 62%, as an antiseptic. It kills organisms by denaturing their proteins and dissolving their lipids and is effective against most bacteria and fungi and many viruses. Ethanol can also be used as an antidote for poisoning, by other toxic alcohols - methanol and ethylene glycol in particular.

Taking into account, the various advantages and the related economic and ecological benefits of the use of ethanol, attempts have been made by both the Centre and the State governments, to garner adequate support for the production of ethanol.

Support from the Central Government

The Government decided to amend the Sugar Development Fund Act, in 1982, enabling financial assistance for the production of ethanol and cogeneration of power, from bagasse. The government has been examining various other options as well, in order to provide concessions / exemptions to sugar and oil industries.

Support from the State Governments

State Excise and Sales Tax Relief, simplification of procedures and concessions, for new ethanol production units, would facilitate easy inter-state movement of ethanol. Issues related to State Governments have been taken up with the Maharashtra and Uttar Pradesh Governments, for the smooth transportation and delivery of ethanol

Support from the Government of Maharashtra

Support from the Government of Maharashtra has been ensured, through the following initiatives:

- Issuing permits to oil companies / Anhydrous Ethanol supplies, for bulk quantities, on a yearly basis
- Renewing such permits, at least one month before expiry
- Allowing oil companies to receive and unload Anhydrous Ethanol, without the presence of State Excise Officials
- Waiver of turnover tax (1%) on Anhydrous Ethanol

- Waiver of Permit Fee (Rs. 500/- per KL)
- Waiver of Sales Tax (4%)
- Waiver of Surcharge on Sales Tax (10%)
- Waiver of Import Fee (Rs. 1500/- per KL)
- Waiver of Service Charges (Rs. 300/- per KL)
- Waiver of Octroi (3%)

The ultimate aim of all these initiatives is to increase and encourage the production of ethanol. And increasing the ethanol production to 5 billion gallons annually would further lead to development in the following respects

- Creation of 214,000 jobs
- Generation of $5.3 billion, in new investments, in renewable fuel production facilities
- An increase in household income, by $51.7 billion
- A reduction in the consumer cost of gasoline, by extending the supply
- Provision of an alternative to costly, imported oil
- Giving leverage to independent gasoline marketers, competing against larger and more powerful, integrated oil companies.

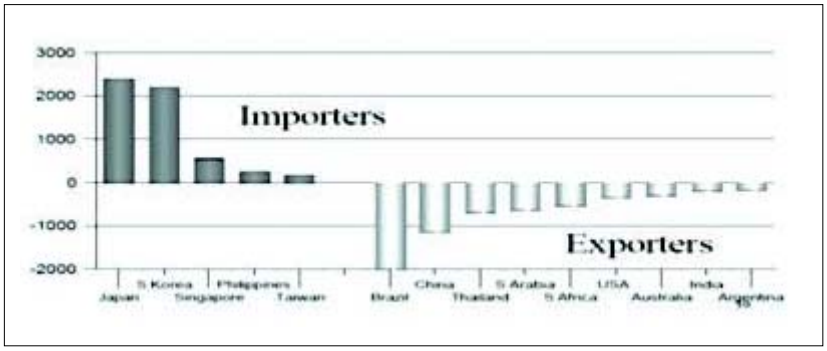
Below is a chart comparing the costs of different feedstocks. All figures are in INR, for a plant, with a capacity of 30,000 litres (7,900 gallons), per day.

	Ethanol From (Rs. In Millions)		
	Rectified Spirit	Molasses	Sugarcane
Feedstock	38	79	152.5
Land	1.5	2	4.5
Civil and Structural Work	4.5	12.5	25
Plant and Machinery	26	55	100
Preliminary and Pre-operative Expenses	1	3.5	8
Margin Money of Working Capital	5	6	10
Contingencies	-	-	5

Though producing ethanol from sugarcane is comparatively costly, one has to bear in mind that India is the 2nd largest producer of sugar and earns high revenue from sugar. Currently, the revenue being earned by sugar industries is nearly 4 to 5 times that of the cost involved, in the production of ethanol.

The Demand-supply Balance In Asia Pacific

The above graph shows that India is in the category of exporters, as against importers, of the world fuel ethanol, demand and supply balance. This means that India is earning high revenue in the form of foreign currency, which will increase the position of India, in the world trade market.



On a concluding note, one could surmise that the production of ethanol in the world will continue to grow strongly. Trade will grow as well, but its pace will depend on the sugar-alcohol economics, new investments in origins, establishment of a viable trading system and the solution of the subsidy issue. The Sugarcane-Ethanol Project undoubtedly has the potential, to power up the rural economy, improve the quality of the environment, and substitute non-renewable fossil energy resources. Promoting public policies, such as investments in agricultural productivity and ethanol manufacturing, setting up sugar factories in cooperation with farmers and focusing on the cultivation of other grains along with sugarcane, will help orient private incentives towards increasing social welfare.

Fulfilling Our Responsibility to the Future

Keeping its sight firmly set on both the present and the future, the article goes on to suggesting initiatives that can be put in place in the fields of education and natural resources harnessing, so as to fulfil a larger responsibility towards the social order.

Prof. Vijay Page - Director General, MET Institute of Management

The hectic pace of everyday existence and one's attempt to stay ahead in the increasingly competitive rat race, often results in one losing perspective of the future, in attempting to deal with today, or vice versa. However true success can only lie in the ability to tackle one, without losing a perspective of the other; for, as T. S. Eliot has observed, all time is inextricably bound to all other time and therefore the actions of today will impact tomorrow, while the actions of tomorrow will in some way be a reaction to today. It is thus important to live in 'today', while planning for tomorrow, an attempt this paper, makes by suggesting initiatives that will reflect our 'responsibility to the future', without compromising our duty to the present.

An International Centre for Youth Motivation and Action for Sustainable Development (ICYMASDEV)

Objective

To strategise, seek and reach out to the youth and opinion makers, from the young generation, as well as their role models and trainers and shapers of this critical mass of society, on a global scale and simultaneously evolve, structure and deliver participatory civil society enrichment programmes to them, aimed at nurturing and enhancing, the quality of our life on this planet, through the delivery of soft skills development inputs, dynamic training, skill development, counselling, experiential learning and networking, so as to achieve sustainable development and build a uniform, seamless civil society worldwide.

Justification

Repetitive incidents of havoc, caused by erratic climate changes, have forced global citizens and all stakeholders of the civil society, to take serious note of their causes and their far reaching impact on the society. As a result both the public and private sectors have launched programmes, to gain some kind of control, on the ecosystem damage, caused by design or ignorance. However, every programme, whether implemented in public, private or charitable sectors, requires intensive and extensive involvement of manpower, committed to the cause of ecosystem conservation. Besides it also requires daring, stamina and missionary zeal, to achieve a sustainable impact on the ecosystem. This task is not cut out for mercenary hirelings, but for those who have a deep commitment, towards the conservation of the planet, as a way of life.

This brings one to the most dynamic and mouldable strata of the society worldwide – the youth. Be it war or peace, music or culture, it is the youth, who can take it to the pinnacle of success, if they take it to their hearts. While environmental education has found its way into the primary and secondary level schoolbooks, college youth in pursuit of their chosen professions, appear to be drifting away from the ecosystem conservation path. Though they are generally exposed to the causes of ecosystem damage, they have very little role to play in conservation work. Thus either by design or neglect (or both), the youth remain passive watchers of the ecosystem damage and havoc, if not victims of the same.

Therefore one feels that it is high time that a systematic approach to attract, train and equip the youth, with the wherewithal of ecosystem conservation, in their respective spheres of operations, is put in place, and the same should form a critical input of their learning process. For this purpose, one has to attract youth leaders and opinion makers, including academicians, so that youth make themselves available voluntarily, to support such programmes worldwide. It is reported that there are almost 15 million college going youth in India, whereas the number of school going children is almost 10 times this number. Virtually, all of them enjoy almost two months vacation annually and another two months of holidays in the form of weekends. Even if 10 per cent of this potential of billion plus hours is made available for voluntary ecosystem conservation work, the country would surely take giant steps, towards restoring ecosystem balance. The story is almost parallel worldwide; therefore global efforts to identify, motivate and train the youth for direct action, aimed at ecosystem conservation, would be a significant step, towards initiating conservation programmes worldwide.

In fact, this Centre could act as a trainer, while simultaneously acting as a provider of a voluntary youth force, to public private partnerships, working in ecosystem conservation. It could train the trainers based on the requirements of the end users and vice versa.

Structure

It is proposed that MET could host such a centre, in collaboration with the UNECOSOC NGO Forum, for which it is already operating a Centre of Excellence for India. Help and collaboration of the UN University could also be obtained, to provide international networking and expertise.

Vidya Setu – A Knowledge Bridge for Societal Bonding

For the past two years, MET has been implementing Vidya Setu, a programme, aimed at networking college youth, with the underprivileged sections of the society, in the area surrounding the educational institution. This programme is aimed at bringing together the academia i.e. students and faculty, as well as the needy sections of the society. A few hundred students of MET have reached out to over two thousand needy families, residing in the neighbourhood, offering them employment opportunities, as well as counselling and shaping them, to be effective members of the civil society. In return, the students are given credits for their work, which motivates them to contribute more effectively, thus ensuring a win-win for both. This project is under consideration of the University of Mumbai, which has a student population of over half a million.

With each student contributing 3-4 hours per week, through his/her voluntary efforts, millions of hours will be available, to focus on the problems of the civil society, as a result of which, under this programme, the very strong and dynamic youth force will be available, to work with NGOs and public private partnership initiatives.

University youth all over the world could share this programme, and by amending it suitably to local conditions, this could be implemented worldwide. Since the students are given marks for their work, the programme is self sustainable and could be implemented by every educational institution the world over.

Green Energy from Drought Resistant Plants Grown on Waste/Saline Lands

Objective

To set up rural energy grids, by growing drought resistant and salinity tolerant plants, in the waste lands, and use the biomass grown for gasification, for power generation, utilising the leaves and pods, for extraction of sugar, for ethanol production.

Justification

The rural areas offer immense potential for growing drought resistant and salinity tolerant plants/weeds, which can be harvested for energy production. One such ideal plant is Prosopis - Juliflora and Chilensis. These plants are growing wild all over the country and have dual characteristics - that of providing fuel through dried biomass as well as the utilisation of leaves and pods as animal feed. There are also some varieties of sugar-beet, which are being grown on saline lands, with very good results. These can also be a good source of ethanol thereby benefiting large tracts of land in Gujarat, Rajasthan, Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Maharashtra, et al.

Pilot units have already been established, for biomass gasification of Prosopis/Lantana, for generating power from 250 KW to 1 MW. In order to generate 1 MW power per annum, normally, one would have to cultivate 300-400 hectares of Prosopis, on wasteland. More than 300,000 villages of our country have wastelands, ranging from 100-200 hectares, while large tracts of fallow land are available on the banks of rivers, rivulets, as well as by the roadside/canal banks. These rural energy centres could be spread throughout the country, thereby decentralising power generation and reducing the transmission losses up to the consumption point, since they would be directly feeding rural feeders. On the other hand, these would act as booster units, to feed the urban centres during peak hours. Thus the rural energy grid would stabilise power production and distribution.

Proven Pilot Technologies

Messrs. Ankur Scientific Energy Technologies Pvt. Ltd., Baroda has installed several such plants of 250 KWH and above both in India and abroad. These plants can use Prosopis or Lantana or agri-waste like cotton stalk, rice husk, gram stalk as well as forest weeds, for gasification, to generate power. On an average 25 MT of dried wood chips are required per day to generate 1MWH power. These plants are very easy to operate and are working smoothly all over the world.

The Central Arid Zone Research Institute (Rajasthan) has developed and tested a number of technologies that allow processing of Prosopis Juliflora pods, for purposes of animal feed. In addition, since the pods contain as much as 12% sugar, it is a promising candidate, for bio-ethanol purposes. More interestingly, according to CAZRI, it has an exotic species of Prosopis Juliflora, wherein the sugar content in the pods goes up to as much as 22-24%.This is far higher than is available either in sugarcane or tropical sugar-beet. As Prosopis Juliflora can be grown in saline conditions, the waste lands, as well as dried out riverbeds, can be used for the above cultivation, to support food and energy production, on a sustainable basis. This can then be converted into ethanol or for sugar production as desired.

Using a Combination of Salt Heaps and Parabolic Mirrors under Controlled Conditions for power generation

Objective

To set up a pilot project, for generating power, by using the heat energy, generated by a combination of salt heaps and parabolic mirrors, which will be used to heat-up pipes, containing heating oil, so as to produce steam, using heat exchangers, fed by salt water.

Justification

The large salt lakes in Rajasthan provide an ideal backdrop, for setting up power generation plants, based on using salt heaps. Salt heaps 10-15 metres high are to be covered by transparent heat resistant canopy; parabolic mirrors are then used to heat the heaps, thus supplementing the solar energy. The heaps contain an intricate network of pipes, carrying heating oil. Once sunlight is available, the

heaps get heated up and hot heating oil is pushed, through heat exchangers, to produce steam. Here again, salt water could be used for steam production, vitally the cooled steam could be a good source for potable water. Such pilot plants are already operational in the US, but not a single pilot has been set up in India. It would be appropriate to locate such a plant, near the famous salt lakes of Sambar and Panchatra, which produce mountains of salt every year.

Solar panels are arranged in a particular fashion that ensures that beams are collectively directed towards the tower, thus generating very high temperature. This collective beam is passed on to salt, which melts at 1200°C. The molten salt is stored and used for producing steam, through heat exchangers, and stored again at appropriate temperatures. During this process, the loss of temperature is less than 1%. Since there are very few consumables this process becomes self sustainable. In states like Rajasthan and Gujarat, where there are large salt works and salt lakes, pilot projects could be erected to test the feasibility of a commercial plant.

Annually, Rajasthan/Gujarat have 300 sunny days, with 65-70% normal light, therefore such pilot projects are justified. Besides, sweet water is a by-product. This power could be used for feeding greenhouses or cold storages, which can produce and store high-value organic vegetables and food products. It could be a boon to the rural community and the energy waste, during transmission of energy from urban to rural areas, could also be minimised.

Integrated Groundwater Recharge and Harvesting Grid

Objective

To build and sustain a grid, to recharge and maintain groundwater resources, by networking and integrating all present and potential water-courses, right from linking roadside burrow pits, rubble and stone mines, natural and artificial ponds, wells, existing and dried nalas; as well as augment and sustain the grid by erecting structures, watercourses and recharge pits, so as to ensure that ground water levels are augmented and maintained, to meet the rising water needs, as well as the increasing demands of flora and fauna, on water resources, keeping in view the dangers of drought and water shortage.

Justification

The road length in India is approximately 3 million kilometres; in addition, the length of other water courses, periodical and seasonal, is approximately 1 million kilometre. On both the sides of the road, burrow pits and trenches are dug, to excavate soil for maintenance purpose, while riverbeds are used for excavation of sand and other material. Moreover, with the national and regional road network programmes in full swing, lot of areas are earmarked for excavation of stone, murm and other material. Besides, the railways have their own quarries for excavation of metal, for their 1 lakh kilometre long rail network. All these excavations are continuously being done, with total disregard to their impact on ground water. In addition large mining areas are also opened up and left unattended, after the mines are exhausted. Therefore it is necessary to prepare integrated mini, micro and macro grids, to network all such present and potential water bodies and courses, so that they are properly maintained and ground water recharge is ensured.

In fact once a grid is prepared it will throw up sites, where excavation could be permitted, so as to eventually excavate a water storage pond, for supply to a village or to excavate the murm, from an adjoining farmer's fields. An open well could be excavated, at no cost to the farmer. Similarly, the burrow pits, along the roadside, could be linked to such wells or soak pits could be constructed, to ensure ground water recharge, at regular intervals. Farmers could be motivated to plant fruit, fodder and fuel trees, along these water courses, which will benefit everyone. All this will ensure that no water is wasted or allowed to damage farms and fields. This will also act as insurance, against the damage caused by monsoon havoc.

It may be difficult to quantify the exact benefits received, by such a grid, but it will certainly contribute to the groundwater recharge capability of an area. For example, if one considers a 100 kilometres road length/river course grid, then once the work is complete, assuming that there will be at least three precipitation cloud bursts per season, the stored ground water would support a minimum of 600 new wells or generate an additional irrigation potential of 10,000 acres. This is assuming the normal monsoon pattern, in the country, which covers about 65-70 per cent of the Indian land mass. By using more sophisticated techniques, like satellite imagery and tritium tracers' studies, more quantification may be possible, over a period of time. But it will be done at a marginal cost, since all excavation will ensure that it leads to ground water increment rather than depletion.

An integrated water harvested grid could be established, based on linkage of roadside, storm water gutters/borrow pits/stone mines, dotted with percolation pits/open wells/water storage tanks, utilising and networking the 3 million kilometres long road network, as well as the 2 million kilometres long river/nala/ other water courses networks.

All these initiatives are both practicable and easy to follow, what is needed is the drive to make the difference, so that one can work today for a better tomorrow; no doubt that all this would require huge investments, both intellectually and financially, but if the resolve is made, the means will surely follow.

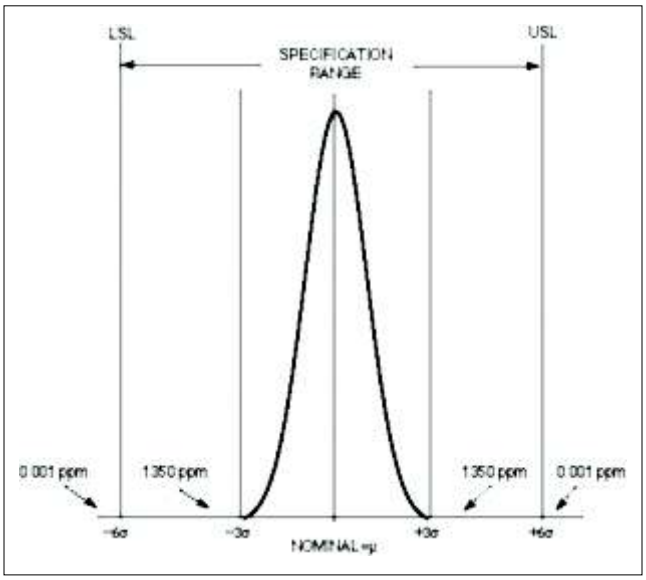
This was a Discussion Paper at a Conference entitled 'Responsibility to the Future'

Going the Six Sigma Way


Detailing the meaning of Six Sigma, the means to develop and apply the process and its viability in varied areas, the article takes up case studies of a complete turnaround for the better, as seen in the case of two companies, which used the Six Sigma way to better their processes, thereby enhancing customer satisfaction, ultimately resulting in image building.

Roshan Wadhwani, Mayuri Chary - PGDM

Six Sigma - A new name for an old vision, that of near-perfect products and services for customers. Why is Six Sigma so attractive to so many businesses right now? That is because being successful and more importantly staying successful in business is more challenging today than ever before. Six Sigma provides power tools not only for the manufacturing processes of goods and products, but also to improve services to levels of accuracy and quality, seen so far only in precision manufacturing. Six Sigma was originally developed as a set of practices designed to improve manufacturing processes and eliminate defects, but its application was subsequently extended to other types of business processes as well. The particulars of the methodology were formulated by Bill Smith at Motorola in 1986. Six Sigma was heavily inspired by six preceding decades of quality improvement methodologies, such as quality control, TQM(Total Quality Management) and Zero Defects, based on the work of pioneers such as Shewhart, Deming, Juran and others.



Where,
USL- Upper Specification Limit
LSL- Lower Specification Limit
- Standard Deviation (1/3)

In a Six Sigma implementation, there is a specified range, as shown in the figure above, within which the variations in the product/service produced/rendered lie. The variation from +3 to -3 is permissible under the Six Sigma approach, beyond which the defects sum up to only 3.4 per million opportunities.

What is Six Sigma?

The lower-case letter "sigma" in the Greek alphabet is a symbol used in statistical notions to represent the "standard deviation" of a population. Standard Deviation is an indicator of the amount of "variation" or inconsistency in any group of items or processes. For example, if you buy three shirts of the same size and one is too small, that's variation. In fact everything varies to some degree or another. And variation is no joke, when it affects customers. A variation can be a defect, and a defect is any instance in which a product or process fails to meet customer requirement. The word is a statistical term that measures how far a given process deviates from perfection. The central idea behind Six Sigma is that if you can measure how many 'defects' you have in a process, you can systematically figure out how to eliminate them and get as close to 'zero defects' as possible. Thus the Six Sigma approach is all about following a model, which can help a business reduce its variation to a great extent to gain a huge edge in efficiency, not to mention customer satisfaction.

The number 'Six' on the other hand represents the six critical ingredients needed to achieve Six Sigma capability within an organisation:

1. **Genuine focus on the customer:** An attitude that puts customer needs first, backed by systems and strategies that serve to tie in the business to the 'Voice of the Customer'.
2. **Data and fact-driven management:** Effective measurement systems that track both results and outcomes [Ys] and Process, Input and other predictive factors [Xs].
3. **Process focus, management and improvement:** Processes in Six Sigma are documented, communicated, measured and redefined, on an ongoing basis. They are also designed and redesigned at intervals, to stay up-to-date with customer and business needs.
4. **Proactive Management:** Involves habits and practices that anticipate problems and changes, apply facts and data and question assumptions about goals and 'how we do things'.
5. **Boundary-less Collaboration:** Features cooperation between internal groups and with customers, suppliers and supply chain partners.
6. **A drive for perfection, and yet a tolerance for failure:** Gives freedom to the employees to test new approaches, even while managing risks and learning from mistakes, thereby raising the bar of performance and customer satisfaction.

Hence the widely accepted definition of a Six Sigma process is one that produces 3.4 defective parts per million opportunities (DPMO)!!

Sigma levels

One Sigma = 690,000 DPMO = 31% efficiency
Two Sigma = 308,000 DPMO = 69.2% efficiency
Three Sigma = 66,800 DPMO = 93.32% efficiency
Four Sigma = 6,210 DPMO = 99.379% efficiency
Five Sigma = 230 DPMO = 99.977% efficiency
Six Sigma = 3.4 DPMO = 99.9997% efficiency

Organising For Six Sigma

Six Sigma is not just about having people work in teams. They must be a part of an infrastructure designed to assist in the redesign of the organisation. One way to understand this is to review the roles of people in the evolving Six Sigma organisations. There are seven functions and roles that must be developed:

Role 1: The Leadership Group or Council

It consists of senior managers, in the business, who assist in planning and implementing the Six Sigma plan, by experience and direct interaction, with the Six Sigma teams.

Role 2: Project Sponsors and Champions

A Sponsor or a Champion is a senior manager, who oversees a Six Sigma project and is accountable to the Leadership Council, for the success of that project. S/he gives the team clear guidelines on their project, checks interference when it meets roadblocks within the organisation, but avoids dictating a pet solution for the team to implement.

Role 3: The Implementation Leader

S/he has to manage the day-to-day roll-out of the Six Sigma effort.

Role 4: The Six Sigma Coach (Master Black Belt)

S/he provides expert advice to a number of Process Owners and Six Sigma teams, in areas ranging from statistical measurement tools to change management and process design strategies.

Role 5: The Team or Project Leader (Black Belt)

S/he accepts primary responsibility for the routine work and results of a Six Sigma project. The duties are similar to that of the coach, but specific to one team only.

Role 6: Team Members

Team members bring the brain and muscle for the collection and analysis of data needed to improve the process. Since team members seldom work full time on team projects, they have to contract with their supervisors, on how they coordinate their team work with their regular jobs.

Role 7: The Process Owner

When Six Sigma starts up in a functional organisation, the Process Owner is normally the manager of a part of a particular function. They are the people, who receive the solution created by an improvement team, and become the 'owners' responsible for managing the improved process

Three Ways to Six Sigma

1) **Process Improvement**

   Process Improvement efforts seek to fix problems, by eliminating the causes of variation in the process, by leaving the basic process intact. In Six Sigma terms, the Process Improvement teams find the critical Xs (causes) that create the unwanted Ys (defects) produced by the process. Process Improvement teams use a 5 step "DMAIC" process to attack problems-

   Define the problem and what the customers require.
   Measure the defects and process operation.
   Analyse the data and discover causes of the problem.
   Improve the process to remove causes of defects.
   Control the process to make sure defects don't recur.

2) **Process Design/Redesign**

   When a business chooses to replace one or more core processes, after a Six Sigma team discovers that simply improving an existing process will never deliver the level of quality the customers are demanding, or when the business identifies an opportunity to offer an entirely new product or service, the business needs to design or redesign its core processes. Process Design will usually take longer than Process Improvement, and because it involves the creation and implementation of a brand new product or process, the risk of failure is greater than improving an existing process. The basic methodology consists of 5 steps, which are as follows:

Define design goals that are consistent with customer demands and the enterprise strategy.
Measure and identify CTQs (characteristics that are Critical To Quality), product capabilities, production process capability & risks.
Analyse to develop and design alternatives, create a high-level design and evaluate design capability, to select the best design.
Design details, optimise the design and plan for design verification. This phase may require simulations.
Verify the design, set up pilot runs, implement the production process and hand it over to the process owners.

DMADV is also known as DFSS, an abbreviation of "Design For Six Sigma".

3) **Process Management**

Process Management is the most evolutionary of the three. It involves changes in culture and management throughout the organisation, that must accompany Six Sigma efforts, if their full power is to be realised. Process Management means that a focus on managing processes across the organisation replaces managing individual functions, through different internal departments. It requires a fundamental makeover in the way an organisation is structured and managed. An existing process will never deliver the level of quality the customers are demanding, or when the business identifies an opportunity to offer an entirely new product or service, the business needs to design or redesign its core processes. Process Design will usually take longer than Process Improvement, and because it involves the creation and implementation of a brand new product or process, the risk of failure is greater than improving an existing process. The basic methodology consists of 5 steps, which are as follows:

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Selecting Winning Six Sigma Projects

Project selection is the most critical and most challenging activity in launching Six Sigma. The right way to select projects is a simple equation:

A clear, well selected, well defined project
+ A well trained team
+ A committed Champion
= good and fast results for customers

Do's and Don'ts when Selecting Projects

Do's

- Base project selection on solid criterion. Balance results, feasibility and customer impact issues
- Balance efficiency/cut costs for projects, that directly benefit external, paying customers
- Prepare an effective handoff from Champion to Team Leader. A clear project rationale and Team Charter gets the project off to a good start

Don'ts

- Create 'world hunger' projects, i.e. too many projects or extremely big projects. Better to learn from a small project than be frustrated by a monster project
- Fail to explain to the members working on a project, its importance and the reason for its selection
- Starting too many projects early in the Six Sigma roll-out

Choosing a Six Sigma Approach

Different organisations use different models for Six Sigma improvement efforts. If an organisation already uses or has taught another process improvement or redesign model, it is not mandatory that one abandons it in favour of the DMAIC model. Each model has its own strengths and weaknesses. In fact, all the models are based on the Plan-Do-Check-Act (PDCA) cycle made popular by Dr. W. Edwards Deming.

PLAN: Establish the objectives and processes necessary to deliver results in accordance with the specifications.
DO: Implement the processes.
CHECK : Monitor and evaluate the processes and results against objectives and specifications and report the outcome.
ACT : Apply actions to the outcome for necessary improvement. This means reviewing all steps (Plan, Do, Check, Act) and modifying the process, to improve it before its next implementation
Bottom Line: There is no right or wrong, a one-size-fits-all model for Six Sigma.

Case Study of Six Sigma Implementation in Motorola

Motorola learned about quality the hard way - by being consistently beaten in the competitive marketplace. When a Japanese firm took over a Motorola factory that manufactured television sets in the United States, they made drastic changes in the way the factory operated. Under Japanese management, the factory was soon producing TV sets with $1/20^{th}$ the number of defects, they had produced under Motorola management. Motorola's CEO at the time, Bob Galvin, started the company on the quality path and became a business icon, largely as a result of what he accomplished in quality at Motorola.

Today, Motorola is known worldwide as a quality leader. To accomplish its quality and total customer satisfaction goals, Motorola concentrates on several key operational initiatives. At the top of the list is 'Six Sigma Quality'. At the manufacturing end, this requires 'robust designs', that accommodate reasonable variation in component parts, while providing consistently uniform final products. Motorola employees record the defects found in every function of the business, and statistical technologies are made a part of each and every employee's job.

Motorola acknowledges that they made many mistakes. One of the most serious was to start the training for quality from the bottom level of the company. Many workers were unable to understand statistical process controls and other techniques without remedial education, and couldn't turn to their untrained bosses for help. Motorola's Director of Training and Education estimates that Motorola wasted $7 million, trying to train from the bottom up. Recognising their mistake, the company established the 'Motorola University' and put thousands of Motorola executives through executive training. Bob Galvin himself spent time in the classroom. By 1992 the company was spending $110 million per year on instruction.

Motorola spent in excess of $170 million on worker education between 1983 and 1987. About 40 percent of the worker training provided by the company was devoted to quality matters, ranging from general principles of quality improvement to designing for manufacturability.
The Motorola management then demonstrated its quality leadership in a variety of ways, including top-level meetings to review quality programmes, with results passed on through the organisation. Non-executive employees now contribute directly through Motorola's Participative Management Programme (PMP). Reducing the "total cycle time" is another vital part of the company's quality initiatives. Motorola can now perform such feats as building pagers and cell phones, in lots ranging from one to 100,000 units. Through mass customisation, the factory can fill a precise order within minutes of receiving it. Thanks to its Six Sigma activities, the company now dominates such key high-tech industries as pagers, cell phones, and mobile communications, and is a significant force in many others.

Case Study of Six Sigma Implementation in Ford Motors

The suggestion was accepted and the management decided to launch Six Sigma, with the dual objectives of enhancing vehicle quality and improving customer satisfaction levels. Accordingly, the initiative was called 'Consumer-driven Six Sigma'.

The journey towards Six Sigma quality at Ford began in late 1999, when Phong Vu, Director of Quality for Global Truck Business was looking for innovative approaches, to improve the quality of Ford's vehicles. The answer was Six Sigma, a data driven statistical technique, invented by Motorola in the 1980s and implemented by companies like General Electric. Vu conducted research on leading companies, which had implemented Six Sigma, to develop an understanding of its implementation process and benefits. Vu then suggested to Ford's management that the Six Sigma quality improvement programme be taken up.

The Ford Motor Company started their Consumer Driven Six Sigma initiative in 2000. Today, Six Sigma permeates all their business units and brands: Lincoln, Mercury, Mazda, Aston Martin, Jaguar, Land Rover, Volvo, Ford Credit and Hertz. It is important to note that Six Sigma is not a standalone initiative at Ford but is an essential piece of a three-part quality management system:

Ford found that in the manufacture of a car, there existed about 20,000 opportunities for defects. Through Six Sigma, the company aimed at reducing the defect rate to just one defect for every 14.8 vehicles. The implementation of Six Sigma required both on-the-job and off-the-job training of employees.

- Quality Leadership Initiative
- Quality Operating System
- Consumer Driven 6-Sigma

Named 'Consumer Driven 6-Sigma' for a reason, Ford's aim is to address customer issues first. The Six Sigma programme at Ford is quite mature and includes supplier training, Design for Six Sigma and widespread Green Belt training. Six-Sigma, Ford's data-driven problem-solving process, has globally eliminated more than $2.19 billion in waste since 2001.

Conclusion

Six Sigma is definitely succeeding in creating some impressive results and culture changes in some influential organisations. It is in many ways a vigorous rebirth of quality ideals and methods, as these are applied with even greater passion and commitment than often was the case in the past. It opens the door to new ideas, new ways of thinking and a new breath of success!

Green Marketing: The Sustainable Way Ahead

Weighing the initiatives taken by various companies and exploring their flip side, the article discusses the concept of green marketing, the various issues that it involves and the reasons why companies adopt/shun the concept.

Namita Parekh – eMBA, Marketing

"Do you really dare put your head above the parapet by touting your greenness and attract very knowledgeable consumers, who are going to crawl all over your business... and Greenpeace and every other environmental group you can think of?... If consumers think they can catch you telling a half-truth, they will"

- Mike Longhurst, Senior Vice President, McCann-Erickson.

Introduction

The term Green Marketing came into prominence, in the late 1980s and early 1990s. The American Marketing Association (AMA) held the first workshop on 'Ecological Marketing', in 1975. The proceedings of this workshop resulted in one of the first books on green marketing entitled Ecological Marketing.

The American Marketing Association (AMA) defines green marketing as marketing of products that are presumed to be environmentally safe. Another definition states that "Green or Environmental Marketing consists of all activities designed, to generate and facilitate any exchanges, intended to satisfy human needs or wants, such that the satisfaction of these needs and wants occurs, with minimal detrimental impact, on the natural environment." This implies that green marketing ensures that the interests of the organisation and all its consumers are protected, as a voluntary exchange will not take place, unless both the buyer and seller mutually benefit. So green marketing should look at minimising environmental harm, not necessarily eliminating it.

Green Marketing incorporates a broad range of activities, including product modifications, changes in the production process, changes in packaging, as well as modifying communication. Other similar terms used are Environmental Marketing and Ecological Marketing.

Green or Sustainable Marketing has found its way into popular marketing lexicon, where very many marketers pay lip service to it. However, how much of it has actually been translated into actual initiatives, undertaken by the corporate sector, is yet unclear. Many customers are joining the so-called 'green consumer' bandwagon. Yet, such movements in the U.S. and other countries have struggled, to reach a critical mass and to remain in the forefront of the shoppers' minds.

Sustainable brands and sustainable marketing are often seen as synonymous with ecological responsibility and being green. But there are three key pillars to a sustainable strategy- ecology, economy and culture.

The Ecological Dimension

This is perhaps the best known and best understood dimension and many brands are already working hard in this area.

The Economic Dimension

Is the economic and financial model sustainable? What effect will this have on the other two dimensions - will the pricing model unavoidably lead to offshore manufacturing, social exploitation or long distance transportation? How will the brand's business plan impact upon increasingly globalised markets? All these are issues related to the economic dimension.

The Cultural/Social Dimension

Brands operate in human societies. One must weigh the effects of the brand, upon the societies, in which it operates - its employees, suppliers, customers and the world at large.

Consideration of these dimensions is not only a part of being socially responsible, but also makes sound business sense, as it can be seen as an indicator of Corporate Social Responsibility.

Importance of Green Marketing

Green marketing looks at how marketing activities utilise limited resources, while satisfying consumers' wants, both of individuals and the industry, as well as achieving the organisation's objectives. One comes across several reasons suggested for their increased use of Green Marketing. The five indicative reasons are as follows:

Organisations perceive environmental marketing, to be an opportunity that can be used, to achieve their objectives.

Both individual and industrial consumers are becoming increasingly concerned and aware about the natural environment. In a 1992

study of 16 countries, more than 50% of the consumers, in each country, other than Singapore, indicated that they were concerned about the environment. A 1994 study in Australia found that 84.6% of the sample under consideration believed that caring for the environment is the responsibility of all individuals. A further 80% of this sample indicated that they had modified their behaviour, including their purchasing behaviour, due to environmental reasons. As demands change, many firms see these changes, as an opportunity to be exploited. It can be assumed that firms marketing goods, with environmental characteristics, will have a competitive advantage over firms marketing non-environmentally responsible alternatives. There are numerous examples of firms that have striven, to become more environmentally responsible, in an attempt to satisfy their consumers' needs. For example, McDonalds replaced its clam shell packaging, with waxed paper, because of the increased consumer concern, related to polystyrene production and ozone depletion.

Organisations believe that they have a moral obligation, to be more socially responsible.

Many firms believe that they must achieve environmental objectives as well as profit related objectives. Firms in this situation can take either of two stances. At the outset, they can use the fact that they are environmentally responsible, as a marketing tool, or they can become responsible, without promoting this fact. This philosophy is directly linked to the overall corporate culture, rather than simply being used as a competitive tool. An example of a firm that does not promote its environmental initiatives is Coca Cola. The company has invested large sums of money, in various recycling activities, and has modified its packaging as well, to minimise its environmental impact. While being concerned about the environment, Coke has not used this concern as a marketing tool. Hence many consumers may not realise that Coke is a very environmentally committed organisation. Another firm that is very environmentally responsible but does not promote this fact, at least outside the organisation, is Walt Disney World (WDW). WDW has an extensive waste management programme and infrastructure in place. Yet these facilities are not highlighted in their general tourist promotional activities.

Governmental bodies are forcing firms, to become more responsible.
Government regulations related to environmental marketing are designed, to protect consumers in several ways. This includes reducing the production of harmful goods or by-products, modifying the consumer's and industry's use and/or consumption of harmful goods, or/and ensuring that all types of consumers have the ability, to evaluate the environmental composition of goods.

The production of by-products is controlled, through the issuing of various environmental licenses, thus modifying organisational behaviour. In some cases, governments try to "induce" final consumers, to become more responsible. For example, some governments have introduced voluntary curb-side recycling programmes, making it easier for consumers to act responsibly. In other cases, governments tax individuals, who act in an irresponsible fashion.

Competitors' environmental activities pressurise firms, to change their environmental marketing activities.
In many cases, firms observe competitors promoting their environmental initiatives and attempt to emulate this behaviour. In some instances, this competitive pressure has caused an entire industry to modify and thus reduce its detrimental environmental behaviour. For example, it could be argued that Xerox's 'Revive: 100% Recycled paper' was introduced a few years ago, in an attempt to address the introduction of recycled photocopier paper, by other manufacturers.

Cost factors associated with waste disposal, or reductions in material usage, forces firms to modify their behaviour.
Disposing of environmentally harmful by-products, such as Polychlorinated Biphenyl (PCB) contaminated oil, is becoming increasingly costly and in some cases difficult. Therefore, firms that can reduce harmful wastes may incur substantial cost savings. While attempting to minimise waste, firms are often forced to re-examine their production processes. In this case, they often develop more effective production processes that not only reduce waste, but also reduce the need for some raw materials. This serves as a double cost saving technique, since both the waste generated and raw materials used are reduced. In other cases, firms attempt to find end-of-the-pipe solutions, instead of minimising waste. They try to find markets or uses, for their waste materials, where one firm's waste becomes another firm's input of production. The last way in which cost or profit issues may affect the environmental marketing activities of firms is that new industries may be developed. This can occur in two ways - a firm could develop a technology for reducing waste and sell it to other firms or it could develop a waste recycling or removal industry.

Problems with Green Marketing
One of the main problems is that firms using green marketing must ensure that their activities are not misleading the consumers or the industry, and do not breach any of the regulations or laws, dealing with environmental marketing. Green marketing claims must clearly state environmental benefits. A problem that firms face is that those, who modify their products, due to increased consumer concern, have to contend with the fact that consumers' perceptions are sometimes not correct. This holds true in the McDonalds case, where it replaced its clam shells with plastic coated paper. There is an ongoing scientific debate, about which is more environment friendly. Some scientific evidence suggests that when taking a cradle to grave approach, polystyrene is less environmentally harmful and if this is the case, McDonalds bowed to consumer pressure, and in the process has chosen the more environmentally harmful option. When firms attempt to become socially responsible, they may face the risk that an environmentally responsible action taken today will be found to be harmful in the future. Consider, for example, the aerosol industry, which switched from CFCs (chlorofluorocarbons) to HFCs (hydro fluorocarbons), only to be told that HFCs are also greenhouse gases. Some firms now use DME (di-methyl ether) as an aerosol propellant, which may also harm the ozone layer. Given the limited scientific knowledge at any point, it may be impossible for a firm to have made the correct environmental decision. This may explain why some firms, like Coca Cola and Walt Disney World, are becoming socially responsible, without publicising their actions.

While government regulation is designed to give consumers an opportunity to make better decisions or to motivate them to be more environmentally responsible, there is a difficulty, in establishing policies that will address all environmental issues. Thus governmental attempts, to protect the environment, may result in a proliferation of regulations and guidelines, with no particular entity, acting as the central controlling body. Reacting to competitive pressures can cause all 'followers' to make the same mistake as the 'leader'. Mobil Corporation, for example, followed the competition and introduced 'biodegradable' plastic garbage bags, as technically, these bags were biodegradable. However, the conditions, under which they were disposed, did not allow biodegradation to occur. Mobil was sued by several US states, for using misleading advertising claims. Thus, blindly following the competition can have costly ramifications.

The push to reduce costs or increase profits may not force firms, to address the important issue of environmental degradation. Ultimately, most waste produced will enter the waste stream. Therefore, to be environmentally responsible, organisations should attempt to minimise their waste, rather than find "appropriate" uses for it.

Other Challenges Faced by Green Marketing

- **Lack of standard:** no public consensus about what constitutes "Green"
- **Healthy consumer skepticism:** people doubt about "Green Claim" made by many companies
- **Green washing:** taking advantage of the confusion and exaggerating one's green marketing effort
- **Corporate Lethargy:** complacency on the part of companies to encourage more sustainable strategies

Case Studies on Green Marketing

The Kyoto Protocol's Clean Development Mechanism (CDM)

The Kyoto Protocol's Clean Development Mechanism (CDM) enables trading between industrial and developing nations, providing a framework that can result in capital flows to environmentally beneficial development activities. Although the United States is not participating in the Kyoto Protocol, several US programmes, enable similar transactions, on a voluntary and regulatory basis.

While international trade in greenhouse gas reductions holds substantial promise, as a source of new funding for sustainable development, this market can be largely inaccessible to many smaller-scale projects, remote communities and least developed localities. To facilitate participation and broaden the benefits, several barriers must be overcome, including a lack of market awareness, among stakeholders and prospective participants, specialised and somewhat complicated participation rules and the need for simplified participation mechanisms, for small projects, without which transaction costs can overwhelm the financial benefits of participation. If the barriers are adequately addressed, greenhouse gas trading can play an important role, supporting activities that benefit people's lives and the environment.

Philips Light's CFL

Philips Lightings first shot at marketing, a standalone Compact Fluorescent Light (CFL) bulb was Earth Light, priced at $15 each, as against incandescent bulbs, priced 75 cents. The product had a difficulty climbing out of its deep green niche. The company re-launched the product, as 'Marathon', underscoring its new 'super long life', positioning and promise of saving $26, in energy costs, over its five-year lifetime. Finally, with the U.S. EPA's Energy Star label, to add credibility, as well as new sensitivity, to rising utility costs and electricity shortages, sales climbed by 12 percent, in an otherwise flat market.

Introduction of CNG in Delhi

New Delhi, was getting polluted at a very fast pace until the Supreme Court of India forced a change, to alternative fuels. In 2002, a directive was issued, to completely adopt CNG, in all public transport systems, in order to curb pollution. This is an example, which can be followed, by metros across the world, to reduce carbon emissions.

Lush Cosmetics

At a time, when the world was experiencing an explosion in packaging, 65% of Lush's products were sold 'naked' (i.e. without packaging). The rest of the products came with minimal packaging. The retail chain used just enough packaging, so that the products reached the residence of its customers safely.

It used grease-proof paper, reusable tins and paper bags made from recycled materials, and rewarded its customers, for bringing back their containers and shopping bags. In 2007, it started using popcorn as loose fill, instead of shredded paper (many other companies use polystyrene chips), in its shipping package. The same year, Lush also started a worldwide campaign - 'Get Naked', against excessive packaging, by the industry. The much-publicised campaign strove to educate consumers, about the adverse effects of packaging waste, on the environment, and urged them to shun excessively packaged products, in favour of minimally packaged or 'naked' products.

Lush had leveraged, on its new product development, to come up with 'category defying' products, such as solid shampoos, solid conditioners, deodorants, massage bars and solid bubble bath, which required no packaging. Moreover, these products were designed, in the form of eatables, such as cakes, cheese, ice-creams and other desserts, and were displayed in the store, in the form of an old-fashioned delicatessen. Experts felt that Lush, through all aspects of its business, displayed a strong commitment, to sustainable development issues, and also successfully differentiated itself, from its competitors. They felt that a key reason, for the success of Lush, was

its corporate culture, with everyone from the Directors to the people, working in the stores, sharing the values of the brand.

Body Shop

This case reflects the issue of the sustainability rhetoric and green washing. In March 2006, The Body Shop International Plc. announced that it had agreed, to an acquisition by the beauty care giant L'Oréal SA, in a cash deal worth £652 million (US$ 1.14 billion). The announcement brought in its wake, a spate of criticism, against Body Shop and its founder, Dame Anita Roddick, as Body Shop was regarded as a pioneer in modern Corporate Social Responsibility (CSR) practices.

Since its inception, it had endorsed and championed various social issues, such as opposition to animal testing, developing community trade, building self-esteem, campaigning for human rights and protection of the planet. Through these initiatives, the company had cultivated a loyal base of customers, who shared these values.

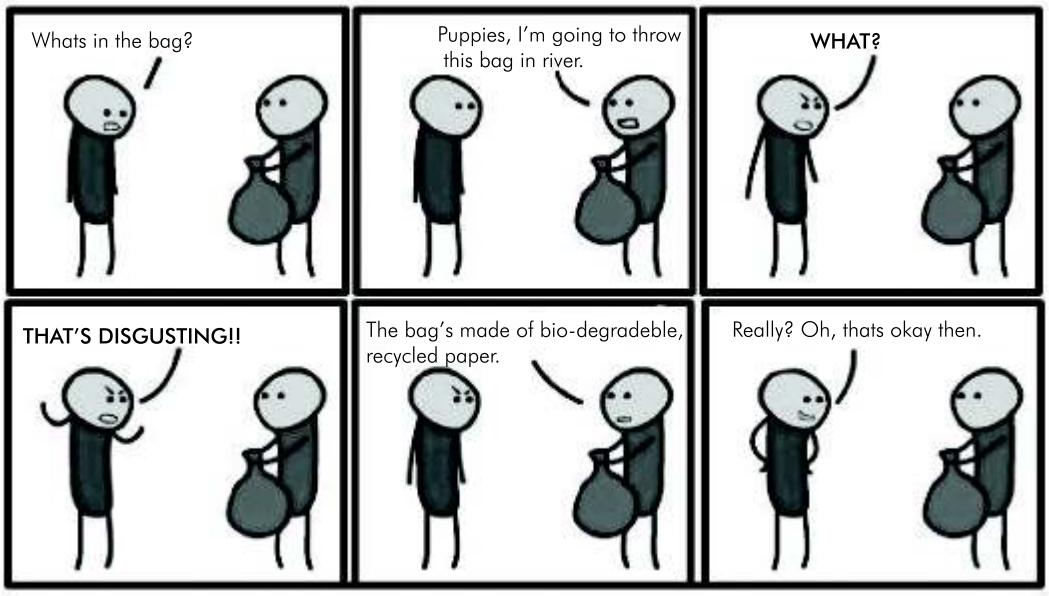
L'Oréal, on the other hand, had been severely criticised, by activists, for allegedly testing its cosmetics on animals, exploiting the sexuality of women and selling its products, by making women feel insecure. Moreover, Nestlé owned 26 percent of L'Oréal and was considered, as one of the most boycotted companies in the world, for its alleged unethical business practices and aggressive promotion of baby milk, in developing countries.

Body Shop's critics called for a boycott of its products. However, Body Shop and Roddick defended the deal, by saying that the acquisition by L'Oréal, would not compromise on Body Shop's ethics; the merger would, in fact, give Body Shop a chance to spread its values to L'Oréal. L'Oréal also announced that Body Shop's values would not be compromised and that it would continue to operate, as an independent unit.

This case brings to light issues, of whether Body Shop is guilty of green washing, or whether it has the influence, to extend its values to L'Oréal. The case also looks into the issue, of whether L'Oréal was trying, to improve its own image and to buy CSR too, through this deal.

In conclusion, one could opine that while firms must bear much of the responsibility, for environmental degradation, ultimately it is the consumers, who demand goods, and thus create environmental problems. It must be remembered that it is the uncaring consumer too, who chooses to dispose of waste, in an inappropriate fashion.

Ultimately, green marketing requires consumers, to aspire for a cleaner environment and be willing to 'pay' for it, possibly through higher priced goods, modified individual lifestyles or even government intervention. Until this occurs, it will be difficult for firms alone, to lead the green marketing revolution. It must not be forgotten that the industrial buyer also has the ability to pressurise suppliers, to modify their activities. Thus, an organisation, committed to the environment, may not only produce goods that have a reduced detrimental impact, on the environment, it may also be able to pressurise its suppliers, to behave in a more environmentally "responsible" fashion. Finally, consumers and industrial buyers also have the ability to pressurise organisations, to integrate the environment, into their corporate culture, and thus ensure that all organisations minimise the detrimental environmental impact, of their activities.



Green to Gold: Creating Wealth through Sustainability

The article takes a close look at how companies can ensure growth, essentially by balancing it with a concern about the environment in order to become 'sustainable' enterprises and cites examples of a couple of companies, who have taken up a leading role in this area, thereby stressing upon its viability.
Mohini Sinha - eMBA

'The Earth provides enough to satisfy every man`s needs, but not every man`s greed'

- Mahatma Gandhi

Sustainable development cannot be achieved in isolation, whether by a single enterprise or by the entire business community. It is a pervasive philosophy, to which every stakeholder in society and participant in the global economy must willingly subscribe.

Concept

Sustainable development is defined as the development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. Essentially, sustainable development is built on three pillars - economic growth, ecological balance and social progress. A healthy economy is as essential for satisfying our material and non-material needs, as preserving the natural foundations of life. Business, as the most potent force of wealth creation, has an essential role to play in promoting the move towards sustainable development. In today`s tripartite world of government, enterprise and civil society, a key business asset will be the ability to work in creative partnerships, to find solutions that, in the long term, will be seen as legitimate and fair.

The Dynamic Role of Business in Developing Partnerships

Market institutions combine three elements that compel dynamism and a search for ways to use materials more efficiently - source reduction (material conservation), pollution prevention and residuals' recycling. There is a general acceptance that governments, businesses and the civil society have to interact constructively, to find solutions to the challenges of sustainable development. According to Bjorn Stigson, President of the World Business Council for Sustainable Development, redistribution, based on the changing perceptions of the stakeholders, within the new tripartite world, has created two sustainable agendas for business:

The Business Agenda

This pertains to what companies need to do in their everyday operations to become eco-efficient, reduce environmental impact and create more value, with a reduced impact. Radical market changes and heightened awareness among stakeholders have led to a greater focus on the 'triple bottom line', based on approaches that will move towards the goals of environmental protection, social wellbeing and economic development simultaneously.

The Political Agenda

This would be set and steered largely by forces from outside the business sector. It would focus on the framework conditions, within which business must work. The government's true role may lie in restructuring the ground rules, in the context of environmental and health regulations, tax codes and incentives for 'green' investments and practices. The new set of ground rules offers progressive businesses fresh commercial opportunities to distinguish themselves from competitors, on the basis of innovation, product quality and environmental performance.

Business Perspective of Sustainable Development

Growing environmental concerns, coupled with public pressure and increasingly stringent regulations are changing the way people do business across the world. Protecting the organisation's capital base is a well-accepted business principle. Yet, companies do not generally recognise the possibility of extending this notion, to the world's natural and human resources.

Many business leaders have begun to realise that achieving truly sustainable enterprises will require going beyond incremental improvements in product and process efficiency, to restructuring markets and changing the economic incentives that drive enterprise and consumer behaviour. The new set of ground rules offers progressive businesses fresh commercial opportunities to distinguish themselves from competitors on the basis of innovation, product quality and environmental performance.

The 'Sustainable' Company

Sustainable development provides decision makers with an additional benchmark, against which business strategies and performance can be assessed. Benchmarking policies, that promote sustainable development, provide a system to explore the commitment to principles of sustainable industrial development. This benchmark information will be a vital starting point for companies, regulators and

the public, as they explore new ways of working towards a co-regulation partnership. The evaluation criteria for a sustainable company could include:

- Environmentally sound products, processes and services
- Integration of sustainable development and economic growth
- Extent of reduction of risks and hazards to human health and the ecosystems
- Community/stakeholder participation in sustainable development commitments

Smaller companies often lack the knowledge and resources to make significant changes in their organisations or technologies. With incentives lacking and the financial benefits of going green remaining controversial, there is a need for a greater focus on ensuring that sustainable industrial development is compatible with profitability.

The growth of innovative programmes and self-regulation are important indicators of change. But the steps taken so far represent just the start of a complex and lengthy transition to more sustainable enterprises.

Balancing Growth and the Environment

Many businesses have incorporated initiatives in their business operations and culture, through environmental management systems, voluntary codes of conduct, performance indicators and regular reports to stakeholders. Multinationals, such as British Petroleum and Shell, have been investing in the development of renewable energy products and services; they are diversifying in anticipation of future markets. Even the Tata Group has been consistent in integrating social and environmental issues, and it has long recognised that sustainable solutions have to be rooted in the principles of ecology, equity and ethics, in addition to those of economics.

The Road Ahead

We want a better world, a better environment, peace and prosperity. But our path is fraught with environmental, social and economic enormous challenges. Our development efforts must be complemented by technological innovations that extend the reach of knowledge and learning, to the remotest corners of the earth. Education and literacy must necessarily be brought to a level that will help create awareness among people and support sustainability.

Business can no longer afford to delink itself from the economic and social impact of its goals and processes. It is against this broader canvas that international cooperation is imperative, in order to address cross-boundary and global environmental challenges.

The Green Wave

A green wave is sweeping the business world, as organisations increasingly realise the importance of going green. Sustainability and sustainable issues have traditionally been viewed, as an extension of a company's CSR programme. However, this perception is undergoing a change as companies realise that sustainability can lead to wealth creation. It can help drive new revenues, enhance brand value, cut costs, through eco-efficiency measures, and reduce risks, related to changing consumer tastes and regulations.

Ecomagination

GE has shown the way with its innovative venture, 'Ecomagination', which illustrates its commitment, in developing products and solutions that address environmental challenges and generate profitable growth. Ecomagination focuses on key areas of the company's business including energy, technology, manufacturing and transportation. Products developed under the Ecomagination brand include locomotives for use on China's mainline rail system, which reduce emissions and are more fuel efficient than other locomotives; LED traffic and road signals, which result in significant energy savings and require lower maintenance; and innovative wind turbines.

Ecomagination products have resulted in substantial revenues for GE, running into billions of dollars, making it one of the company's most successful initiatives. This is a clear example of how sustainability can help create profits for its stakeholders. There are a few Indian companies as well, which have taken the initiative both to reduce their carbon footprint and harness the power of sustainable solutions, for greater common good. Mahindra, for instance, has launched several eco-friendly products, such as India's first bio-diesel tractor, the Alfa CNG, which is a dynamic three wheeler cargo carrier and Bijlee, the first-of-its-kind electric three wheeler in India. Most recently, Mahindra & Mahindra launched the environment friendly Bolero Pik-Up CNG model, to be launched in the large Pik-up category, which offers savings of up to 40% on costs, as compared to a comparable diesel vehicle.

How Can Companies Make Sustainability Work To Their Advantage?

- Companies must first understand how their business impacts the environment across the value chain. Do suppliers, for instance, follow environment- friendly practices?
- Organisations also need to know 'what others think' of their environmental performance. This would include perceptions held by employees, customers and perhaps even NGOs.
- Last but not the least, businesses must 'take stock of their core competencies', when it comes to creating environmental-friendly and energy-efficient products and actively work towards developing them.

In fact, a keen focus on sustainability can ultimately only benefit companies, as it would not only help them reduce their carbon footprint but also keep stakeholders happy and attract the best talent. In short, we need to move towards a form of 'Sustainable Development' that is economically sound, socially equitable and environmentally responsible.

Handling Human Capital Management for Sustainable Development

In the world of increasing competition, one of the primary challenges, facing the business world, is finding the right employee and more importantly retaining him/her. Citing examples of a few companies and analysing their strategies in Human Capital Management, this article goes on to discuss effective employee management measures.

Sharmistha Nath - eMBA

"The inventory, the value of my company, walks out of the door every evening" - Bill Gates, Microsoft.

"People are the key! Technology can be purchased and copied, but not the people" - Sam Walton, Founder, Wal-Mart.

Human Capital Management, a new term for Human Resource Management, is the key, which provides companies with a competitive advantage in the market. Process, machines and technology can be duplicated. However, the only unique asset of a company is its human power.

The Significant Change

Early HR was regarded as a service provider, a cost centre, an expense cell and was essential for internal administration purposes. Gone are the days, when HR Managers were only regarded as the hire and fire people. Human Capital Management is now regarded as a strategic unit that makes a difference to the business. It adds value to the company both tangibly and intangibly. A sound and efficient HR team speaks volumes about the company. It is an integral part of a company's strategic goal setting and planning process. And, in this era of constant change, it is not only the rapid growth and expansion, which is important, but also sustaining the growth of the organisation and the Indian economy.

Sustainable Development and HR

Sustainable development refers to meeting the needs of people today without compromising the ability of future generations to meet their own needs. In the context of Human Resources, it refers to first stabilising growth and ensuring that the momentum of this growth is maintained, by effectively managing the most crucial asset of the company - the people. However, it is not just the responsibility of specialists and consultants but requires the contribution of people from all functions in an organisation namely Marketing, Finance, Corporate Affairs, Supply Chain Management etc

As the role of HR professionals, has evolved with time, it is important to understand the core functions of Human Capital Management.

- Who is HR responsible to?
- What are they responsible for?
- What are the working mechanisms, to meet organisational goals and objectives?
- What are the outcomes?

The three challenges faced by human resource professionals today are

- Recruiting and retaining top talent
- Creating incentives for exceptional performance
- Enhancing critical competencies

These challenges have made companies respond to sustainable development opportunities. Also given below are the recent trends and strategies adopted by companies to combat the above challenges.

The economic slow-down has not affected the retail sector, as it has other sectors. "We emphasise not only on people but also on the environment", says a senior HR representative of Bombay Store. The office isn't flashy or fancy, but oozes the warmth of one's home. It is a lean organisation characterised by a flat reporting structure. There is an open door policy, where employees can walk in anytime, to discuss their ideas or challenges. The employees seemed to be close knit and hence shared a common mindset and attitude. This isn't surprising. It is said that when the employee dreads to go to work on a Monday, s/he is in the wrong job. "Here in Bombay Store, we have maximum attendance on Mondays." Such a statement speaks volumes for a company. The average employment period of an employee here has been 3.5 to 4 years, which is a startling figure in the retail industry. "We don't want to be the highest paymasters, as that's the easiest way out. If we were, our attrition could be counted on the tip of one's fingers." At peak season, where companies hire more than the

required figure, Bombay Store hires 15% less than the total number required. Hiring a lesser number would give more leg room to the employees to push and perform better. If the total number of employees to be hired is met, it spares very little to do, which leads to attrition and increases the cost of recruitment too. "Hire less, but focus more."

Every role is uniquely tailored to avoid any ambiguity. Attrition is not only the HR manager's responsibility. Every functional head is answerable for his/her numbers. Here the HR is only the catalyst, in other words they are the change agents. But the initiative to change, according to the market environment, must come from the employees themselves. The HR is there to consult and assist the change. "Lead by example" is their mantra. Irrespective of one's age, background, qualifications and designation, every employee is given an equal opportunity to excel. Hence, the top management consists of employees, who have been with the company for over 10 years, on an average. Does this lead to complacency? No, as Bombay Store has sustained its development this year, it looks like this ship will sail in stormy waters too.

Their policies are formulated according to the regional culture. The appraisal system followed is called the 360 degree appraisal system for Levels I and II, which is at the grass root level. But it does face challenges as any other retail business house. Ambiguity in career growth tops the list. This is due to the fact that most of the people, working in this sector, come from allied industries like hospitality, entertainment and media. Hence the steps taken by the company are adding value to the current roles and encouraging employees to take initiatives for improvement.

Bharti Axa Investment Managers is the Asset Management arm of the parent company Bharti Axa. The insurance business is very manpower intensive. The challenge is not just finding the right person, but finding people with the relevant skill sets. The incentives are performance driven and on a commission basis, hence rewarding the performance is a challenge. In case of lapse of a policy, before the maturity date, how will the company account for the reward? Hence communication is a concern area. There are agents at remote corners in India, how does one know which product is sold and how it is sold? Is one aware of their capabilities of selling insurance products? What kind of assistance do they need from the company? Here, there is need for an HR System, in terms of effective communication and maintaining the crucial employee database.

Coming to the investment arm, it is more intelligence driven and hence the people hail from the premier class of managers and are remunerated equally well. However, even in this avenue, the HR Team faces the challenges of finding the right people. The goal is to align the candidate's objectives with the organisational objectives. Not to mention, rewarding these employees and communicating with them effectively, which is a challenge. One might think of intensive and strategic moves to address these roadblocks, but the initiatives taken by the company have been rather simple yet effective. "Involve and engage the family, especially parents and spouses." In this time of recession, Bharti Axa sent letters to the family and kept them posted on the current situation and how the company intends to combat the pressure. By doing so, they have managed to earn the trust and the faith of the family, eradicating a sense of unrest. In turn, the employee feels valued and his/her affinity towards the organisation increases. This helps manage the emotional quotient of the employee and his/her family. On the business front, they practice what can be termed as a "Promenade Manager". A Promenade Manager is the one, who spends a good amount of his/her time on the floor socialising with the employees. However, there is a hidden agenda. In doing so, a lot of information is gathered and behaviours are noticed. The Top People have a healthy chat with all the employees on a daily basis. This helps to understand the attitudes of the employees. Also for the non-local employees regular conference calls are held with the HR. This takes place on a monthly basis in Bharti Axa. These initiatives have already borne fruits. Only within one year after its inception, 54% of hiring is through Employee Referrals. What is astounding is that, the employees are not given any monetary or non-monetary benefits. "I feel the employees should not be given any incentives for referring their company. If they do, they must do so, on their own will. This builds a sense of ownership." says a senior Director.

Having the right human power isn't sufficient. Because they are good, the competitors are constantly looking to poach them. There is very little an organisation can do. But they do take initiatives, to build competency, in the existing employees. There are certificate courses available for the employees. The focus is on consistency and leadership, not just at the strategic level, but throughout the hierarchy. Training programmes are held for both first time managers and the senior management. Advance communication and business etiquettes, a few key areas of these training programmes, are outsourced to specialised training professionals. Next year the focus would be on Employee Development. In short, the organisation focuses a lot on training and building competencies of an all round manager, with technical and people skills. In totality all the initiatives of the company are aligned to the mission and vision statement of the company.

"Building employer brand is imperative", says a senior ex-employee of St. Gobain. As, when it is adequately done, it helps the company during tough times, for example the key challenge at St. Gobain was awareness about the organisation. Hence, building employer brand was crucial. This was collaboratively achieved with the marketing and advertising agencies. The ads were made by Lintas, in which foreign models were hired, to give the company an international look.

It positioned the company fairly well as 'a large multinational, which is financially sound and has a conducive working environment that encourages learning, growth, performance and fun'. This has been achieved by 2 means

- **Extensive interaction:** The focus was to keep the people together, keep them engaged not only to their work but the company, as this instils a sense of ownership. Training programmes were held to make managers, efficient people managers.

- **Candidate Management:** Another key point rightly mentioned by the dignitary, was that along with all other factors, candidate management experience is very crucial. Right from the initial call till the final interview, the candidate is making his/her judgment about the company and the people. Even if this candidate does not get the job, his/her experience will want to make him/her work for the company in the future. Through word of mouth, the industry gets acquainted with the company's culture. Hence, this experience is very crucial.

On downsizing and retrenchment, he believes that the decision must be fair and equitable. For example, rather than firing new recruits and trainees, the non-performers must be asked to leave. This is fair and justified. In this way, the company is not creating any animosity in the hearts of the employees and is also reducing their non- performing human assets. For those who have performed, they need not feel insecure.

The Aditya Birla Group has corporate cells for each function of the company. The Group HR's role is to strategise and provide intellectual infrastructure for Human Resources and the Organisational Development of the Group, in line with the strategic direction of the Group. While designing the organisation's future in terms of human capital, Corporate HR engages with businesses at strategic, tactical and operational levels, to assist in specific areas of human capital value drivers, such as Talent Management, Leadership Development, Reward Strategy, Performance Management, Organisational Development, Competency Building, etc. Corporate HR also monitors and takes proactive steps to promote employee engagement, through embedding world-class people processes and a value-based work culture. It partners with businesses and other functions, to realise the Group HR vision, which is to build the Aditya Birla Group as "an achievement focused, development oriented and people sensitive organisation and the HR function to be an externally benchmarked and business friendly service function of the Group".

Founded in 2001, Helping Hands is part of EDF Energy's Employee Community Involvement Programme, which encourages all its staff to take advantage of two days of paid work time, to get involved in community projects. In 2004, more than 1,700 employees participated in Helping Hands, contributing more than 18,000 hours to community initiatives. The staff undertook 57 team challenges, benefiting 20 schools and two community farms. The programme has been enthusiastically received across all areas of operation, and 85% of those who participated say that they feel better about working for the company.

Recent Trends in HR

Given below are a few trends and techniques, one observes in the industry today.

1. **Human Resource Accounting** - This basically involves measurement and valuation of human resources, and communicating it to the management and the employees, for performance evaluation. It is a process of developing financial assessments for people within the organisation and society and the monitoring of these assessments, through time. It is the measurement and reporting of the cost and value of people, as organisational resources. It involves accounting for investment in people and their replacement costs, as well as accounting for the economic values of people to an organisation. One cannot only measure the profitability of the employee, but also the attitudinal and emotional quotient, during the recruitment process, through psychometric analysis.

2. **Talent Management** - This involves hiring the best employees and retaining them, as well as developing the better performers. Recruitment strategies vary from company to company. This process involves monitoring and improving the performance of the employees, from employment to retention, with the help of a 'career progress chart'. There are other such measures taken by companies in the form of employee management programmes like training, employee engagement initiatives etc., one of the best being Competency Mapping. The steps involved in Competency Mapping are:

- Read, Study and Understand the Company first
- Interview the CEO and the people, who report to him/her: Directors, Functional Heads and Union.
- Study the organisation goals, objectives, vision, business plan and success factors
- Data Capturing through questionnaires, interviews, psychometric analysis etc.

This activity ensures that the goals and objectives are firmly formulated and communicated. The required resources are made available and every human activity is aligned to the business objectives.

3. **Employee Leasing Organisations** - Consulting agencies provide specialised consultants, who provide their expert advice on various processes or projects; however the execution of the advice is left to the employees of the company. The employees with their limited knowledge and/or lack of execution abilities fail to implement them. In this case, the consultancies could take a step ahead and also supply human resources for the execution of these projects. These organisations can employ candidates and lease them to their clients. The agencies would serve as the principal employers, who will pay the salaries of the leased employees.

4. **Moonlighting by Employees and Out-placing** - Few employees realise that all their demands cannot be met by their organisation alone. Hence they take up a part-time job, do a part-time business or start an industrial unit, in order to become financially stronger. This process is referred to as Moonlighting and in simple words would mean 'double jobbing'. Out-placing is a process in which instead of giving 'pink slips' to the least performing employees, the HR Department provides re-employment

opportunities, by referring them elsewhere discreetly. Out-placing helps in avoiding the emotional damage caused to the employees because of the 'pink slip' process and maintains the goodwill of the company with ex-employees. Moreover, it could also be a profit earning process.

5. **Non Monetary Benefits** - Benefits like childcare centres, senior citizen care, handyman services, lawyers, doctors, special leaves and paid vacations, build goodwill for the company.

6. **Affiliation with Institutes and In-house Training Centres** - In collaboration with Technical and Management Institutes, professional courses can be offered to students. Certificate courses and employment opportunities are given to the student, post successful completion of the programme.

The above are few of the many techniques used by a proactive HR team. All such steps taken to guarantee the fulfilment of long term objectives are supported with long term stability. One can firmly believe that, if executed appropriately, the above are recommendations, which will help in the constant growth and development of the employees, companies and the economy.

In fact, 'new problems invite new solutions; it's only the matter of finding them'.

Harnessing the Power of Nature

The article discusses the need to make more concentrated efforts, to tap alternative energy resources, by harnessing wind and solar power, and details the methods to go about it as well as throws light upon certain projects, where this is already being done, thus charting the way, for making power available, without causing much damage to the environment.

Pankaj Patil - PGDM

Sustainable development is a pattern of resource use that aims to meet human needs, while preserving the environment so that these needs can be met not only in the present, but in the indefinite future. However, in order to be able to sustain for an indefinite period, without damaging the environment, or without depleting a resource, one needs to focus on the 'renewable'; and one of the prime areas, where this needs to be done is in the creation and consumption of energy. The importance of this can in fact be driven home, if one were to cast even a brief glance at rising crude prices as also the increasing demand for energy. It is thus time to turn more actively towards renewable sources of energy, which include solar, wind, tidal, biomass, biofuel energy, etc. All these resources are sustainable and can be useful for fulfilling present needs, without compromising on the future supply, as these sources can be replenished, renewed, and sustained.

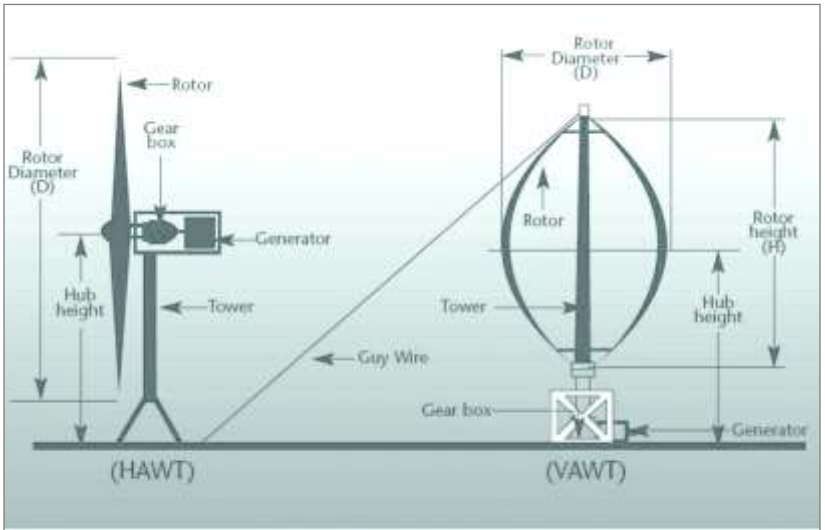
Why Use Sustainable Energy?

Out of the known world petroleum reserves, it may be technically economically feasible to explore only a part. This fact, coupled with the present and expected consumption rates of energy, implies that these reserves may not last beyond the next 30 years. For India, the situation could be even more difficult. Given the limited reserves at our disposal, present known stocks may not last even 10 years, at the current consumption rate. On the one hand, rapid industrialisation has led to increased use of fossil fuels, such as coal, oil etc. to meet our power and steam requirements. For which, developing nations, like India, are paying huge import bills, thereby putting stress on their economy. On the other hand, naturally available energy sources such as solar, wind, biomass, biogas etc. are not being effectively used. Presently most of the petroleum products are imported and the steady rise in their prices is affecting the Indian economy. Our country can stop this financial drain only by turning to self-sustainability, in the energy sector. And, in fact, India has huge prospects in developing energy through alternate sources.

Wind Power is the conversion of wind energy into a useful form, such as electricity, using wind turbines. At the end of 2007, 95 GW of power were being produced from windmills alone. India ranks 5th in terms of installed capacity. Globally, the use of wind power is growing by 30% , which is the fastest in renewable energy. India has the potential to generate 45,000 MW from wind energy alone, out of which the installed capacity is about 1,870 MW, which is about 4% of the total estimated potential. The intermittency of wind power is no doubt a hindrance, but the effects in terms of the environment are more favourable. Windmills have a life cycle of around 20-25 years, after which 90% of it can be recycled.

Understanding Wind Turbine Generators or WTGs

WTGs can be of two types – a Horizontal Axis Wind Turbine Generator or a Vertical Axis Wind Turbine Generator (HAWT & VAWT respectively) The most familiar turbine is the HAWT. The main propeller-like rotor has an axis that is parallel to the ground and therefore horizontal to the wind. A VAWT, on the other hand, has an axis perpendicular to the flow of the wind. A basic wind energy system consists of a turbine (a propeller-like rotor, a gearbox and a generator) a tower, and a Balance of System (BOS) package.

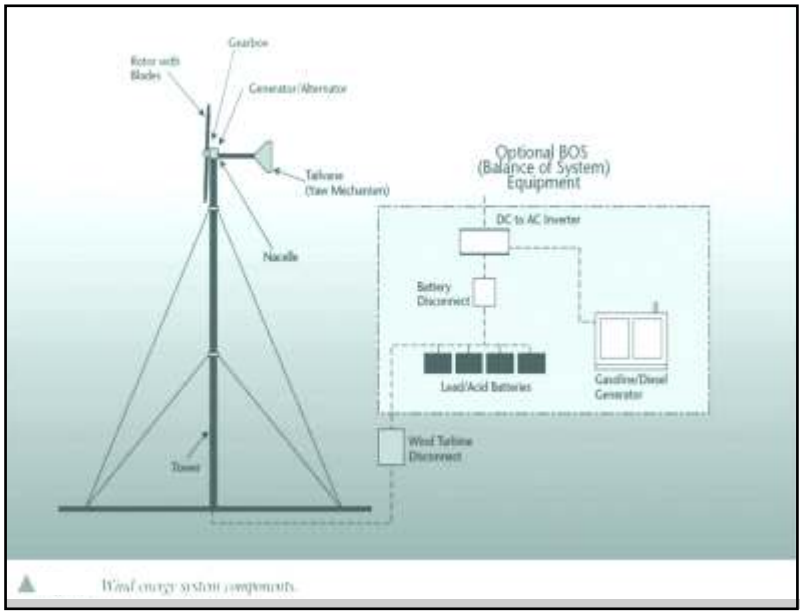


HAWT's and VAWT's: Horizontal and Vertical Axis Wind Turbines.

A WTG comprises a Rotor, Generator, Gearbox, Nacelle, Tail vane, Control and Protecting Systems.

The Rotor consists of blades with specially shaped, aerodynamic surfaces. When the wind blows over the blades, the rotor turns, causing the rotation of the drive train and generator. The blades should be lightweight, strong and durable, to withstand the elements. They are usually made using

composites of fibreglass, reinforced plastic or wood.



Wind energy system components

A generator produces Direct Current (DC) power or, as an alternator, it produces Alternating Current (AC) power. Most small wind turbines used for battery charging systems use alternators generating AC power, which is converted to DC for the batteries or vice versa. Only for high-end WTGs, are gearboxes used.

Nacelle is an enclosure, which protects the gearbox, generator and other components from the elements. It is removable to allow for maintenance, while Tail-vane is a yaw system that aligns the HAWT with the wind. This helps WTGs to face the wind directly and to derive maximum benefit from the wind in order to generate electricity.

Control systems vary from simple switches, fuses and battery charge regulators to computerised systems, for control of yaw systems and brakes. The sophistication of the control and protection systems varies, depending upon the application of the wind turbine and the energy system it supports. In domestic or household uses, this system can be the simple brake system but in case of wind farms, wind can be controlled by using a computerised system, which will optimise and regulate the output, as required by the grid.

The other major parts of Wind Energy Generation are the Towers and (HAWTS and VAWTS) Balance of System Components (BOS). The tower holds the turbine in the path of the wind and is an integral part of a wind energy system. Towers should be able to withstand lightning strikes, extreme winds and weather and should be well engineered.

The major BOS components are batteries, the inverter and, if you are using one, a fossil fuel generator.

Batteries are used in case the wind is not continuous or if it is not adequate. A system without batteries will only provide power, when sufficient wind is blowing to meet the demand. To generate electricity, wind speeds greater than 15 km/h are needed, before a wind energy system can begin to generate electricity. This is known as the 'cut-in' speed. The 'cut-out' speed, usually around 70 km/h, is where the system stalls, to protect itself from damage. The precise amount of energy that can be extracted from the wind depends on many factors, which are as follows:

1. **Swept Area:** It is the area covered by the wing span of a WTG. As the swept area increases, the power output also increases. If the Rotor Diameter can be doubled, it quadruples the power output.
2. **Wind Speed:** A 10% increase in the wind-speed increases power output by almost 30%.
3. **Density of Air:** Wind power is directly related to air density, which increases with a drop in the temperature.
4. **The Betz Limit:** It refers to the maximum energy that a wind mill can extract from wind, which is 59.3%.

A typical 1 MW wind turbine can generate about 28 to 30 lakhs units of electricity and would cost Rs 4.5 to 5 Crores. With the present power cost, the simple payback period would be about 3 – 4 years. Wind turbines of 250 kW to 1650 kW systems are being manufactured in India, for power generation. These systems require an average wind speed of about 2.5 m/s to 30 m/s velocity, to generate electricity that can be fed into the grid.

How does one draw up a site for the Wind Energy Plan?

Assess the site for wind speeds: A wind energy system needs an average annual wind speed of at least 4 metres per second (m/s) to be able to operate with any degree of efficiency.

Average Wind Speed	Wind Regime
Up to 4 m/s (about 15 km/h)	No good
5 m/s (18 km/h)	Poor
6 m/s (22 km/h)	Moderate
7 m/s (25 km/h)	Good
8 m/s (29 km/h)	Excellent

Energy required: When one determines how much energy one requires, one is really asking two questions. First, how much total energy does one require over a year, to operate all the appliances and equipment that one's system will run? Second, what is the peak power requirement? What is it one wants to run? One has to determine what it is that one expects to run with the electricity generated by one's small scale wind energy system. Some household appliances such as water heaters, clothes dryers, stoves and electric heaters can draw a large amount of power, but do so only intermittently. Other appliances, such as refrigerators and freezers draw a large amount of electricity, and the supply must be reliable. Lighting, on the other hand, does not require that much power, and the draw is fairly consistent. Even so, it is best to look for the most efficient lamps and fixtures. Remember that fluorescent lamps use far less electricity than incandescent lamps; they last ten times longer; and give the same amount of light.

Size of the wind turbine: A tower of greater height can give a great wind to be used for power generation and small tower will need a bigger turbine to generate same amount of power. Hence it is matching of both wind and machine so as to achieve highest efficiency.

Selection of the BOS system: the earlier two questions will guide you for the BOS system as how much power is required to be used? Will it be AC or DC and so on.

Solar Energy is the conversion of the sun's (light and heat) energy into a useful form, such as electricity or heat, using photovoltaic or heat collector/concentrators. Photovoltaic collector/concentrators convert the sun's light directly into electricity, while solar thermals use heat to heat water in the concentrators, so as to produce electricity. One of the best examples of a Solar Thermal is the Solar Cooker in Shirdi.

A parabolic type of Solar Cooker, concentrating on the solar steam cooking system, was commissioned at the Shri Saibaba Sansthan, Shirdi on 24th May, 2002. This system received a financial assistance of 50 % of the total project cost from the Ministry of Non-Conventional Energy Sources, Government of India. This is the first of its kind in Maharashtra. It cooks food for about 3000 devotees. The solar steam cooking system installed at Shirdi has 40 parabolic concentrators/dishes (called Scheffler dishes, after its inventor) placed on the terrace of Sai Prasad Building No. 2. They reflect and concentrate the solar rays on the 40 receivers, placed in focus. Water, coming from the steam headers, placed above the header centres, is received from the bottom of the receiver, which gets heated up, due to the heat generated (of about 500?C) by the concentration of solar rays on the receivers, which in turn gets pushed up via the top pipe of the receiver into the header. The principle that 'anything that gets heated is pushed up' is called the Thermo-siphon Principle. The advantage of the thermo-siphon principle is that no pumping (thus no electricity) is needed to create circulation, since the heated water is pushed into the header and water from the same headers comes into the receivers for heating. The cycle continues until it reaches 1000?C and the water is converted into steam. The steam generated is accumulated in the upper half of the steam header. The temperature and pressure of the steam generated keeps on increasing and heat is stored, till the steam is drawn into the kitchen for cooking. All the 40 dishes rotate continuously, along with the movement of the sun, always concentrating the solar rays on the receivers. This movement of concentrators is called tracking, which is continuous and is controlled by the fully automatic timer mechanism. Only once during the day i.e. in the early morning, the dishes have to be turned manually onto the morning position; subsequently, the automatic tracking takes over.

When an aerogenerator and an SPV system are interfaced, the power generation from these is mutually supplemented, and the resultant hybrid system offers a reliable and cost effective electric supply, in a decentralised mode. The wind-solar hybrid system mainly consists of one or two aerogenerators, along with SPV panels of suitable capacity, connected with a charge controller, inverter, battery bank, etc. in order to supply AC power.

The major advantage of the system is that it meets the basic power requirements of non-electrified remote areas, where grid power has not yet reached. The power generated from both wind and solar components is stored in a battery bank for use, whenever required.

Subsidy of up to 50% of the ex-works cost of the system is provided, subject to a maximum of Rs 1.25 lakhs per kW to individuals, industries, and academic institutions. The MNES provides a subsidy for community use and direct use by central/state government departments and defence and para-military forces, of up to 75% of the ex-works cost of the system, subject to a maximum of Rs 2 lakhs per kW. For non-electrified islands, subsidy of up to 90% of the ex-works cost is available, subject to a maximum of Rs. 2.4 lakhs per kW.

The cost of the system varies from Rs 2.50 lakhs to Rs 3.50 lakhs per kW, depending on the ratio of the wind and solar components. The approximate cost of installation, including civil works, is about Rs 10,000 per kW, while the repair and maintenance cost is about Rs 3000 per kW per annum.

Wind-solar hybrid systems have been installed for a variety of applications. Some of them have been installed on islands and in coastal areas. One notable project is the 5-kW capacity wind-solar hybrid system installed on Vagator beach in Goa, which has become a destination point for tourists. The system illuminates 60 CFLs (Compact Fluorescent Lamps) of 18 watts rating each. These CFLs are the

only source of illumination on the beach. A 15-kW wind-solar hybrid system has recently been installed, at the famous pilgrimage site - Bhimashankar Deosthan, in Pune district, Maharashtra. This system provides electricity to meet the needs of the entire temple complex. It has become a point of attraction for a large number of devotees, visiting the temple complex. A large number of wind-solar hybrid systems have been installed in Maharashtra by MEDA, including a unit that provides power to the local area network of computers and fulfils other needs, in their own office complex in Pune.

The benefits of tapping alternative energy resources are many; however to name a few:

Reduced green house gases

- As clean methods are used to generate energy, old methods of burning wood and cow-dung are discarded.
- Less dependence on fossil fuels and coal for generation of electricity, resulting in less green house gases

Continuous power supply

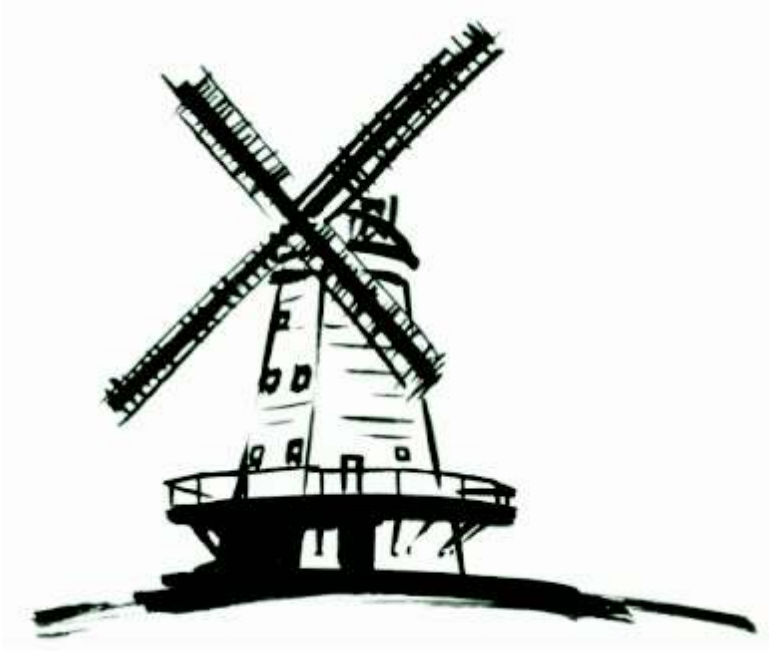
- Wind energy supplies power during the day and photovoltaic's can be used to store electricity in batteries for night use.
- When the wind is not generating electricity, the solar panel can come into action in order to provide electricity

Scalable

- The capacity of power generation can be increased, so as to meet the demands of the growing population and what is in excess can be further used to be fed into the grid.

This technology can be successfully installed at places, which have as yet had no access to power; this would in turn provide the community with a sense of security, community building and information access.

Both of the technologies are widely used all over the world and in India too (recently, a 10MW plant of solar thermal has been commissioned in Nagpur) and they can guarantee indefinite supply of energy, without having to consume too many resources, making them viable industries that would no doubt result in sustainable development.



"The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased, and not impaired, in value"

- Theodore Roosevelt

Hybrid Captive

By taking up the example of various multinational companies, the article, against the backdrop of ever expanding dependence and focus on core competencies, as a result of globalisation, builds up a case for making hybrid captives a regular practice in order to facilitate a growth in two ways – for the company using it and for the one providing it.

Shruti Shirke - eMBA

The global business environment is ever changing and it requires large companies to adapt quickly. Thus, global corporations, in order to serve the parent company, search for an alternative way, to contract jobs, to an offshore provider.

To address these challenges, companies are looking beyond their internal core resources and consider setting up R&D bases, in offshore locations, such as India and China. The primary motivations are cost and scalability, with an access to skilled resources. Therefore, the offshore model can help global companies, to mitigate risks and improve the time-to-market.

The supply side of the outsourcing industry is growing rapidly, as indicated in Figure 1, fuelled by small companies entering the market every year.

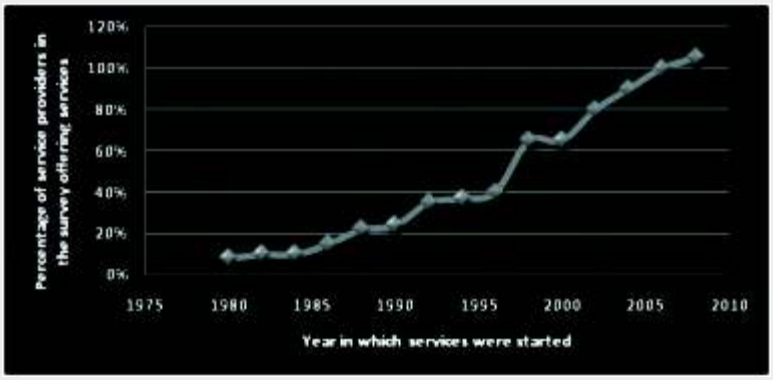


Fig. 1: Service Providers in the Market per Year in accordance with the Percentage of All Companies Responding to the Survey

Source: *Duke University Offshoring Research Network 2007 Service Provider Survey and Booz Allen Hamilton analysis*

A Hybrid Captive Model

With R&D budgets under pressure, companies need to deliver more returns for their investment. How can companies leverage offshore resources, while ensuring quality and protection of Intellectual Property (IP)? The answer lies in a hybrid captive model.

The Hybrid Captive model represents the lowest cost, lowest risk and fastest way of establishing a company's captive operation. This unique process ensures that the company has all of the cost and control advantages of owning a captive operation or subsidiary organisation. The company has the flexibility to migrate to an entirely owned captive operation, at a future point, once they have proven that the model delivers value to their business, so as to deliver their core functions, without the risks usually associated with setting up a new company in their chosen delivery country or various countries. This allows them to continue performing core business processes for the parent company, but outsourcing non-core work.

It merges the comfort level of a captive centre with the benefits of leveraging the competencies of a third party provider. For example, if a company wants to set up a captive development centre without having the necessary competencies to run it, it could outsource the task of setting up the facilities, standardising processes and staff selection, to a third party vendor. After the infrastructure is set up, with the help of a service provider, the company takes full ownership and responsibility of the captive. All rights are reserved for the core development work, while non-core activities continue with the third party vendor. Non-core work could involve testing, version control, maintenance, service support and migration. This model offers tremendous advantages to companies, as they can benefit from the strategy of outsourcing, while retaining full control over their IP. This model also effectively addresses challenges such as standardising processes, retaining people, managing cultural change and IP protection. Ten of the eighty companies in the sample chosen, or 12.5%, adopted this strategy.

This is how multinationals like Deutsche Bank, Verizon, Alcoa, Aviva and Standard Chartered Bank have set up their captives; by bringing third parties directly into the centre to provide IT infrastructure, HR services or back-office process management, rather than leveraging a service provider's external services. With such a hybrid model, the company can enhance their centres productivity, by capitalising on a service provider's expertise, while retaining ownership and control. Hybrid partnerships enable buyers to focus specifically on services that must remain in-house, while handing off non-core activities that can be delivered by tactical staff augmentation or full-scope outsourcing, within the centre.

A sizeable number of companies, i.e. 41%, operate, using hybrid captive service delivery models as is represented in the following graph in Fig. 2:

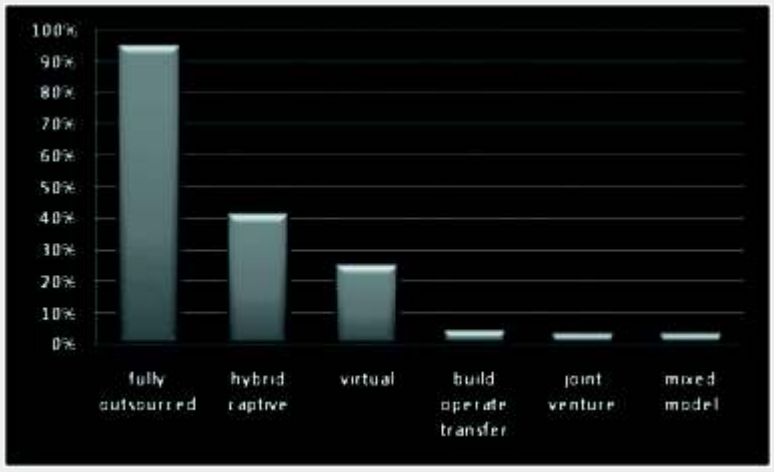


Fig 2: Service delivery models operated by service providers

Source: *Duke University Off shoring Research Network 2007 Service Provider Survey and Booz Allen Hamilton analysis*

As shown in Figure 2, currently, operations based on a full outsourcing model occupy greater percentage of off shoring operations but the positives of the Hybrid Captive model, as given in Figure 3, are significant, due to which its growth in the near future would be more sustainable.

Third Party Vendor Positives	Captive Positives
• Understands the offshore model, can setup and ramp up operations quickly • Offshore outsourcing systems and processesin place • Greater cost savings, through economies of scale Training infrastructure ensures quality resources	• Organisation retains control over the IP & critical work of business • Organisation has better perceived control over data & security • Control over business continuity • As the same processes of the parent organisation are followed, at the captive centre, it ensures that the development of a product happens in a seamless manner, in the onsite and offshore locations

(Fig. 3: Third Party Positives Vs Captive Positives)

The Hybrid Captive model offers various advantages to the parent company, which wants to expand globally and make better use of available resources. The typical advantages of the Hybrid Captive model are:

Quick Start-Up Capability

Offshore service providers can help companies to establish hybrid captive centres quickly, with the ability to ramp up on a fast pace. This has a significant impact on cost and provides time to market a product

Time-To-Market

The Hybrid Captive centre provides the companies with the scale to accelerate product development, by leveraging large talent pools and 'follow-the-sun' development model. As most offshore service providers have a distributed presence across the globe, they can help companies provide 24x7 customer support with regional expertise

Ability To Retain Talent

One of the key drivers for retaining talent in the companies is the quality and variety of the assignments, on which they can work. Most offshore service providers are involved in huge number of projects and offer enormous career possibilities. A definitive career growth path for the individual goes a long way in retaining talented staff. Hybrid captives have developed extensive curriculum and processes to impart training, which ensures that the people hired have the required skill sets in technology, design or designing. This is another attractive retaining factor. By smartly managing the requirements of the customer and the aspirations of the people, Hybrid Captives are able to create talent pools that ensure knowledge retention, for the companies.

Ensuring Quality through a Processes Approach

Most Hybrid Captives have mature processes related to the entire product development operation – from the actual product development to quality and people processes. Some Hybrid Captives have combined the quick and proactive development needs of companies, with their process maturity, to develop optimised models, specifically for companies. These processes ensure that the development of a product happens in a seamless manner, between the onsite and offshore locations. While these processes assure quality, they are also

flexible enough to incorporate the processes. This ensures that the policies are coordinated and closely integrated with the policies defined by the company. Most Hybrid Captives, besides having access to a large pool of talent, also have processes in place, to ensure seamless work transition. Early stage companies can clearly benefit by this association, as they adopt the process maturity of their vendors, to increase their own process competencies.

Mitigating Risks

A global development team helps to mitigate the risks, associated with reliance on a single talent market. Further, distributed teams facilitate the customisation and localisation of software, to specific regions.

IP Protection and Compliance

Apart from physical security measures, Hybrid Captives have well defined security policies in place, which are regularly audited. A standard non-disclosure agreement that covers issues related to IP, such as patents and trade secrets, can be mutually agreed on, between the company and the Hybrid Captive centre. This could contain protection of confidential information, such as proprietary applications and processes, internal financial, marketing or personnel information and information related to business plans and forecasts.

Sustainable Development of Hybrid Captive Operations

In order to investigate whether Hybrid Captive operations can be sustained over time, it is important to understand the typical modus operandi of setting up a Hybrid Captive. The first step in this process is to assess the performance of the centre, by comparing it with that of service providers in the market. This process is currently under way for several multinationals, which are re-evaluating their captives and redesigning their global delivery models. The factors conducive for starting a Hybrid Captive operation are utilisation, employee turnover, cost of labour and certifications, such as Six Sigma and CMMI. Also end-user metrics need to be considered. It is also important to know how the customer satisfaction of one's captive compares with that of service providers. These factors are becoming increasingly important in today's economy and, over time, the economy is becoming favourable for Hybrid Captive operations. The industries, earlier untouched by these types of operations, are resorting to the Hybrid Captive model to enjoy the definite advantages offered by this model. Hence, it can be believed that in the years to come, this model will have global acceptance and it will sustain its rapid growth.

According to a survey conducted, India continues to be the top location for setting up Hybrid Captives. The survey also indicated that many companies are trying to expand their global footprint, by setting up captives' operations in various regions like (in order of preference) Western Europe, China, Latin America, Eastern Europe, USA, Canada, Philippines, Mexico, Russia, Africa, Middle East and Australia.

US based firms are expanding offshore, while Indian firms are expanding near shore capabilities, which are important for US and European clients. As the Indian economy is growing at the rate of around 8%, Indian companies are fast scaling up, to match or surpass international quality standards, and are ensuring that they stay ahead of the development curve, through stable quality systems and continuous quality improvement, thus guaranteeing the sustainable development of the Hybrid Captives in India.

Global expansion is expected to continue and thus global presence and a diverse network of delivery centres are among the most important factors, for a country to win new business, along with other factors like number of certifications, management team turnover, availability of skilled employees etc. These additional factors will contribute to long term sustainability of Hybrid Captive operations, across the globe.

Companies will continue expanding globally to keep labour costs low and gain access to talent, and so setting up captive centres is considered to be the best option. As revealed by research done through surveys conducted with various industry personnel, other top drivers for setting up Hybrid Captives for the companies (in order of preference) are other cost savings, improving service levels, business process redesign, growth strategy, competitive pressure, increasing speed to market, lacking capability in-house, need to be part of a larger global strategy, accepted industry practice, enhancing system redundancy, differentiation strategy, and access to new markets. The Hybrid Captive model addresses all these requirements, due to which companies are looking beyond their internal core resources, which makes Hybrid Captive operations, a economically viable alternative, to attain stable development in their business.

The above claims, about the sustainable development of the Hybrid Captive model are supported by following the evidence available, in the industry. A vast majority of companies that own offshore operations in India believe that their captives are delivering on cost savings and service expectations. According to a survey and research, by an outsourcing advisory firm - Everest Research Institute, over 85% of the executives said that their Indian captives are delivering on both savings and service fronts.

Also according to a survey, by the Captive Value Diagnostic Study Market Update, which polled 102 key executives from global companies, representing both parent and captive stakeholders, with captive operations in India, across a wide range of industry verticals, including hi-tech, banking and telecom, “Performance is not dependent on the size of the parent company's operations or industry. Most captives are doing well, despite a few instances, and this survey proves the viability of this sourcing decision”.

So is the state of affairs really conducive for adoption of the Hybrid Captive model? A recent Forrester Research report, 'Shattering the Offshore Captive Centre Myth,' paints a contradictory picture. According to Forrester about 60% of captives are struggling. Forrester believes the disappointing results of Hybrid Captive can be tied to high attrition, lack of scale, higher than anticipated costs, poor development process and integration with onshore teams. It's important to realign the parent company around the offshore strategy and develop strong governance processes, for managing third parties, lest they end up with numerous partnerships that lack a unified goal. Too often, the misalignment of sourcing strategies hampers captives from the start, making them mere dumping grounds for non-essential work.

Conclusion

Captive centres are leveraging offshore resources, to form a bridge between shared services and outsourcing, getting the best of both worlds by strategically balancing control and flexibility, so the captive centres - in India and elsewhere - are definitely not going away. EquaTerra estimates that some captives in India can realise an additional 20 percent in savings, namely by partnering with mature service providers to augment staff, redeploy resources, automate processes and improve overall service quality.

Even more, the outlook for captives may be helped by the U.S. credit crisis, as a slowdown in the mortgage industry may require some loan-processing service providers in India, to reduce staff and/or cut back on hiring. However it can be expected that over time, the credit crunch will generate a flow of staff back into the Indian marketplace, possibly easing the labour challenges for India's captive centres. Thus as Hybrid Captive offer a broad service portfolio, covering the entire gamut of product development from product creation, evolution and sustenance, companies can mitigate risks and focus on their core competency; going forward, as technology changes, at a rapid pace, and markets become more competitive. A hybrid option will prove to be the best bet for companies caught between the twin market forces of protecting IP and increasing competitiveness.

Thus, in spite of discouraging results obtained by Forrester, which cast a doubt on the success of the Hybrid Captive model, adopting a hybrid model might translate into a win-win situation for companies, which adopt this model in the right perspective and execute the operations in a systematic way. They can ultimately take full advantage of an outsourcing strategy, while having better control over their IP. This model is more advantageous to mid-sized or smaller companies, as they can enjoy the same advantages of scale and access to skilled resources, similar to bigger companies. Partnering with a third-party vendor, having a proven offshore delivery model, can help companies accelerate product development at reduced costs and improved quality.

Thus significant cost savings and improvements in the IT and business processes, whether in an outsourced, internally-transformed or shared services environment like in the Hybrid Captive Model, in the years to come, will help clients to achieve sustainable value.

WE'RE GOING TO HAVE TO LET YOU GO... WE'VE FOUND SOMEONE
IN CHINA WHO IS 45% BETTER AT BEING YOU FOR 24% LESS

Indian Depository Receipts (IDRs): One More Step towards Globalisation


The article builds a case for issuing Indian Depository Receipts (IDRs), citing international precedents, and details how such a step would facilitate globalisation by looking into the notion of IDRs and reasons why this scheme would prove attractive and beneficial to foreign companies and Indian investors.

Amrut Jadhav, Hiten Shah - eMBA

Listing in the exchanges world over is an opportunity for firms to raise funds globally. We have often heard foreign investors using terms like ADR and GDR while talking about their investments. ADR stands for American Depository Receipt, which makes it easier for Americans to invest in foreign companies, while GDR stands for Global Depository Receipt, which allows investors in any country to buy shares of any other country, without losing income or trading flexibility. One such financial instrument that is in the process of being approved by the Government of India is called the Indian Depository Receipt (IDR). This instrument would allow Indian investors to participate in the wealth created by foreign companies abroad. IDRs would be equity instruments issued in India for Indian investors by companies that have been incorporated abroad. Individuals, companies and even foreign institutional investors could make investment in IDRs. We have reached a stage, where we have competition among Exchanges and even across the global markets. Companies would want to tap markets, which ensure a large investor base and a significant level of liquidity.

IDRs would be rupee denominated. These would be listed on Indian bourses rather than foreign bourses and are expected to facilitate the progress of stock-swap transactions, in which Indian promoters are offered stocks in foreign companies, in excess of the current limit of $25,000. The Union Government eased rules relating to the issuing of the Indian Depository Receipts (IDRs) by overseas firms, a move that will facilitate greater outflow of money, from the domestic economy, which is flush with foreign capital receipts. The foreign companies that would issue IDRs in the Indian capital market are required to seek listing on the recognised Stock Exchange in India.

Four potential objectives that an issuer can achieve through IDR issuance

1. To increase capital, though this is not much of a reason, as most foreign companies are not going to come to India just for incremental capital.
2. If the company has a large employee base in India there is the possibility of giving ESOPs (Employee Stock Ownership Plans), which are based on the local IDR. This proves to be a good enough reason, if the employee base is large. So BPO companies or IT companies, which have a large base in India, will possibly get attracted to IDR.
3. For companies which want to increase their brand awareness or companies which have a large consumer business in India or deal with products/services that touch a large number of Indians, this would serve as a listing that adds value to branding.
4. Creating currency in the Indian market for an Indian acquisition or acquisition of any business or assets in India.

Eligibility criteria for issuing IDRs

1. Foreign companies wanting to raise money in India through IDRs would need to have a continuous trading record on the stock exchange in the parent country, for at least three immediately preceding years.
2. The eligibility criteria which stipulates that the issuer should have been making profits for at least five preceding years has be relaxed and the period has been shortened to three years. However it is mandatory that the issuing company should have declared dividends of not less than 10% in each year for the said period.
3 Earlier the issuing company was required to have a pre-issue capital of $100 million but after amendment it would be relaxed to $50 million.

Though the IDR norms were first released in 2004, not many foreign companies have shown interest in issuing IDRs. And so, though some of the criteria were amended to make IDRs more attractive still not many companies have turned up to issue them.

Few reasons why IDRs are not successful

1. In spite of relaxing them, the criteria are still very tough. If the companies could have met these norms then they would have easily raised money in their own market at a much lower cost.
2. IDRs are not marketed properly due to which foreign companies have very little knowledge about them. As against this the New York Stock Exchange (NYSE) and the London Stock Exchange (LSE) have offices and people in India, who attract people to the idea of listing there.
3. The criteria for the declaration of dividend may pose a problem for the overseas companies interested in issuing IDRs. For example, in the U.S. it is not common for companies to declare dividends.

How can we attract foreign companies and investors?

Stock Exchanges in India should give top priority to creating opportunities for boosting the profiles of foreign companies listed via IDRs. Our stock exchanges should offer many forums, so that foreign companies are seen and heard by individuals, companies and even FIIs. The stock exchanges here could organise some conferences, which would bring the executives of the companies face-to-face with the investors, or organise a web based forum that links the executives of the companies with high-net-worth investors. This would raise the visibility of the listed companies and help them communicate their corporate message to the investors.

Conclusion

IDRs could serve as a revenue generation instrument. This would result in the inflow of listing fees to the Exchange and also augment the revenue of the Exchange in the form of transaction fees from members, due to increased business at their end. So too, Indian investors would definitely want to associate themselves with foreign companies which perform well, which in turn would help in enhancing the trading volume.

However, most listing of the foreign companies is found in developed markets like the NYSE, London and Luxembourg. Among the emerging markets cross-listing is yet to pick up. At this juncture, if we look into the Indian market, it is conducive for foreign firms to enter through the depository receipts route. The Indian Depository Receipts are a vehicle that could be used by the foreign firms for cross-listing. The British Bank - Standard Chartered is eyeing Indian listing via IDR. This emerging market biggie, also the foreign bank with the biggest presence in India, is looking to list itself on Indian stock exchanges and so could well be the first MNC to issue Indian Depository Receipts.

India has definitely opened doors to foreign companies to float IDRs in the Indian stock market. Thus India has taken one more step towards globalisation via IDRs.

"It is our belief that companies, which are listed abroad, would be interested in coming to the Indian market. We want to see whether cross listings can be facilitated. ….Similarly, Indian companies, which have operations in other countries, would be interested in listing abroad. We want to see how to smoothen this process."

- C.B. Bhave, Chairman, SEBI

Infrastructure Development in India

By taking a close look at projects that have been implemented and those that need to be implemented, to propel India into living its development dream, this article through an assessment of PURA speaks about the need for striking a balance between rural and urban development, so as to ensure sustainability in growth.

Nikesh Mehta - PGDM

Countries prosper, where there is growth and for growth, there is a need for ample investments; while both internal and external and investments flow in, where there is good infrastructure in place.

Hence the primary aim of any country should be the development and up-gradation of its infrastructure. This not only attracts investments but also empowers the citizens to take competition head on and allows them access to the world market, by making available to them raw materials, technology and processing facilities at competitive rates.

To sustain its ambitious plans of over 8% GDP growth in the coming decades, India needs to develop and upgrade its infrastructure on a war-footing. This is a time, when many world markets are facing recession and the threat of world depression is looming large; and it is important that India should see this as an opportunity rather than a time of uncertainty and difficulty. As commodity prices of non-precious metals have declined to over 5-year lows and crude oil has become affordable again, the cost of raw materials has considerably declined. As India has a very large population, it is bound to see growth in requirements on all fronts, like transport, healthcare, housing, sanitation etc., in the near future. Hence, to remain ahead in competition and to become self sustaining, India needs to develop its infrastructure. For this, India, rather than imitating any other nation, should develop infrastructure, as per its requirements.

Moreover, the development of infrastructure has to be different for different places, especially as regards rural and urban habitats. It is very difficult to immediately merge the two, but the PURA Project has demonstrated that this is indeed possible. And while many Urban Area Projects have been implemented successfully, many others are either in the planning stage or in some stage of implementation. So it becomes absolutely necessary to now consider balancing urban and rural development, even while sustaining the increasing requirements of the urban areas.

The PURA Project

Dr. A.P.J. Abdul Kalam, former President of India, shares his vision for a developed India in the book 'India 2020: A Vision for the New Millennium', which he co-authored. In one of the chapters, he mentions that on asking a young girl about her dream, she replied that she wanted to live in a developed India. This deeply inspired him to start his quest for initiating projects that would help in making India a developed nation rapidly.

So what is the 'PURA PROJECT' all about?

It is Providing Urban Amenities for Rural Areas (PURA) through Physical Connectivity, Electronic Connectivity and Knowledge Connectivity that will lead to Economic Connectivity and provide villagers with livelihood security.

PURA aims at halting the trend of urban migration by rural inhabitants, in order to get better infrastructure, opportunities, jobs and a sustainable lifestyle, in this fast changing world. It also aims at prevention of abandonment of traditional abodes of human civilisations in India.

PURA is a high-quality 'Rurban' habitat on either side of a ring road, linking a loop of villages. With that design, all infrastructure lengths are halved. Workplace and residences can be co-located, minimising thereby daily commuting to work, the costliest part of urban life. Located as it is in rural areas, real estate prices will be a fraction of that in cities; water and waste management will also become simpler. Thus, PURA cuts down both capital costs and running costs of urban services, minimises rural urban migration, and will even curb the mindless growth of cities. It can thus promote both urban and rural development simultaneously and raise the quality of life in both areas.

The dream of PURA is to achieve

- Urban amenities without the loss of a rural ambience
- Development from slums to quality habitats
- Change from manual labour to knowledge based employment

PURA's location principles mirror those of the Silicon Valley, where businesses came up in villages and not in cities.

Today there are two major 'PURA' projects, which have been successfully implemented. There are also more than 7000 PURA projects

being implemented all over the country, and these are in various phases of implementation.

The success of a PURA project lies in the collaboration of the administration (central and state governments and local bodies like gram panchayats and zilla parishads) with the local populace. It brings the power of scales of economies that are developed due to these collaborative efforts. It has considerably improved the competitiveness of businesses and self-reliance of essential services available in the rural areas.

Let us take a look at the successful models, on which the two implemented 'PURA' projects were designed.

Periyar PURA

Periyar PURA comprises 65 villages situated in the Thanjavur and Pudukkottai Districts of Tamil Nadu, which are adopted by the Periyar Maniammai College of Technology for Women (PMCTW), for implementation of sustainable development projects, in order to provide them with an economic uplift. PMCTW launched a programme of rural development, based on the ideas of its mentor and social reformer Thanthai Periyar in 1996. These ideas achieved renewed importance and recognition, through the initiatives by Dr. Kalam in 2003.

Local inhabitants of the villages are participating in these projects in their planning, implementation, evaluation and maintenance, in order to provide them the desired economic sustainability. All these developments are being implemented, utilising the natural resources for sustained development, without endangering the environment.

Gandhigram PURA

Gandhigram PURA (G'PURA) is a model project, for a state like Tamil Nadu, where the knowledge is provided by the Gandhigram institutes. The aim is to make a 'bio-regional' community, with adequate content and connectivity, including social connectivity, with appropriate self-governance directions, in order to create a self-reliant, self-governed and self-sufficient community of about 50,000.

Most hamlets are connected by road, have electricity and irrigation pumps installed. There is also a good penetration of landline and mobile phones, ranging from 10 to 70 percent.

The region now has two primary health clinics catering to the health needs of the region, in addition to many private hospitals, as well as the Kasturba Hospital, which has 300 beds. A veterinary sub-centre has also been setup there. Moreover adequate stress has been laid on self and household sanitation, in the region.

The region has seen the setting up of many primary schools, balwadis, a special school and a rural university, which has improved the access to quality education among the region's residents.

Thus we can observe that the two PURA projects implemented and others in implementation, like the coastal Kerala PURA Project, are very diverse in nature, as they keep in mind the level of development, in each region, and the opportunities, that are untapped there, which can be harnessed for the region's growth and development. So too, these initiatives have led to an improvement in the quality of the life of the people and increased their connectivity with the world.

Urban Area Projects

Urban areas in India constitute just 27% of the land mass, but are home to more than 50% of the nation's population. Due to the ever increasing urban population, there has been considerable strain on the infrastructure in place. Hence, the Governments here have to continuously improve and upgrade the infrastructure. This includes urban planning, planning for economic and social development, roads and bridges, water supply, sanitation, fire services, slum redevelopment, public amenities and urban forestry. Many urban projects are being planned and implemented like the Mumbai Urban Transport Project (MUTP) and the Delhi Metro. Other major urban projects in the offing are those in Bengaluru, where the infrastructure has not kept pace with the rapid expansion the city has undergone in the past decade, and the 12 km. long Sewri-Navi Mumbai Bridge, which will connect Mumbai to its proposed international airport.

Some of the major urban area projects under implementation are:

The Dharavi Redevelopment Project, Mumbai

Dharavi is the largest and most highly populated slum pocket in Asia. The Goverment of Maharashtra has initiated the process, for redevelopment of Dharavi, which has gone through a tender process in May 2007, after a delay of almost a decade, after a need was perceived in 1995. A total of 27 international consortia bid for this landmark project, out of which 19 were finalised. Finally the project was divided into 10 sectors, to be developed by different consortia. Local non-polluting industrial units have been retained, along with a housing project. Schools and colleges are to be built, to educate the area's children, who don't have proper access to education. After much delay and some opposition, from Dharavi's citizens and local politicians, the project has finally kicked off. But the delay has proved to be very expensive, as the cost has inflated from the initial projection of Rs. 9,600 crore to Rs. 15,000 crore.

The Mithi River Project, Mumbai

The Mithi River was the main water body responsible for the 26th July, 2005 Mumbai floods. A project, to address the issue,

costing Rs 1400 crore, is being completed in two phases. The Mumbai Metropolitan Region Development Authority (MMRDA) is the project implementation authority. It has undertaken, widening the river channel, dredging the riverbed, removing encroachments along the riverbanks, checking effluent discharge and construction of public toilets and providing for green zones, buffer areas and access roads. This has reduced the danger of heavy flooding across the city considerably and reduced the strain on the Municipal bodies.

The Delhi Metro Rail

The Metro Rail service has served as a much awaited gift for the people of Delhi, as it has indeed changed the transport facility of the city, by proving to be its 'life line'. The Metro Rail in the city has reduced the traffic to some extent and the pollution level has also declined. The construction of the Metro is being implemented in 4 phases, out of which 2 have been completed. The Delhi Metro is equipped with modern facilities, and a state of the art design as well as security have been give prime importance.

Its CEO Mr. E. Sreedharan has been widely acknowledged as the changed face of what used to be the old 'babudom' i.e. red tapeism of the IAS officers. Without overburdening the workers and without much hassle, the 1st phase was implemented 3 years ahead of schedule in 2005. This has set a benchmark for other Government and private projects alike. In fact, The Metro Rail has been so successful that its model has been replicated all over India, as well as in Kathmandu, Nepal and Indonesia.

Public Private Partnership

Being a democracy, India has many advantages, but this also creates many operating bottlenecks. To overcome this and to bring transparency into the system, Governments have acted upon the idea of involving the private sector in major projects like the development of National and State highways, railways, ports, airports, power stations etc. Due to timely funding by the Governments and efficient implementation by the private sector, this model has become a success.

The various opportunities, that lie ahead, which can be implemented via the PPP model, are:

Roadways

Roadways are the primary form of transport in India, and hence need major investments, in order to be extended and upgraded. The India Infrastructure Fund (IIFCL) has been set up by the Government to fund such projects. A large component of highways is to be developed through public-private partnerships. An ambitious National Highway Development Programme (NHDP), involving a total investment of Rs.2.2 lakh crore, to be completed by 2012, has also been established.

Some of the important roadway projects initiated by the government are:

- The four-lane 5,900 km long Golden Quadrilateral (GQ) connecting Delhi, Mumbai, Chennai and Kolkata
- The four-lane 7,300 km North-South-East-West (NSEW) corridor
- The Accelerated North-East Road Development Project

Railways

The rapid rise in international trade and domestic cargo has placed a great strain on many rail tracks. The Government has, therefore, decided to build dedicated freight corridors in the Western and Eastern high-density routes. The investment is expected to be about Rs. 22,000 crore.

With increasing containerisation of cargo, the demand for its movement by rail has grown rapidly. The high prices of petroleum fuels and the increasing strain on roadways have also resulted in increasing demand for freight transport by rail lines. The container movement, once a state monopoly has now been thrown open to competition and private sector entities have been made eligible, to run container trains.
Focus is being laid on technological up-gradation and modernisation for higher operating efficiency. PPP is envisaged in new routes, railway stations, logistics parks, cargo aggregation, warehouses etc.

Ports

The Government has decided to upgrade the 12 major ports to world-class standards. A large portion of the foreign trade in the next 5 years is to be through the maritime route: comprising 95% of the volume and 70% of the value. The plan for improving the rail-road connectivity of major ports has been finalised. Growth in merchandise exports projected at over 13% p.a. underlines the need for large investments in port infrastructure. Over Rs.80,000 crore is required for this purpose. PPP is essential at this stage.
Many minor private ports like Mundra and Pipavav on the west coast and others on the east coast are gaining importance, due to the increase in world trade, and India's plan to double its trade contribution in the next 5 years is bound to give a fillip to maritime trade.

Airports

The economic boom, of the not so distant past, had necessitated the need for the expansion of aviation services. To take care of this, Greenfield International Airports have been built at Bengaluru and Hyderabad. So too, modernisation and expansion of the Delhi and Mumbai airports, through PPPs, is in the offing, based on a rigorous and transparent competitive bidding and evaluation process. Here the investment over the next decade is expected to be of about Rs.15,700 crores with significant up-gradation and building of new

runways, terminals, access roads, rail connectivity etc. Other major airports such as Chennai and Kolkata are also proposed to be taken up for modernisation through the PPP route. Similarly, a comprehensive plan for the development of 35 other, non-metro airports is also under preparation. These measures are expected to bring in a total investment of Rs. 40,000 crore for modernisation of the airport infrastructure.

Power

Today, due to rapid development of technologies and amenities in urban as well as rural areas, there exists a large demand-supply gap in energy requirements and availability. There is an all India average energy shortfall of 7% and peak demand shortfall of 12%.

Over 90,000 MW of new generation capacity is required in the next seven years, which requires a total investment of about Rs.10 lakh crore. A corresponding investment is required in T&D networks. Power costs need to be reduced from the current high of Rs.4-6/unit, through a combination of lower AT & C losses, increased generation efficiencies and added low cost generating capacity. With the signing of the Indo-USA civil nuclear treaty, new opportunities in excess of over Rs.2 lakh crore are expected, over the next decade.

There is tremendous need for infrastructure development, which in turn implies an opportunity for the growth of the country. Effective and timely completion of projects will save costs and help India leap forward into the future as a developed nation. Suitable and investor friendly Government policies are needed to bolster the economy, which will lead India, to a new trajectory of growth and sustainable development.

"Guess they're still fixing the street."

Legal and Regulatory Frameworks - A Lot to Read Between and Beyond the Lines

Considering that India's legal and regulatory frameworks are extremely rigid on the one hand and contain a lot of loopholes on the other, this article talks about the importance of strengthening them while yet making them more flexible, so as to offer India an edge as a growing hub, rather than generating apprehension about investing in it.

Punit Jain - eMBA

"My years in the corporate world made me understand how much India, despite its recent, tremendous growth, is straining against barriers that hold it back, and is kept well below its potential. One major barrier is conflict in ideas. India is deeply divided on the way forward on a variety of policies. There is for instance, huge disagreement between what people, in business and those in politics, see as the country's critical challenges. It is not easy to find common ground – between governments and the entrepreneurs. Our 24x7 politicians manage a precarious balance between staying elected, meeting the needs of the interest groups and negotiating to get work done with various state agencies – and what this world has prized, as a result, is the urgent over the important, tactics over strategy, and patronage over public goods."

- Nandan M. Nilekani, Co-Chairman, Infosys

India began its liberalisation process hesitantly and with numerous political hurdles. Despite this, the small liberalised sectors did so well, and it is because of our great entrepreneurs, that India is today viewed worldwide, as an upcoming economic powerhouse. Today, the Indian economy is booming and has been growing at about 9% p.a., for the last five years. Compared to developed countries, the Indian economy is still on track and is likely to sustain a 7% GDP growth, in the current fiscal year. The FDI and FII investments in the country have increased tremendously. The world's biggest corporations have their base in India and have made huge investments. India, according to the UNCTAD report, is the second most preferred destination, after China, as a place to do business. The Bank for International Cooperation from Japan is quoted in the report as saying that Japanese MNCs saw India replacing China as the most promising country for longer-term prospects; with the number of companies planning to expand operations in China declining.

The above statements should motivate Indian policymakers. However, for global interest to translate into projects on the ground, the country needs to continue reforming and removing impediments to investment. To sustain in the long run, it is imperative that the government develops a long term perspective and devises a mechanism, which is transparent and has a wider acceptance, so to take India to the next level. The inefficient enforcement of contracts, outdated laws, continued delays in granting permits and reversing previously established government rules is causing potential investors, to lose interest in India. The general impression of investors on India's legal framework is that, they face legal hurdles, even if they wish to be legally compliant, as regards their set ups. Foreign investors are also careful that their Indian investee companies understand and comply with regulatory requirements. They don't want to take any chances, because they know that in case of any default, they tend to lose a lot. But there is so much ambiguity in Indian laws that companies are forced to learn the hard way. In spite of hiring CAs, they still have to pay heavy penalties. There are lots of loopholes in the Indian legal system, which does not ensure the smooth establishment of a company. Many laws like the Urban Land (Ceiling and Regulation) Act, 1976, the Indian Contract Act 1872, the Sales of Goods Act, the Indian Income Tax Act, 1961 and the Indian Companies Act are all archaic and have lost their relevance; but as long as they are on the statute book, investors have no choice but to abide by them. In addition to this an investor is also required to deal with countless agencies, which often do not work in tandem, causing delays and cost overrun. Every time a new Bill is drafted, a new Parliament is constituted and it lapses with a change in the Government.

Reversing previously established rules is also a key feature of Indian laws. In 2007, SEBI had banned P-notes instruments, bought by anonymous foreigners, to invest in Indian shares, saying the curbs would promote transparent flows. But SEBI gave a whole new dimension to the term, when it reversed its earlier move to phase out P-notes, by introducing P-notes again in 2008. There is no consistency in Indian laws and it thus requires great acumen, to read between the lines and beyond it. On the one hand, we announce tax sops and create the SEZ Act, in order to attract investors, but on the other, we discourage them, by levying taxes, under the Income Tax Act. As per the SEZ act, SEZ units are supposed to be given 100% tax holiday, in the first five years of operation. But our IT act states that only a proportion of profits, based on the proportion of export sales, from the SEZ unit, to the total turnover of the company, will be exempt from taxation– notwithstanding the promise made in the SEZ Act. Hence the IT act needs to be amended.

We want to attract global investors and would like to be named as a preferred business destination, but events like Singur will create a chilling impact on an international investor's view of the nation. If a State Government wishes to ease industrialisation and wants to avoid events like Singur, it should be allowed to acquire land for Private Companies. India, according to IATA, is one of the most expensive places to buy aviation fuel (ATF); in Mumbai, it costs nearly 60% more than in Singapore, largely because of state-level taxes, and excise and airport levies on fuel. Making ATF a declared good would help, as that would cap sales tax at 4%, as opposed to the 30% plus,

charged by many states. No doubt, the aviation infrastructure is improving, but the development of non-metro airports needs to be speeded up. Foreign airlines should be allowed to invest in domestic airline companies, which will make them more competitive.

Another problem is that of dual regulatory control. For that the Government needs to give more powers to regulators. The drug price regulator, the National Pharmaceutical Pricing Authority (NPPA), has been rendered a mute spectator, as drug companies continue to fleece customers, by selling medicines at higher prices. While the watchdog imposed a hefty penalty of Rs. 1,627 crore on such companies, it could recover only Rs. 132 crore, due to the lack of adequate powers and capacity, to handle litigations. The road forward lies in taking away regulation from the government and investing in independent and autonomous bodies, created by the Parliament. The Government implemented a ban on future trading in rice and wheat, blaming speculation as a cause for increase in prices; without knowing the actual problem. The Forward Markets Commission, the commodity exchanges regulator, had very little say in the matter. Commodity futures are important for companies, farmers, exporters, importers, hedgers and common men for hedging risks. The same is the case with currency futures. India has made a good beginning by introducing currency futures, but the RBI policy report treads too much on the side of caution. As a result, it aims at restricting trading in currency platform rather than giving it a free hand. Restricting trading is not the solution, internal risk management systems and controls have to be made strong. Each of these transactions must be handled with utmost integrity, controlled by vigilant supervision and adjusted by clearly applied laws and processes. To adopt international best practices, ownership of exchanges by foreign entities should be allowed. Foreign ownership will bring the required technology and infrastructure needed to create safe and secure systems.

Currently, no effective legal framework exists for cross border trade. Cross border tax, as we all know, is not simple. Recently the IT department sent a notice to Vodafone International, to pay $ 4 Billion, for its transactions in India. But Vodafone feels that the transaction is not subject to tax, in India. If Vodafone loses the case, it will be a major setback to the company. Such taxation issues will send wrong signals, to the international business community keen on investing in India. MNCs often execute deals through various layers and structures. Tax implication comes at the bottom of the priority list. Hence tax policies must be in sync with the changing times. Genuine needs of corporate entities should be addressed. So too, the Income Tax Act does not define certain categories of business that have come up in recent years. Therefore, firms engaging in such businesses have difficulties in understanding the applicability of various provisions, including the deductions and exemptions that may be available to them. For example, legal requirements and implications of getting into businesses such as Contract Research, Medical Transcriptions, Medical Coding and Billing are not clearly defined in India. Legal rules governing education, health and e-Commerce are not advanced in India and need to be upgraded.

A recession in the US, EU, and Japan can be seen as an opportunity by India, which can attract global investors, looking for reasonable returns. This is the time to come up with policy responses that will ensure that India remains an obvious choice for global investors, once a semblance of normalcy returns to financial markets. So reforms in some sectors, where investor interest is high, must happen apace. These include retailing, mining, manufacturing and insurance, which provide a compelling investment story. It is important that the country gets a larger share of long-term capital rather than portfolio investments, in order to prevent any crisis on the balance of payment front or create undue pressure on the currency. The centre needs to ease restrictions in several sectors to boost inflows. The financial services sector, notwithstanding the current financial crises, could do with higher doses of foreign investment, under strong domestic regulation. Insurance would gain from capital infusion, from both domestic and foreign investors. Doubtless, such reforms must be accompanied by even stronger regulation.

The experience of various countries has shown that financial and legal obstacles have affected the small firms to a greater extent than their large-scale counterparts. In India, the SME sector comprises more than 90% of Indian Industries. One needs to encourage them by granting licenses and permissions quickly, without delay, because they are our future. However, the current legal formalities and procedures are only discouraging entrepreneurship from coming into the country. For instance, the government has been levying excise duty on the MRP of medicines, since 2005. Prior to this, the duty was charged on the wholesale price. The modified system was implemented, in order to discourage high trade margins, at the retail level, by setting low MRP for medicines and making them more affordable. But, at the same time, Excise Free Zones were created, which made the entire system meaningless. Bigger companies located in Excise Free Zones began taking advantage of the new system, by printing higher MRP on decontrolled medicines. Big companies or multinationals are the sole gainers, from such a policy, as they manufacture decontrolled medicines, from these zones, and charge high prices. So either this system should be changed and duty should be charged on wholesale prices or excise exemption must be extended to the entire country, so that small manufacturers can also compete with large corporations, which will help in making medicine prices competitive.

Before starting a business, one needs to negotiate the complex and often confusing maze of regulations that can stall one's plans. The most apt illustration of this is the fact that whereas the 'Reserve Bank of India Act, 1934' defines the term NBFC, there is a different definition of the same term viz. NBFC, in the 'Non-Banking Financial Companies Acceptance of Public Deposits (Reserve Bank) Directions, 1988', which the RBI itself has issued under the aforesaid Act of 1934. Why has RBI adopted an incongruous definition of an already defined term in its own parent statute? Needless confusion has been created by RBI, as it would have been simpler and more rational, to use the definition already available in the Act.

Ambiguity in tax rules is just one of the roadblocks upcoming companies have to contend with. The sheer number of approvals needed before starting a business can be daunting too. Licenses, registration and approvals for setting up a manufacturing unit may vary from

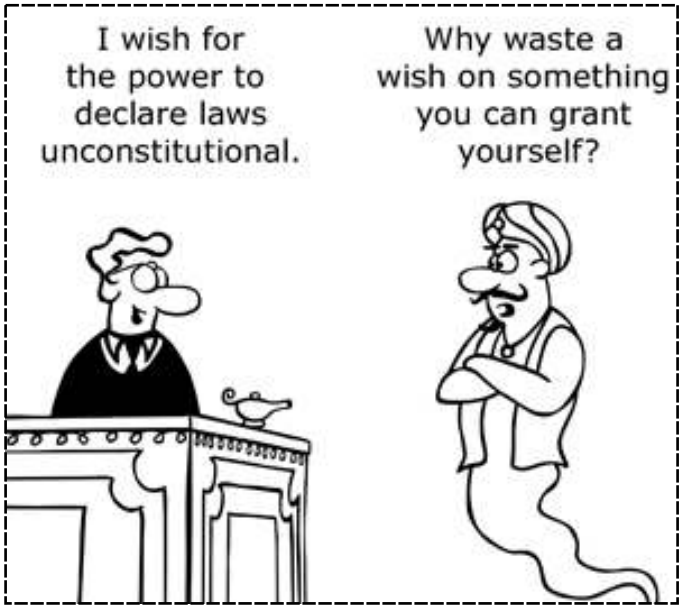
state to state and the time needed to get all the 30-40 regulatory approvals could take any time between 90-365 days.

Countries with poor business environments – costly regulations, bureaucracy, poor credit and banking system – tend to have a large 'shadow' sector, which indulges in commercial activities that are conducted outside the formal regulatory environment. It includes everything from hiring of casual labour and tax evasion to trademark infringements. In India, the percentage of workers having a formal job is less than 7%. Everybody suffers - workers in the informal sector lack job protection and basic benefits and the Government can't collect taxes. There is a large pool of local entrepreneurs willing to partner with good global/national corporations; they need opportunity, capital and landholding.

The need of the hour is first setting clear rules, which are entrepreneur friendly, and then creating sector-wise guidelines, such as a check-list of necessary documents for starting a company. Things can be simplified by way of a single window system that works within a definite time period and is sure of either providing approval or rejection. The solution is to educate budding entrepreneurs about the regulatory framework rather than waiting for them to flout rules and then taking penal action.

The issue of global warming is debated all over, but most entrepreneurs have the perception that their individual impact on climate change is not significant. Also, many green technologies are not cost effective. Hence the Government should indulge in Public-Private Partnerships. By engaging with entrepreneurs, assisting them with capacity building and aiding them with compliance, particularly with environmental standards, the Government can help local businesses integrate sustainable development thinking into their production processes and operations. Moreover, if one really wants to tackle global warming, one shouldn't spend vast sums of money buying inefficient green technology. One should rather invest directly in R&D, to make the future of green technology competitive. For instance, if one invests massively in inefficient solar panels, most of one's money will go into buying the physical panels, whereas only a small part will go into R&D. If one wants more R&D, one should spend one's money directly on R&D. Such investments in R&D should also be made tax-free. This could tackle global warming in the long run.

The decline in the US economy is likely to persist. Emerging markets like India have got the winning combination of cheap labour and advanced technologies. The impact of the American crisis on India will depend on the policies implemented by our government. US, Europe and Japan are all floundering. As a result oil-exporting countries are less likely to invest here. They can invest in India, if our government follows the right policies. We have an opportunity to turn India into an economic powerhouse, but we must act quickly and unhesitatingly, because many foreign investors are now looking for other destinations to move their investments, out of India.



Lending a Helping Hand to the Cultivators

In the light of the continuing spate of farmers' suicides, this article discusses the measures in place, in the form of Self Help Groups and Micro Credit Organisations, while urging every individual to contribute in some way towards the effort of curbing the rate of farmers' suicides in India, in order to ensure true and balanced development.

Anushree Anchalkar - MMS

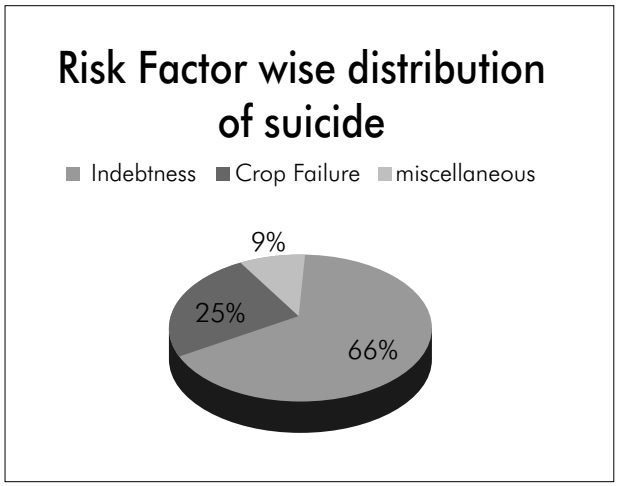
Shankar Mandaukar, a respected farmer 100 miles away from Nagpur in Central India took the decision to end his life. Facing the loss of his land, due to debt, he drank a cupful of chemical insecticide. Shankar's crop had failed twice. So, unable to repay the loan amount, he was in despair. He could see no way out and helplessly took the extreme and fearsome step – that of committing suicide.

One can find a number of such examples in most of the villages in our country. 1 suicide in every 8 hours – the official data tells the real story. In India, more than 80 crore people are still spending an average of hardly Rs 20 per day on livelihood. Rural India is crying for attention, but no one has the time to listen. The growth rate in the farming sector has been just 3.8 per cent in the last financial year. Agriculture is likely to grow at mere 2.6 per cent in 2007-08, and the industry and services sectors are projected to grow at 8.6 and 10.6 per cent, respectively. Doesn't this reveal the real picture of agriculture in India? To the members of a now entirely urban, middle class press, these deaths were statistics, duly reported in five centimetre 'page fillers', whenever these were needed to complete the page design, and were then forgotten.

What one needs to think about is, can we do anything for the improving the conditions of these cultivators?

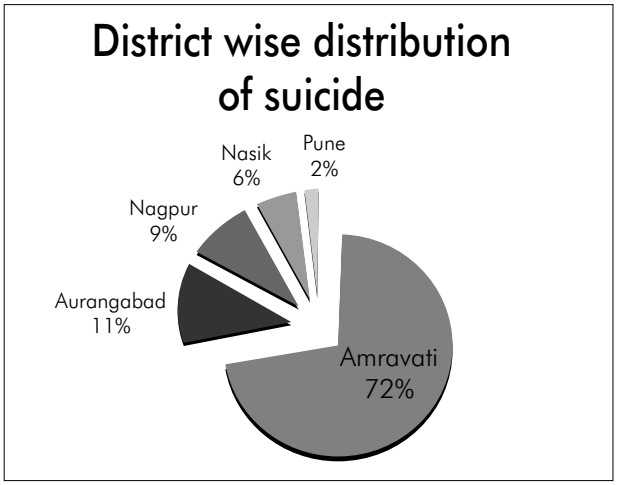
The real irony of the India farmers is that when the BSE SENSEX goes down, the Finance Minister and Prime Minister themselves promptly give assurance to investors by saying that the government will take care of their financial interest in stock market, but when farmers commit suicide in large numbers, due to indebtedness, even the Agriculture Minister doesn't bother with a single line of assurance for the farmers' families. It cannot be denied that the Government has come up with a number of policies, including loan waivers, but how many of them are actually getting implemented and/or reaching the really oppressed. With rumours of imminent government compensation to stem the wave of deaths, many farmers said that they were desperate for any form of assistance. 'We just want to escape from our problems,' one said. 'We just want help to stop any more of us dying.' So are these policies really providing any help or facilities to the cultivators? If yes, then why is the percentage of farmers committing suicide increasing every year?

The reasons for this are innumerable. The foremost reason is the substantial loss farmers face in agriculture. Due to this the poor cultivators find refuge in taking loans from the money lenders, with the promise that they will pay back the loan the next year. Most of the times the moneylenders charge a huge interest rate on the amount. The cultivators use this loan for buying various chemicals, pesticides, genetically modified seeds etc., without possessing much knowledge about it. When in turn the next year arrives, the cultivators realise that their crops have failed again and they are not able to pay back the loan. The moneylenders then harass them for the payment. Due to this condition, the farmers feel lost and think that suicide is the only way to get out of these problems, thus taking the extreme step. Other miscellaneous reasons are not receiving the right price for the crop, long wait at the government marketing centre prior to the selling of the produce, non receipt of compensation in return for land that got submerged under water, non receipt of drought relief compensation, crop loss due to fire, crop being stolen, unsuccessful attempts at digging well for irrigation, being cheated in land transactions and litigation of the land.



From the above chart it can be observed that the highest risk factor that leads to suicide is the debt, which farmers are not able to return after a fixed period of time. The next highest risk factor is the continuous failure of crops, due to varied reasons like irregular rainfall, improper use of pesticides, fertilisers and technology, which makes the farmer lose hope in this occupation and finally take the decision of committing suicide. Other reasons may be economic downfall, marriage in the family, health problems, addiction, etc. In fact, most of the suicides are because of more than one factor.

The distribution of the number of suicides taking place in different districts of Maharashtra is shown below. The maximum number of suicides take place in Amravati which is 72% followed by Aurangabad 11%,then Nagpur 9%,Nashik 6% and the lowest recorded are in Pune which is 2%.



The most crucial measure in this critical situation would be to give them support, guidance and knowledge, due to the lack of which they are not able to bring about sustainability /development in farming. One can begin with oneself in an informal way, by providing assistance to them in whichever way possible - by imparting knowledge, training, giving financial assistance etc. Many organisations work in this direction and have started gaining wide acceptability all over the world. One such organisation is SHGs i.e. Self Help Groups, which work as an informal segment and reach out to the rural society.

Self Help Groups (SHGs)

In the midst of apparent inadequacies of formal financial institutions and their failure to serve and protect the interest of rural poor, despite their phenomenal outreach, an informal segment comprising small groups of rural poor began to mobilise the capital and savings of their members and used these resources among their members on a micro scale. These groups were termed as Self Help Groups (SHGs). A SHG comprises a group of rural poor, who have volunteered to organise themselves into a group, for eradication of poverty of its members. They agree to save regularly and convert their savings into a common fund known as the Group Corpus. The members of the group agree to use this common fund and such other funds that they may receive as a group, through a common management.

SHGs are usually formed by NGOs or Government agencies. They can also be formed by any informal group, which is willing to work for the development of farmers. SHGs are found mainly in four states i.e. Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu.

SHGs especially support the upliftment of women. More than 50% of groups comprise women. They are specially formed for women so that these rural homemakers can learn new activities and help their families by adding extra income, to supplement their very small source of income. It is a group formed by community women, and has specific number of members like 15 or 20. In such a group the women come together for emergency, disaster, social reasons, economic support, to converse etc. To start with, the attendance of members was very low and savings were irregular. Constant counselling and formal training for concept clarity and effective leadership helped them to understand the hidden benefits of being organised. Training for record keeping also proved tobe extremely beneficial, as it ensured their financial security.

So too, SHGs train their members in various activities like catering, embroidery, weaving, tailoring, handicrafts, leather works, etc., which helps them to learn acquire a new occupation that can increase their source of income. As stated earlier, they raise common funds among themselves and provide this fund to the members, whenever they require it.

The group also performs functions like keeping records of the transactions, deciding the interest rate for loans, operating a group account, preferably in their service area bank branch, so as to deposit the balance amount left with the groups after disbursing loans to its members.

However, the base of the SHG has to be right, with effective and transparent management and guidance, in order to be effective. Clear guidelines and systematic record-keeping for microfinance transactions are essential. SHGs represent an opportunity for social action and empowerment through women's involvement in considering, addressing and participating in issues that affect their members and their communities, including issues that affect women in particular. The extent to which this is happening is perhaps less than what can be hoped for – although a beginning has been made.

In majority of the groups however the SHG's earnings are not high enough to maintain the value of SHG members' capital. So, there are Micro Credit Organisations that provide funds to these SHG.

Micro Credit Organisations

The lending procedures of these groups are not only simple but also effective, due to small amount of loans involved in the process. When the concept of SHG was relatively new, NABARD undertook the task of studying the functioning of SHGs and the investigations encouraged NABARD to launch a pilot project in the last decade, which involved linkages between banks and SHGs. The SHG-bank linkage programme got a real boost, after RBI recommended that the banks that lend to the SHGs should be considered as an additional segment under priority sector lending. Thus, in view of this recommendation, lending to SHGs was integrated with the mainstream credit operations of the banks. Thereby, the SHG linkage programme gained wider acceptability, with large number of commercial banks, regional rural banks, cooperative banks and NGOs participating in this project.

SBI was the first bank to enter this SHG-Bank Linkage project and has taken up the SHG movement as a mission, to reach those families, who hitherto had no access to credit by any formal financial institution and, therefore, depended on informal sources and moneylenders.

Micro finance is however not new to the State Bank of India. The bank's association with Non Government Organisations (NGOs) or voluntary agencies in extending financial help can be traced as far back as 1976, well before NABARD introduced the SHG-Bank Credit Linkage Programme, as a pilot project. Since then the Bank has made steady progress in financing SHGs. As on March 2006, SBI's branches have spread throughout the length and breadth of the country with over 6,30,067 Savings Bank accounts of SHGs, out of which more than 5.41 lakh SHGs have been provided with credit facilities, thus benefiting more than 75 lakh poor people. Moreover, majority of these SHGs are women SHGs.

Additionally, the bank has successfully initiated various measures towards widening its SHG network - sensitisation of the staff, special training programmes for handling SHGs, close liaison with NGOs, 'SAHYOG NIWAS' - a loan product for SHGs and first Insurance scheme for SHGs - Life Shakti. SBI has furthermore set for itself an ambitious target, that of credit linking 1 million SHGs by end of this year. The Bank has thus started leveraging the vast SHG network for various services beyond credit delivery.

SAFAL (Skills Academy For Appropriate Livelihood)

SAFAL is an organisation that aims at the development of low income groups in rural and urban areas. SAFAL facilitates programmes that lead to sustainable and viable livelihood opportunities, leading to the improvement of the rural and uneducated population.

SAFAL was launched in March 2005, focusing its energies on providing knowledge and skills to the rural areas for incorporating proficiency and expertise in their particular fields. They aim at training these people thereby bringing about a change in their income levels thus resulting in sustainable development. The team works towards providing vocational training, developing self employment and goes a step further by assisting groups in planning small enterprises that will help rural markets to interact with large markets. SAFAL has brought about a noticeable change in states like Maharashtra, Karnataka, Tamil Nadu and Gujarat. They create awareness among the people regarding the importance of effective training and learning. SAFAL works with various SHGs, indentifies their products, standardises them and introduces them in larger markets.

Like SAFAL, each concerned individual can start with these activities on a small scale basis in an informal way, like interacting with the cultivators, knowing their individual root causes for depression and dissatisfaction, providing solutions to problems to the greatest extent possible and providing them with knowledge and training in whichever way one can. One can also assist such organisations in their projects. This will surely help the cultivators to a great extent.

It is generally accepted that India is developing. But while cities such as Mumbai and Delhi have boomed, the farmers' lives have slid back into the dark ages. One has no time even to think about these poor farmers, instead people are busy counting the shopping malls in cities as a reflection of growth and setting up Special Economic Zones on land acquired forcefully from poor farmers. India reflects the desire to become a developed state, without developing its farmers' community. Can India really develop without agriculture? And is this the development we are looking forward to? India's paradox is that as the nation develops, more farmers commit suicide.

So, it is tome to try and put together efforts towards the development of the so called backbone of the Indian economy, i.e. 'agriculture'. It is not going to change the situation in one day but a continuous and dedicated approach in this direction will definitely bring about sustainable development of the entire nation.

"Microfinance stands as one of the most promising and cost-effective tools in the fight against global poverty."

- Jonathan Morduch, Chair, UN Expert Group on Poverty Statistics

Life Insurance in India


In the light of the fact that most industries are facing the effect of the global slowdown, this article talks about how the life insurance sector continues to grow and how local and global players can tap the vast potential that rural India has to offer.

Deepak Karankal, Ritesh Vaish - MBA, MET Nasik

The Insurance sector is one of the most promising sectors, in India today. India's share in the global life insurance business rose to 1.97% in 2007, as compared to 1.68% in 2006. This growth of 0.29% in the global market is very significant. With the largest number of life insurance policies in force in the world, the rate of increase in the penetration of insurance in India, as a percentage of the Gross Domestic Product (GDP), is on a very high side, these days, as compared to the past. In that, life insurance has accounted for a major proportion as against non-life insurance.

Life insurance is therefore, one of the major sectors, which has been on a continuous growth curve, in the Indian economy. Still a very large population in India is without life insurance, which reflects ample business and job opportunities, in this sector.

Life Insurance in India

India is the fifth largest life insurance market, in the emerging insurance economies globally and the segment is growing at a healthy 32-34% annually. A decade ago, there was only a single player in this market i.e. Life Insurance Corporation (LIC), but today there are around 18 active players like Birla Sun Life Insurance, Tata-AIG Life Insurance, Max New York Life Insurance, Bajaj Allianz Life Insurance to name a few, who have tied up with global insurance companies, to come up with new opportunities and development.

Private players have brought in new energy in this sector. Most of them have exceeded expectations, in terms of growing their business in rural areas. All of them topped their individual targets laid down by the Insurance Regulatory Development Authority (IRDA). For example, SBI was expected to sell 18% of all its policies in rural areas. It ended up selling 22%. According to Mr. U. S. Roy, Managing Director and CEO of SBI Life, "with urban areas having high insurance penetration, the next growth drivers will be the rural population."

The penetration of life insurance in urban India is 47%, while it is only 27% in rural areas. Insurance executives believe that all firms will benefit, from low cost of distribution in rural areas. Rural and social sector policies are sold through a multichannel approach, including hiring agents from villages and tie-ups with banks, Non Government Organisations and micro-finance institutions. This helps in saving around 10-15% of the distribution cost.

Major driving factors for Life Insurance:

- Innovative and buyer friendly insurance products
- Rapidly increasing awareness
- The fast growing educated population in our country
- Rise in the Per Capita Income of the middle class
- Growing demand among the rural and semi-urban population
- Increasing number of private players entering the market

Growing Role of Private Insurance Companies

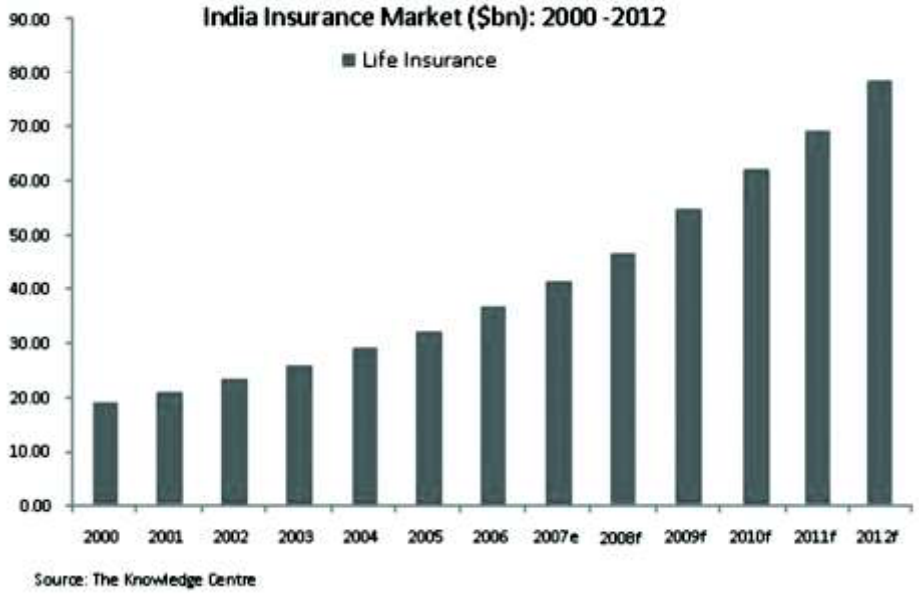
Intense marketing strategies, used by private players, have helped them to rapidly increase their market share. The share of government owned insurance companies, like General Insurance Corporation (GIC), Life Insurance Corporation (LIC) have come down to 50-55%, in the last 4-5 years, from over 97%.

State owned insurance companies have been suffering, due to a limited number of policies on offer, while private insurance companies have larger number of policies, with more competitive premium amounts and maturity periods, thus making smart use of globalisation. Heavy advertising by private companies has created huge awareness, among the people, in urban as well as in rural areas.

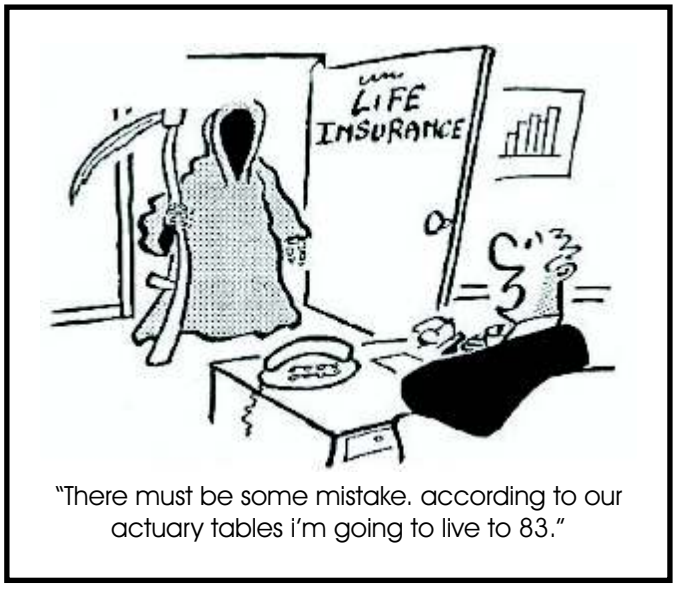
Future of the Life Insurance Sector in India

As shown by latest research, nearly 80% of the Indian population is without a life insurance cover, thereby reflecting huge market potential for the sector. The Associated Chambers of Commerce and Industry (ASSOCHAM) in India has projected that, the size of the current Indian life insurance business will cross the figure of about US$ 80 billion by 2012 (ref. Fig 1.1), particularly in view of contribution that the rural and semi-urban insurance will make to it.

Penetration of insurance in India as a percentage of the Gross Domestic Product (GDP) stood at 4.8%, as on 2008, compared to 1.2% in 1999-2000. Of this, life insurance accounted for 4.1% and non-life insurance for 0.6%. The share of life insurance in GDP is expected to increase up to 5.1%-6.1% by 2012. The strong growth potential of the country has also made international players look at the Indian insurance market. Moreover, the saturation of insurance markets, in many developed economies, has made the Indian market more attractive to international insurance players. In October, the federal cabinet approved changes to insurance laws and proposed raising the foreign investment limit to 49% from the present 26%.



Thus, in spite of the global slowdown, Indian life insurance business continues to grow at the desired percentage. Though the non life insurance sector is facing some effect of recession, life insurance is still doing well. There is huge potential seen in this sector, in India, as regards the future, as its growth rate seems to be very high. Life insurance has become one of the most viable emerging businesses in India for domestic as well as global players.



"There must be some mistake. according to our actuary tables i'm going to live to 83."

Marketing Score on Gains


Sports marketing is a burgeoning trend both in India and abroad and though it may be believed that in India it restricts itself to cricket, it is not true. Sports other than cricket are beginning to gain popularity among audiences as well as marketers. However, one needs to tread cautiously and with open eyes if one has to ensure sustainability in the emerging area of sports marketing.

Abhishek Singh, Prateek Singh - MMS, Marketing

Sports marketing: a success formula

Consumers in today's era want a branded experience. This has led many sponsors to focus on areas of association and relationships, through event sponsorship. For example, at Salt Water Lake City Winter Olympics, Coke attempted to link themselves to the Games by celebrating everyday heroes.

Sporting events like the Formula One Grand Prix, Football World Cup, Golf and the Olympics draw immense fascination and attraction from many sponsors and millions of people worldwide. Superstar drivers are paid millions of pounds simply to wear branded clothes. In this light, the Football World Cup and Olympic Games had doubled the top sponsorship price to about $60m for each of the 11 main sponsors between 1998 and 2002. Companies bidding to sponsor these events achieved global broadcasting and branding rights. Ferrari enjoyed an astounding increase in sponsorship after Michael Schumacher won the Driver's Championship in 1999. In fact, many companies use event sponsorship as a means to position their products. The outcomes of these sponsorship programmes were enhancement of the corporate image and awareness along with building association with the type of event that suits the company's image and positioning. Some case studies are presented in the next section to illustrate how brands have utilised sponsorship programmes internationally.

Today's audiences are media saturated and desensitised. It takes a fresh, invigorating approach to get results. Sports marketing breaks through to your market and capitalises on the inherent energy and excitement of the sports world. Today in a world defined by commercialisation, sports has a different definition altogether. It is all about good sponsors, venue, promoters, channels and Event Management Companies, coming together to make the sports events more glamorous and productive.

The next decade will witness the most significant changes in the way we consume sports, since the emergence of mass audience television in the 1950s. The proliferation and fragmentation of media channels such as satellite and cable television, the internet and mobile telephony has undermined the traditional free television model in every advanced economy. Well managed sports will remain valuable content and many will continue to prosper. Forward thinking governing bodies will grasp the opportunity by repackaging their sports to appeal to the new broadcast landscape. Others will not.

Brand marketers have seen the effectiveness of traditional TV spot advertising fall over the last twenty years as audiences for free to air television fall year on year. The growth of sponsorship as a marketing tool is one consequence. However, sports must compete for the sponsor's dollar with other forms of content such as music, the arts and culture and cause-related marketing, each of which offers a compelling alternative.

At the same time some of sports biggest stakeholders - the soft drink, beer and fast food companies - will come under growing pressure from social and political pressure groups concerned about levels of obesity, binge drinking and anti social behaviour that have become such a part of modern life.

Companies such as McDonalds, Coca Cola and Budweiser face calls to cut its ties with sports, a bandwagon which will gain momentum over the next decade. Are we facing a ban on soft drink sponsorship similar to that of tobacco? Certainly, the removal of hundreds of millions of sponsorship dollars from the sports economy worldwide would have devastating consequences. This report analyses the threat, seeking comparisons with the tactics employed by the tobacco abolitionists a decade ago.

Need for marketing in sports

Explosive growth of sports marketing came with the 1984 Summer Olympics in Los Angeles, when corporate sponsors used the Games as a platform to market their brands. Coca-Cola, for example, spent nearly $30 million in support of its official sponsorship of the Games.

According to the Sports Business Journal, an industry trade publication, today, sports marketing is a US $250-billion industry and includes sports-related advertising and venue signage, athlete endorsements, facility construction, sporting goods and licensed merchandise, event management and marketing services, sponsorship and ticket sales, media broadcast rights, and multimedia — including sports-related websites, magazines, books, and video games. New content distribution channels like the Web, email, voice messaging, streaming video and mobile are creating many new opportunities and challenges for sports marketers. Indeed it was the 1996 Summer

Olympics at Atlanta where the big commercial break through was made, Coca-Cola was the main sponsor of the games, and not the 1980's games in LA to which it was ascribed!

Sports sponsorship is currently a multi-billion dollar industry. Players such as Tiger Woods, LeBron James, Peyton Manning and many more are finding ways to make millions of dollars. They are getting outstanding deals to wear clothing during events, do a commercial, a photo shoot or an advertisement. Sports marketing is becoming a current trend in business education in high schools as well. Many high schools are offering this as elective class. So too, many colleges are now offering Sports Management programmes to support the demands for employees in this industry.

Indian sports - cricket vs. others

Cricket has been a sport, which Indians watch with great passion over the years now. Not only are they glued to the television to see their favourite players striking those sixes but they also perform pujas for their preferred team to win. Such is the craze for cricket.

So too, the approach towards marketing this sport in India has changed a lot. The shift is from non-marketing strategies to more streamlined strategies and perfect planning. Lot of event management companies are coming together to create a successful sports event in order to enthral its audiences.

Furthermore, India's win in the Twenty20 World Cup has boosted the brand value of the cricketing heroes, raising expectations of media planners and broadcasters.

Not only are the media planners bullish on the increased brand value of cricketers, including star performers M. S. Dhoni and Yuvraj Singh. Dhoni, who endorses around a dozen brands such as Pepsi, Videocon, Exide ,sonata and Reebok, has become a hot cake already with an estimated Rs 1 crore per brand. Post-T20 success, some new companies are also trying to rope him.
"There are a few companies which have contacted us and shown keen interest," Jeet Banerjee, CEO of Gameplan Sports which manages Dhoni's account, said. Moreover, he opined that nothing changes overnight but the cricketers' endorsement value would go up if the team continues to play well.

Similarly, Collage Sports Management director Latika Khaneja, who manages the endorsement accounts of Virendra Sehwag and Gautam Gambhir, said, "I expect more endorsements for Sehwag who is currently engaged with Adidas if he is able to maintain his form but it will be decided once he gets back to one day internationals." So too, Vice-Captain Yuvraj Singh has nine brands in his kitty with slightly over a crore a brand riding on him. He is the highest earner per brand from India's Twenty20 team.

According to some market observers, there is going to be a big change in Indian cricket in terms of brand endorsements with new and young players making their mark.

There is a new lease of life in cricket with the new generation of players in the game. The Yuvraj and Dhoni of today will become Sachin and Ganguly of tomorrow, while players like R P Singh, Robin Uthappa and Dinesh Karthik will become Yuvraj and Dhoni of yesterday.

T20 had a positive impact on cricket. Whenever India has done well, there has always been a good response to cricket both from viewers and advertisers. The performance of the men in blues in T20 has wiped off the nightmarish memories of the World Cup debacle. Post-England, they (the Indian cricket team) seeme to have put the World Cup ghost behind. The T20 cup should bring confidence back to team,
So too, the Indian Premier League, held in 2008, has proven to be a massive success on a number of fronts. Perhaps the more important question is what this success says about the Indian sports market as a whole.

To give some sense of the scale of the IPL's success, consider the following: The BCCI secured a $1 billion deal with Sony and Singapore-based sports marketing agency WSG for global TV rights and sold 10-year franchise licences for an average price of $60-70 million.

In the first year alone, franchise holders regained 80 per cent of their money under a revenue-sharing formula devised by the BCCI. Although the deal is calibrated so that franchise holders get less in future years, the BCCI is already claiming that a true valuation in light of the first season's success would be around $250 million. The BCCI also brought in a swathe of blue-chip sponsors, all hoping to ride the Indian economic wave including DLF, Hero Honda, Vodafone, Citibank, Nokia, Coke and Hyundai. However, the success of a sportsman does not necessarily mean his success as a brand in the marketing world, as seen in the case of Anil Kumble and V.V.S. Lakshman.

Moreover, with India winning its first ever individual Olympic gold through shooter Abhinav Bindra, it was felt that there were tremendous opportunities to project other sport stars and market other games better. For this, the State, the media and the marketer, can combine to make Indian sports a success story for all. Sports cannot be looking up to the marketers for charity. The product had to be packaged well to sell.

Not just cricket

Anyone with even a passing knowledge of Indian sports knows that much of the money in sport is based on a huge national passion for

cricket. The launch of the Indian Premier League, a new Twenty20 tournament was a massive boost to the amount of revenue spent around sport as well as an instant global phenomenon.

However, were cricket to be the only game in town the prospects for the market wouldn't be as enticing. Recent months have witnessed a number of developments that suggest that other sports are becoming serious contenders.

For example, Formula 1 has seen a huge surge of interest following Vijay Mallya's creation of the Force India team. Golf and tennis, both aspirational sports for the middle class, are enjoying record levels of success. Perhaps most interesting of all, football is beginning to achieve real traction with TV audiences tuning in, in ever greater numbers, for international leagues and competitions.

There are also some major events in the calendar which look set to have a transforming effect on sports in India. Delhi will play host to the Commonwealth Games in 2010 and India will stage part of the ICC Cricket World Cup in 2011. The race is also on to bring F1 to the country, which will almost certainly see the creation of a new circuit, which together with historic investment in stadia by cricket and football will drive opportunities here too.

Yet the fact remains that IPL is in fact at the centre of focus as regards the Indian sports scene. Anxious to capitalise on its early success, the BCCI joined forces with governing bodies in Australia and South Africa to launch a Twenty20 Champions League. In September, broadcaster ESS paid $975 million to secure exclusive control of the event's rights for 10 years. So what does this say about the state of the Indian sports marketing sector. Is there any evidence that other sports are benefiting from the Indian economy's bull charge? Or is cricket so strong that it is suppressing activity in other potential growth areas? The answer is a mix of the two. To begin with, there's no question that many big brands want to be associated with cricket in some form or another. But even though cricket is believed to take 70-80 per cent of all available sports marketing revenues in India, there's still enough commercial activity around other sports to suggest the non-cricketing community is also making headway. Golf is an interesting case in point. The sport began to gain traction in the late 1990s but the real sea-change came with the creation of a new governing body, the Professional Golf Tour of India (PGTI), in October 2006. Led by around 100 golfers, the PGTI was a breakaway from the PGAI (Professional Golf Association of India), and has pretty much taken control of the sport. As a result, India is now home to four Asian Tour events - making it second only to China (with five events). Golf's turnaround isn't just apparent in terms of the sponsors it attracts (which also include Johnnie Walker and Emaar) but also the fact that PGTI has sold its exclusive broadcast rights to Sports 18, the sports marketing division of the media conglomerate Network 18.

Network 18's Managing Director, Raghav Bahl, is in no doubt that he is tapping a growth opportunity. Explaining his involvement in golf, he argues that "a fundamental shift is occurring, with the rise of non-cricket sporting interest. With an expanding pedigree of home-grown world class golfers, greater media support and sophisticated management, golf in India can see the same heights as it has achieved internationally. This partnership with PGTI will be a landmark for the game in India."

The fact that Network 18 is both a broadcaster and marketer for PGTI is not that unusual for India. Look around the Indian sports sector and you can find at least two parallel examples where broadcasters are trying to get in at the event ownership level in order to secure a pipeline of content for their channels. One is field hockey where the Indian Hockey Federation brought in ESS as a partner, when it launched its Premier Hockey League in 2005. The other is soccer, where Pay TV broadcaster Zee TV linked up with the All India Football Federation (AIFF) in 2006 to try and build a 360-degree strategy around the sport (the theory being that a stronger club-based system will eventually feed through into the national team set up).

Zee's involvement with soccer started when it signed a deal with the AIFF, which gave it exclusive rights to domestic soccer in return for $65 million over 10 years. At the same time, Zee agreed to help the AIFF promote the sport off-air. Subsequently, the AIFF has revamped its domestic soccer league - giving it a new name, the I-League. This move has been well-received both by fans and title sponsor ONGC, which has just renewed its support with a $250,000 sponsorship deal.

Increased investment in Indian sports isn't just evident in attempts to build new league structures like IPL, PHL and the I-League. There's also been a much greater willingness to host set-piece sports events in recent times. As stated earlier, 2010, for example, will see the Commonwealth Games come to New Delhi. A year later, Formula One will arrive in Delhi following negotiations between the Indian Olympic Association and F1 supremo Bernie Ecclestone.

Moreover, Delhi is hoping to use its new sports facilities for other events once the Commonwealth Games are over. Although it was beaten in its bid to host the 2014 Asian Games by Incheon in South Korea, the Indian Olympic Association has said that it may bid for the 2020 Summer Olympics. As for the F1 story, there had been talk of India joining the circuit in 2009 or 2010. However, even 2011 represents impressive progress when you consider how far India was off the international pace just a few years ago. Combine the arrival of F1 in Delhi with the launch of an India F1 team (Vijay Mallya's Force India) this season and you have the emergence of a new power within the sport.

Among international sporting franchises, which have made progress in India, one of the most noteworthy is WWE Wrestling, which has toured the region on and off for a number of years. Furhermore, its popularity has been driven in recent times by the emergence of Punjabi wrestler The Great Khali, now one of the biggest sports stars in India.

More recently, the NBA has also set out its stall in India, staging one of its Basketball without Borders outreach programmes in partnership with FIBA and the Basketball Federation of India (BFI). Although this is a pan-Asian event, the fact that it was held on Indian soil underlines the way in which India is moving up the corporate agenda (though basketball and the NBA have some way to go before they can claim to have much traction in India).

So too, soccer's big guns are beginning to circle the Indian market. Having seen the kind of money that the IPL is capable of attracting, it is no real surprise to see clubs like Manchester United beginning to get involved. In summer 2007, the club sent a coaching team from its Soccer Schools programme to work with 5,500 children in Goa (one of half a dozen major regions where soccer is popular). This summer, the club took another tentative step forward when CEO David Gill came on a fact-finding tour to India. While there, he talked with AIFF president Priya Ranjan Dasmunsi about ways they might collaborate going forward to promote the game in the subcontinent.

Stories such as these show that there is a lot of money moving into parts of the Indian sports marketing arena other than cricket. More insight and analysis on the opportunities in the Indian sports market are presented in the brand new Business of Sport in India intelligence report from SportBusiness. Drawing on extensive expertise from within and outside the India, this comprehensive resource will be invaluable for those looking to expand in this rapidly emerging market.

Today and the Future

As regards the emerging trends, the examples of pro teams with less than overexposed teams are likely to decrease. As for college athletics, that trend should not be the same. While it is financially responsible to take sponsors, it does not seem as positive in amateur athletics as a rule. Colleges have alumni and interests other than merely winning at all costs. Colleges will not be where sports marketing trends will usually develop; they are more at the will of the public opinion towards sponsors, unlikely to take as many risks as the pro organisations.

Sports Marketing has made its way into the budgets of many companies around the world. The stakes keep rising to get into this game and the returns may be diminishing. The importance of sports and how the consumer perceives its relationship with business is very important. Sports and athletes are incredibly dependent on TV and endorsements today. Those sources of capital will pull back if the consumer becomes disillusioned with sports and ratings drop. The most recent NFL TV contracts were for more money than it would cost to buy every team in the league. Players salaries will hit limits at some point (probably when TV deals decline), and players will seek even more outside sources of income.

What one needs to remember is that sports marketing cannot grow at the pace it has forever, though it still has room to expand. The sports marketing trend's success or failure will hinge on sports' role in society in the coming years. Many issues arise everyday between fair play and big money. The target market needs to be clearly defined.

However one can surmise that it is important for a company to stay clear of the troubles sports can be a victim to, while it is important for sports to keep their integrity to stay popular with the people. In short, it is important for sports marketers to increasingly police themselves in order not to ruin an effective marketing tool and sports in general.

Mergers & Acquisitions (M&As) - Charting a Course to Ensure Success

Tracing the history of Mergers and Acquisitions (M&As), by taking a close look at the various stages through which they have evolved, the article analyses two cases of M&As, at either side of the success/failure yardstick and comments on the reasons this happened, while also defining strategies for successful M&As

Mamta Chugh - eMBA

Mergers & Acquisitions have gained considerable importance and success in the present globalised era, though it has been an old concept in the business world. Tracing its history, one can surmise that this strategy of corporate marriages has evolved in five stages.

In the First Wave, Mergers commenced from 1897 to 1904. During this phase, mergers occurred between companies, which enjoyed monopoly over their lines of production like railroads, electricity etc. and these were mostly horizontal mergers, where two similar companies came together, primarily to increase the market share. These mergers took place between heavy manufacturing industries.

The Second Wave Mergers that took place from 1916 to 1929 focused on mergers between oligopolies; these were mainly horizontal or conglomerate, i.e. a company merges with a company from a completely unrelated industry to diversify the nature of the risk. The investment banks played a pivotal role in facilitating these M&As.

Third Wave Mergers that took place during 1965-69 were mainly conglomerate mergers, which were inspired by high stock prices, interest rates and strict enforcement of antitrust laws. Mergers were now financed through equities; the investment banks no longer played an important role. Third Wave Merger ended due to poor performance of the conglomerate. One of the most prominent mergers of this period was the United Technologies and OTIS Elevator Merger.

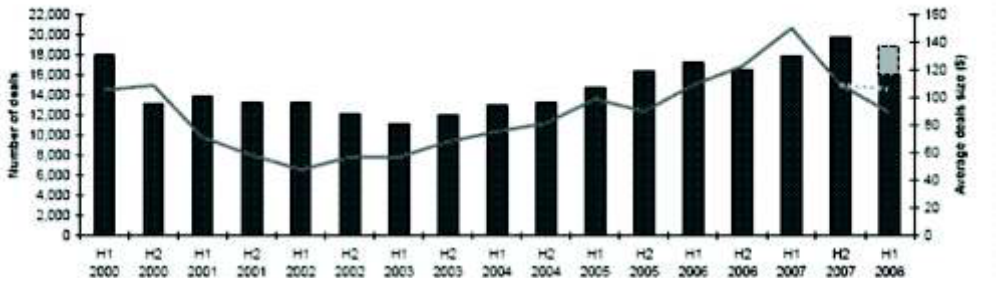
Fourth Wave Mergers began in 1981 and ended by 1989 and were characterised by acquisition targets that were much larger in size, when compared with the previous years. Foreign takeovers became common with most of them being hostile takeovers. They ended with anti takeover laws, Financial Institutions Reform and the Gulf War.

Fifth Wave Mergers of 1992-2002 were inspired by globalisation and the stock market boom, resulting in deregulation mainly in the banking and telecommunications industries. They were mostly equity financed rather than debt financed. The mergers were driven by long term rather than short term profit motives. They ended with the stock market crash.

Even today whether it is for sharing technical expertise or expanding into new markets, M&As are preferred vehicles for solution providers, to add value to their existing business.

In the present scenario, a new class of business leaders is fuelling India's current success in M&As in line with globalisation. The confidence within the Indian business community, combined with its natural entrepreneurial zeal and intuitive ease with global business models, creates a formidable force. India's economic liberalisation in 1991 sparked fears that the country would be overrun by foreign multinationals. But Indian companies have not only fought off competitors on their home ground, but have also taken the commercial battle abroad. According to researchers, it is anticipated that India's cross-border M&A activity will accelerate dramatically in the immediate future. As Indian companies mature, overseas acquisitions offer the most tangible evidence yet, of their new found readiness, to compete on the global stage. This can be termed as the new and Sixth Wave contributing to the history of M&As.

Global M&A activity - number of deals vs average deal size



*TD: end May 2008

Source: KPMG ■ Numbers of Deals ▬ Average deal size value(Sm) ⬚ Projected H1 averaged H1 averages deal size

Before reading further…

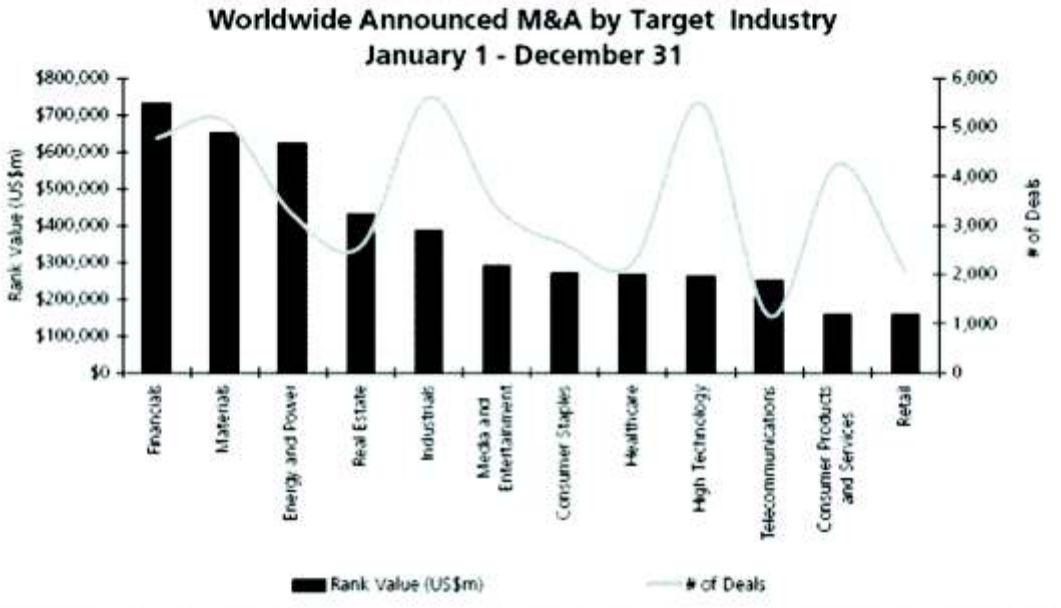
There is a thin line of confusion between merger and acquisition, as in truth many mergers are acquisitions. Merger is a full joining of two previously equal sized separate corporations, wherein they work together, rather than competing with each other in areas of technical expertise and the targeted customer base. In a legal sense both businesses dissolve and fold their assets and liabilities into new third entity – a new corporation.

A typical merger is very strategic in nature, wherein post merger, the nature of both firms is changed for the better. While considering acquisitions, companies look for jump-starts. Bigger companies acquire smaller ones doing relevant or complimenting kinds of business and build it up from there.

M&A is a responsibility, not a victory. What happens post acquisition or merger is far more critical than the mere event itself. The secret of the effort lies not in sending mails of congratulations, once the deal is fixed, but in understanding that post-deal is where the real story starts. As someone has rightly mentioned, success in the long-term requires strategic planning before, during and after the ink is dry.

Raison d'être

Presently in its attempt to grow and survive in a competitive market, enterprises have realised that inorganic growth is the need of the hour. In this dynamic time, even large Corporate Houses are not averse to taking over smaller companies or getting taken over by bigger players or simply aligning themselves with other organisations. For example, in spite of being in the top position Corus sold itself out to Tata Steel. These deals are not a bull run, where you make a bid, and announce the M&A, and it is done. There are multiple permutations and combinations.



Given the pressure to report quarter on quarter growth in revenues and earnings, many companies are looking at inorganic growth through M&As, to deliver revenue and earn growth. Gaining access to key markets and customers, building delivery capabilities and domain expertise, expanding business into a new geographical area or enhancing a particular type of business expertise would further the growth of the company and are other drivers for M&As.

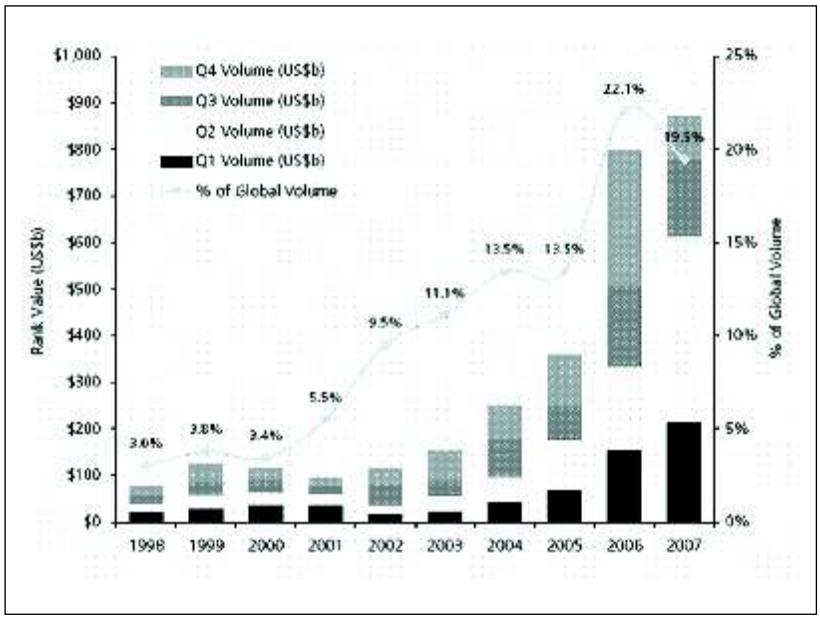
Even capturing 100% of one's customers' daily requirements sometimes becomes the rationale behind M&As. Today's customers are looking for end-to-end service providers, who can offer an entire gamut of services. M&As therefore become preferred vehicles to complete services, if they want to want to retain a customer.

Synergies between companies and their product/service offerings, their complementing strengths and the market reach of companies, in terms of geographic spread and products/services, buying-out of a strong brand from a financially weaker company, to gain acceptance in a new space for the acquirer, the financial health of companies, which can help absorb the cost of acquisition, while looking for long term benefits, accruing from better products or intellectual property, the need to balance the portfolio of product/service offerings and hence be better prepared for industries, which have cyclical demand for products and an increase in market capitalisation and consequently shareholder value for listed companies are some reasons, why a company would go in for M&As.

Thanks to the constant rising above needs and upward trend of cross-border M&As, six Indian companies feature in the Fortune Global 500 list of the biggest companies in the world; and as per the current rate of growth and M&A trends, we could expect this number to double by 2010.

Cycle of Bear to Bull

Evidently, significant numbers of M&As are happening in the industry today, especially in business, where value-addition is a norm. Globalisation, deregulation and privatisation have caused India Inc to become hyper-competitive. Many meaningful, smaller companies are open to M&As now, unlike in earlier times, when M&As were restricted only to bigger companies. M&As have thus gained a greater degree of visibility now.



While the number of M&A deals peaked in 2007, from Tata Steel – Corus, Hindalco – Novelis, Tata Motors – Land Rover & Jaguar, to Vodafone and Hutch, a substantial drop is observed in the slowdown period. The sentiment was positive and growth oriented and aggressive in the previous year. However 2008 has been more about consolidation and reorganisation of business portfolios. The Indian focus seems to be more on acquisitions rather than big bang mergers. The approach seems to be 'a more low risk, low return approach', as compared to 'the high risk, high return big bang merger approach'.

In an M&A deal, it is important to realise that the interval between the decay of the old and the formation and establishment of the new constitutes a period of transition, which must always necessarily be one of uncertainty, confusion, error and wild and fierce fanaticism.

But for it to tag as sustainable development in the long run, at the end it should ensure that the entire system is in one line and the blemishes of change disappear.

Cases

Remarkable Horizontal Acquisition

The historic acquisition of the country's largest pharma company - Ranbaxy Laboratories, by Japan's third-largest pharmaceutical company Daiichi Sankyo changed the Indian pharmaceutical landscape forever. Apart from adding Greenback, the deal also created models of sustainable development, wherein both the Corporate Houses had equal benefits to be accrued in the long term.

Background

Pharma companies of developing countries are small fish in the global market and competitive games by big sharks are not played in markets but in law courts. They usually face problems of IPRs & patent protection, lack of production facility, no incentive for R&D, lack of proper distribution, price control measures etc.

Pharmaceutical companies in developed countries are battling the soaring costs of bringing new drugs to market and have been speeding up research and testing in emerging markets.

What's in store?

The deal will open up 56 countries for Daiichi Sankyo and give access to low-cost research and production facilities and strengthen its ability to capitalise on the fast-expanding generics sector in Japan. Apart from that, it will even provide an opportunity to enter emerging markets and complement its strength in innovation in 'the fast-growing business of non-proprietary pharmaceuticals.'

Ranbaxy in-turn gets strength and cash flows, to compete with global markets. The valuation is about 20 times of Ranbaxy's EBIDTA and about 4 times its total sales. The company, apart from receiving a hefty premium for an over-leveraged company, also reduced its dependence on US markets, from where it was getting 45% of its business.

The combined group creates "hybrid" of Ranbaxy's core generic drug business and Daiichi Sankyo's strength in patented medicines. Together with their pool of scientific, technical and managerial resources and talent, they would enter a new orbit to chart a higher trajectory of sustainable growth, in the medium and long term, in the developed and emerging markets, organically and inorganically.

Moreover, Daiichi Sankyo and Ranbaxy believe that this transaction will create significant long-term value for all stakeholders through:

- a complementary business combination that provides sustainable growth, by diversification, that spans the full spectrum of the pharmaceutical business;
- an expanded global reach that enables leading market positions in both mature and emerging markets, with proprietary and non-proprietary products;

	Proprietary drugs	Non-proprietary drugs
Developed countries (Current market size: large) Low Growth rate	Daiichi Sankyo's core business Features: Blockbuster model, high profitability, slowing growth rate Opportunities: Antibody drugs, personalized medicine	Features: Low price, high growth rate Opportunities: Patent expiry of blockbusters, pharmacoeconomics, biosimilars
Emerging countries (Current market size: small) High Growth rate	Features: High growth rate Opportunities: Enhancement of IP protection, economic growth, population increase	Features: Low price, high growth rate, large volume Opportunities: Economic growth, population increase

- strong growth potential by effectively managing opportunities, across the full pharmaceutical life-cycle; and
- cost competitiveness by optimizing R&D and manufacturing facilities for both companies, especially in India

Graphical Representation of Strategy

The deal provided Daiichi Sankyo the platform to launch its innovator products in India at competitive prices. After the buyout, Daiichi Sankyo is the second largest pharma company in India, with an interesting combination of an innovator and generic product basket and about a 5% market share and a 5% rise in its stock price on the Tokyo exchange.

The deal is further expected to

Boost broad a multifocal approach to the pharmaceutical business spanning geographies and product portfolio

- Developed countries + Emerging Countries
- Proprietary drugs + Non Proprietary Drugs

Acquire a presence in emerging countries

- Enhance sales operation in Eastern Europe and Asia
- Largest coverage in Africa

Accelerate innovative drug creation, by leveraging the most efficient value chain, from upstream (research) to downstream (sales).

Moreover, this most attractive deal brought in new drugs from Daiichi's portfolio into the Indian market and tempted Indian pharma majors, to invert their emotional attachment, to particular generic manufacturers, hitting a plateau in overseas markets, to sell out and realise attractive valuations of the kind that Ranbaxy has secured.

Multiplying by Zero

Boldness in the business is the first, second and third thing. However, business strategy does not only have to be bold, it has also to be measurable, achievable and sensible. It has been estimated that 70% of mergers fail to realise even the initial financial and market growths projected. Interestingly the percentage has remained relatively stable in spite of the growth of mergers as a viable option for businesses.

So too, unsuccessful strategy in merger usually leads to a not so great outcome, which though not spoken of often, becomes a point of learning, as is evident, through one of the greatest disasters of recent times, discussed below.

The Jet Sahara Deal

Sahara Airlines is now named Jet Lite Airlines. Jet Lite, a wholly owned subsidiary of Jet Airways India Ltd., was acquired by Jet Airways in April 2007. Acquired by Jet Airways, as a concern with a significant long-term potential in the future, the settlement enabled the Jet Airways management to concentrate on its long term expansion plans, on international routes, and the induction of its new wide body aircraft fleet.

Jet Airways wanted to abandon the deal raising some documentation issues but the problem with Air Sahara was that the whole world had come to know that the deal was done. People started associating both the brands and this became a problem for Air Sahara, when Jet decided to discontinue the deal.

Background

India is one of the few aviation markets, which do not have any clear demarcation between LCC and full service airline. Every airline competes on only one platform - price and that is fraught with danger.

For Sahara Airlines selling off of their airline business was a measure to get away of the financial crisis they were facing, in their alternative financial business. The inflow of funds from the deal would have helped them to revitalise their core business. The deal also had to battle a lot with the legal and regulatory requirements. But finally all went well and the deal took place. The deal was however tagged as controversial, in its initial stage.

The Post Deal Scenario

The 2300 crore deal was done. Now began the long nights of work on differentiation and positioning. Initially Jet Airways indicated that Jet Lite would be positioned as a value carrier but aviation experts and brand gurus were clear that Jet Lite was traversing the greyest area in aviation yet.

If it had to compete on price with Indigo and Spice Jet, Jet Lite would then be no different from a fielder covering an area between third-slip and mid-off. It's always easier to build an LCC from ground-up rather than cut out the fringes from a full-service airline. This way the DNA of the airline remains intact.

Then there was the problem of cannibalisation with Jet's own customers looking for a downgrade. Jet planned that if they were to lose customers to an LCC, then Jet Lite could retain them, blurring the lines between both the carriers.

To be fair, it's not as if Jet Airways had any choice, as the acquisition of Sahara came with its own legacy. Integrating Sahara into Jet premium fold would have meant huge infusion of capital, whereas downgrading to an LCC would hamper Jet's premium positioning. Jet had to revamp their corporate image, as Kingfisher forced their hand in the domestic market and they had to compete with the likes of British Airways globally. Jet thus decided to develop an identity separate from Jet Lite.

The deal was a marriage of two different sized non-matching culture companies. It was not for mutual benefit but for ensuring that one of them would recover loss by selling the organisation. Jet Airways still tried to derive commercial and economic benefits, keeping in view the current state of the domestic aviation industry.

In the long term, Jet Airways is trying to use common expansion strategies and bank upon the synergies gained from this acquisition, like a large operational base, ensuring economies of scale, common fleet network and stations, cross utilisation of qualified personnel and infrastructure, advantages of achieving consolidation, availability of a larger operational base for future expansion and also using them as a means of tackling competition.

The acquisition of Sahara Airlines gave Jet Airways the opportunity to reassess its strategy. But the deal was characterised by a fall in share price as also the brand equity of Jet Airway's JetLite.

Successful deals are made, not born

M&As are important decisions and are triggered by economic factors. The macroeconomic environment, which includes the growth in GDP, interest rates and monetary policies, plays a key role, in designing the process of mergers or acquisitions between enterprises.

Therefore partners must look closely at how their companies would gain from a proposed M&A. A merger would thus make sense only if the weaknesses of one company could be covered up by the strengths of the other. An M&A would be justified, if the threats faced by one could be taken care of by the opportunities of the other. Once that is done, the work cultures of the two entities, their systems and processes, their revenue models and the management team could be looked into.

Long-term investments made by one would need to be complemented by the short-term revenues or cash reserves of the other; else the entire initiative would lose steam in record time. However, the criteria vary from company to company and depend largely on the long-term vision and growth objectives of the two companies.

Moreover the partners should bear in mind the strategic fit for the buyer – the exercise should either complete a product gap, a market gap, a vertical gap or an expertise gap. Before considering a merger proposition, it is important that partners analyse the benefits and costs in terms of money and then arrive at the conclusion. Spreading the word among the employees and convincing them that the change is for their benefit is a necessity. Regulatory impact and considerations too must be analysed.

It will be a prerogative of the management to acquire a company, to keep the interests of their counter-parts alive, in order to remain associated. In a merger, both partners need to have a deep understanding and clarity as regards RRO definitions.
The mantra for sustainable M&A deals in difficult times

Experience shows that acquisitions rarely fail due to flawed strategy, rather failure is most often a result of not executing the strategy in a timely fashion. While underlying synergies are typically the catalyst, a transaction success in the long-term requires strategic planning and investment before, during, and after the ink is dry.

Why are we making this deal?
Whether one is in the middle of a transaction or just thinking about one, this is the first and most important question. And while it sounds obvious, it's worth mentioning because companies often forget to ask it. In many cases, the question gets asked only once – that too at the start of the deal. After that, momentum quickly builds up and the transaction takes on a life of its own. One also needs to question the rationale throughout the deal as one learns more, not just at the outset (when the people are in the least informed). What is the main reason for pursuing the deal - Revenue growth? Complimentary products and services? Industry consolidation? Geographic expansion? Defending oneself against a competition threat? And now that details are already fleshed out, does the initial hypothesis still ring true? Please note that in this entire process one is not trying to hold things back. The sole intention is to move forward in the right direction, and to keep a sharp focus on the end game.

How can one position the business to capitalise on opportunities?
A tight credit market and a slow economy create a wealth of buying opportunities for companies that are positioned to take advantage of them. It's a buyer's market – but only for buyers with good credit reserves or a big war chest. Before going ahead with a deal, one can work on cash flow by streamlining the company's operations. These actions will help the company to be ready to move if and when the right opportunity comes along.

Is one's vision for the future still valid?
Strategic deals can take a long time to complete – and a lot can change in the interim period. It is wrong to assume that the future will be a linear continuation of the past and present. Although one may be anxious to unload a business that isn't pulling its weight – particularly when the times are tough, like the Sahara deal explained above – one might get a much better price, if one waits for conditions to improve.

These are the important issues in every deal, no matter what the economy is doing. So too, they are even more crucial, when the times are tough because there is a lesser margin for error.

Conclusion
For any M&A deal to be identified as sustainable, it needs to outweigh mutual benefits for both entities, not only in the present scenario but in the long term. There are several things written, heard and read about the fact that the sustainability of a merger or an acquisition is the biggest challenge. The enterprise comes together but it has to make sure that the scar of this tie has to fade off in the long term. The true success of a merger or acquisition is the extent to which two organisations bring themselves into a line effectively, to guarantee business continuity, at the same time ensuring that business efficiencies are recognised i.e. there is no imitation of functions, across the two organisations, that resources are deployed optimally and that policies are standardised and institutionalised, across the new entity.

The history of M&A reveals that these integrations usually happen in good times (when the economy is riding high) but the true test is when the merged alliance fights back disaster and crisis through this toughest part of its entire life and then it can be sustainable. Glaxo Smithkline one of the oldest M&As does not ever reflect that they were once upon a time separate entities. The true essence lies in the long term relationship and the attribute that the companies, while they gradually make their way to the top and develop sustainability.

"They've agreed to the merger, the sticking point is who is swallowing who?"

Micro, Small and Medium Enterprises - A Viable Route to Sustainable Development

In the light of recession and the resultant fight for survival that this may result in, between the big industries on the one hand and the small and medium enterprises on the other, as they vie for the government's attention, the article talks about why and how MSMEs will still emerge winners.

Pooja Iyer - PGDM, Finance

Each new day brings with it a new set of crisis for the small units, be it the rising interest cost or the difficulty in procurement of raw materials, especially in the wake of the global financial meltdown, and yet paradoxically it is more viable to be a part of a micro, small or medium enterprise.

It was not very long ago that it was great to be into a Large Scale Industry (LSI) format, as being a large unit it had its own advantages: economies of large scale, cheap credit, ease of availing finance and the sheer size of operations that would enable it to command financial support in the market.

This theory held true for a very long period in time. But just as the boom time period in a trade cycle has a unique story to share, the dip in the trade cycle brings with it a new trend, rather a change in the trend or perception.

This is also very easy to appreciate, when one equates it with the fact that the Large Scale Enterprises are the first ones to get hit in the wake of a recession. While they are better equipped to face the battle however, the situation is bound to pass on to the Small Enterprises sooner or later.

So one can say that be it the big industries or the smaller units, they all get hit at some point of time. What is then so unique about Small and Medium Enterprises.

As per the Micro Small and Medium Enterprises Act 2006

- A micro enterprise is one, where the investment in plant and machinery does not exceed twenty five lakh rupees;
- A small enterprise is one, where the investment in plant and machinery is more than twenty five lakh rupees, but does not exceed five crore rupees; and,
- A medium enterprise is one where the investment in plant and machinery is more than five crore rupees, but does not exceed ten crore rupees;

SMEs are a tried and tested formula not only in India but also all over the globe. There are no two ways about the fact that the importance attached to these are immense and every care is taken to allow these enterprises to blossom. Some of the main reasons for this are:

- In India almost 60 million people are employed in this sector, including the handloom and handicraft segments
- They are capable of producing quality goods and contribute around 35% to total exports
- Today Small and Medium Enterprises are the most touted routes to entrepreneurship.
- The share of Small and Medium Enterprises (SMEs) in India's Gross Domestic Product (GDP) is likely to go up to 22 per cent by 2012, according to an industry lobby report.
- Also the continued support and encouragement to this segment has resulted in special MSME segment financing, across all leading public sector banks.

However, SMEs remain far from the global spotlight. It is only the big ones that manage to be frequently spoken about with the big ticket Mergers and Acquisitions. Yet there is no denying that SME's happen to be an important part of the India Inc's global thrust as well. So too, SME's are increasingly acquiring companies, to gain advantages of quick scale-up, technology acquisition and the benefits of innovation.

A special mention also ought to be made about the Small Information Technology or Auto Companies that have made some acquisitions overseas.

Example

Bengaluru based Shobha Renaissance Information Technology, which was in the process of buying out the California-based Agilent Technologies. The buyout comprised a sizeable stake worth US$100 million, as a global supplier of Telecom Operations Support Systems.

In fact, the once largely spoken about 'the big fish eating up the small fish dimension has assumed a whole new angle.' The small fish seem to have multiplied in such sizeable numbers that today while the survival of the larger ones seems to be at stake, smaller ones continue to play it easy.

A constant question that emerges however is that, would this segment do as well if it is left to fend for itself? i.e. with no subsidies, no sop's no protection and no support. The answer to this question indicates the sustainability in this model of industrial activity.

The future options with respect to the Small Scale Units are

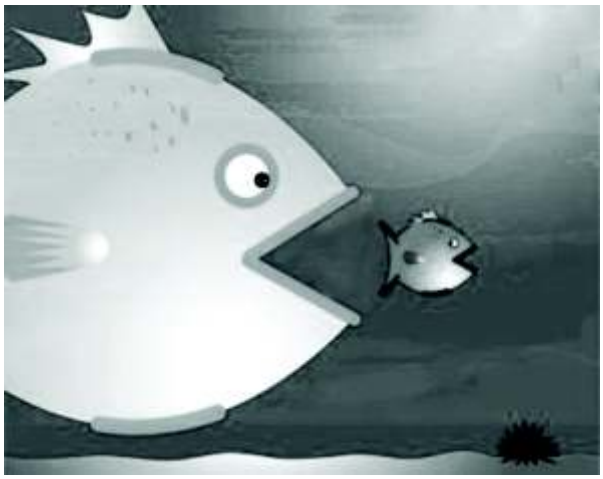
- Collaboration amongst all the Small and Medium Enterprises
- Integrating themselves with the Large Scale Units
- Retaining their individuality with due assistance from the Government
  While the sustainability exists, the issues that act as hindrances are as follows:
- Since 2006 there has been no small scale reservation for auto components, ancillaries or garage components.
  -So the much hyped protection/preference, partiality seems to be on a waning trend
- Most global auto majors have set up shop in the country and have been accompanied by their preferred suppliers. Also the global units have set up local offices for procurement of raw materials.

So this constitutes a looming threat to proposed integration plans of the small industries.

On the one hand the latest Automotive Mission Plan for 2006-2016 envisages India emerging as the global auto hub, which would be a destination of choice for the manufacture of autos and auto components; and on the other hand, the sliding blanket of protection seems to put sustainability under scanner and pose the question 'How will the SME's integrate themselves into the Global Supply Chain so as to realise their global vision of an extensive network?'

The journey of the SSI to MSME is truly a story that goes beyond the realms of survival. It speaks of the idea that 'Small is Sustainable' in the most logical manner, from being mere protected puppets, who earned sops for themselves year after year, to viable business opportunities. Small enterprises have indeed come a long way, providing a whole new dimension to the statement that the protected child is the weakest child. However what remains to be seen is if this model shall withstand the turbulent times of recession. The government still seems to be fond of this child but will it always be able to come to the rescue of Small and Medium Enterprises, considering that it will have to now choose between aiding the Big Ones or the Small Ones. Will the clusters survive or will they have to give way to a newly devised supply chain?

One can all but deny that MSMEs shall definitely be the flavour of the oncoming season. The question however remains about their survival; but here onwards shall begin yet another journey towards a sustainable existence. The MSMEs have faced the shift from 'extreme protection to intense competition' and are now ready to face the next shift in their path to sustainable growth.



Need to Create Sustainability in the Tobacco Industry in India

Considering the heavy dependence on tobacco, despite being aware of its ill effects, and its capacity to generate revenue and its actual standing as a flowering industry, this article goes on to, after a detailed analysis of the harmful effects of tobacco consumption, charting means by which its growth in real terms can at least be made sustainable in the context of the industry.

Pooja Gala - PGDM

As we have entered the 21st century, the interactions between the industry and its environment have become more and more complex. As the resources are scarce and costs are rising rapidly, organisations are struggling on a daily basis, to survive in this highly competitive world. So, companies need to formulate and develop their strategies, in such a way, that they can balance their growth with their responsibility towards the environment.

What the companies actually need to aim for is sustainable development. Sustainability would essentially mean surviving in the existing environment, using the resources responsibly, in a manner that their present needs are met, while yet keeping in mind the needs of future generations.

Tobacco is an agricultural product that is used in various forms. It is a very significant crop from an economic point of view; as it is draught tolerant, can be grown in a short duration and can be grown on soil, where one cannot economically grow other crops. It contains the highly addictive psychoactive ingredient, nicotine. Tobacco products are essentially made of leaf tobacco. There are various types of tobacco like aromatic fire-cured tobacco, bright leaf tobacco, burley tobacco, criollo tobacco, Dockham, Oriental Tobacco, Perique, Shade tobacco, etc.

Tobacco products are mainly used for smoking, sucking, chewing or snuffing, as tobacco can be processed into products like chewing tobacco, snuff, gutka, etc.

Tobacco is used by around 1.1 billion people. About 1/3rd of the adult population uses tobacco.

The Tobacco Industry in India

India is the third largest producer and fifth largest exporter of tobacco in the world. Annually, the total production of tobacco in India is around 700 million kilograms. Tobacco, as a crop, plays a role of national importance for the development of the country's economy. Though it occupies a very small amount of the total cultivated area, it provides employment, to many persons, as it is a labour intensive crop. More than 60 lakh people are engaged in the farming, curing, redrying, packaging, grading, manufacturing, distribution, export and retailing activities of the tobacco industry. The bidi industry too provides employment to lakhs of people. Most of these are in the rural areas. Thus the tobacco industry provides a source of livelihood to rural people, unskilled persons and women. It also earns revenues for the government in the form of excise. The revenue from the tobacco industry is roughly Rs. 350 billion per year.

Thus, as tobacco provides economic sustenance to a large number of people, and also earns huge revenues, it becomes important to sustain and develop the tobacco industry for the development of India.

Tobacco does not only have economic importance for our country, it is also of social and medical importance, as the hazards of tobacco exceed the benefits that are currently derived from tobacco. Tobacco is a risk factor in six of the eight leading causes of deaths in the world. It is estimated that its use kills up to half of all its users. Its use kills 5.4 million people a year - an average of one person, every six seconds, and accounts for one in 10 adult deaths worldwide.

Tobacco contains nicotine, which has addictive properties. Smoking tobacco is also said to cause cancer. There are over 19 known carcinogens in cigarettes and tobacco use is one of the main risk factors for a number of diseases like cancer, lung diseases and cardiovascular diseases. It is one of the biggest public health threats that our country and this world is facing. Moreover, it is estimated that tobacco use will result in up to one billion deaths in the 21st century. Following are the various diseases caused by tobacco:

Cancer: It is estimated that among people, who have ever smoked any kind of tobacco, almost one in ten will develop lung cancer. Tobacco is also associated with cancers of the larynx, esophagus and mouth and is believed to increase the risk of developing pancreatic cancer by 75%. Tobacco use is also linked to cancers of the bladder, stomach and kidney.

Cardiovascular diseases: Tobacco use increases the chance of heart disease, blood vessel disease, stroke, heart attacks, peripheral vascular disease and gangrene of the legs. There are ingredients in tobacco that lead to the narrowing of blood vessels, increasing the likelihood of a blockage, leading to a heart attack or a stroke. Tobacco consumers are 2 to 3 times more likely to develop heart disease and paralysis.

Risks during pregnancy: According to some studies, there are greater chances of miscarriage among pregnant women, who smoke. Also, studies suggest that pregnant smokers have greater chances of having babies, with low birth weight or babies with developmental problems.

Other problems related to tobacco

Secondhand smoke is a mixture of smoke, from the burning end of a cigarette, pipe or cigar and the smoke exhaled from the lungs of smokers. It lingers in the air, hours after cigarettes have been extinguished, and can cause a wide range of adverse health effects, including cancer, respiratory infections and asthma. It is involuntarily inhaled.

Therefore, smoking can also have adverse effects among people who do not smoke but are exposed to smoke in some way. Tobacco smoke in enclosed spaces is breathed in by everyone, exposing smokers and non-smokers alike to its harmful effects.

According to the International Labour Organisation, 200000 workers die every year, due to exposure to second-hand tobacco smoke at work. WHO estimates that around 700 million children, or almost half of the world's children, breathe air polluted by tobacco smoke.

Tobacco is also linked to several psychological defects. New smokers have been linked to experiencing rapid heartbeat and dizziness. Moreover, tobacco consumption causes or aggravates several diseases like diabetes, osteoporosis, hypothyroidism and hyperthyroidism.

Use of tobacco has very high economic costs. Due to sickness, the productivity of smokers may be reduced. Also, tobacco use may result in the early death of people, who otherwise would have been employed and productive. Children, who consume tobacco or are exposed to tobacco, are also susceptible to tobacco related illnesses, which could affect their productivity, in the future, thereby creating economic issues.

As the society is exposed to many ill effects of tobacco, governments and organisations have taken certain steps to reduce or regulate tobacco consumption. These steps include smoking bans, anti tobacco and tobacco related awareness campaigns. India, for one, has recently banned smoking in public places.

Tobacco consumption has ill effects. But despite awareness in this regard and many measures in place to deal with the situation, the reality of tobacco addiction cannot be wished away. So too, if the consumption reduces greatly, it will also have ill effects on the tobacco industry. It may reduce employment and also the revenues generated from it. As both these factors – revenue and employment are of significance in India, a reduction in tobacco consumption will have negative impact on the Indian population that in some way depends on the tobacco industry for their source of livelihood.

Therefore, it is now important to find ways and means to develop the tobacco industry at the same time reducing its ill effects.

All over the world researchers and bioengineering entrepreneurs have already begun to use tobacco plants as hosts for bioengineering processes that could be used to produce new antibiotics, vaccines, cancer treatments, other medicines, blood substitutes, and even biodegradable plastics and industrial enzymes and solvents. So that an acre of tobacco might not be an acre of potential cigarettes. It might be an acre of cervical cancer vaccine. In the not-so-distant future, the plant linked to lung cancer — the leading cancer killer nationally — could be used to help prevent cervical cancer — the second-most-deadly cancer in women worldwide.

The first step taken by the researchers is the prevention of cervical cancer. The vaccine that has been produced till now still requires the final FDA approval and speculations are that it may be very expensive. So the second step taken by them has been to make sure that the vaccine is accessible to all. Thus they are trying to bring down the cost of this vaccine, as more is known about the tobacco plant genetically than any other plant, and it's being used in a number of creative ways. However, while the original and subsequent vaccines will prevent cervical cancer, they only will be effective if a woman is not infected with HPV.

Thus the next step is clear: to create a therapeutic treatment to cure women, who already have cervical cancer.

Other researchers are exploring the possibility of using genetically engineered tobacco plants that could clean up contaminated areas around weapons' factories and munitions dumps, just by being grown in the contaminated dirt. Tobacco plants are ideal for these biotechnology procedures because tobacco is leafy, readily accepts the procedures, grows quickly, is relatively easy to harvest and yields millions of new seeds per plant.

Because of the large numbers of tobacco plants required to produce the desired amounts of the biotechnology products, full scale production could require tens, if not hundreds, of thousands of acres of tobacco. So, some U.S. tobacco growers have been exploring the

possibility of growing other crops instead of tobacco, but producing tobacco for alternative uses, having nothing to do with smoking or other tobacco consumption, and might ultimately be even more promising.

In India The Central Tobacco Research Institute, along with the Tobacco Board and the ITC-ILTD Research and Development Divisions, is working on alternative uses of tobacco, according to Dr V. Krishnamurthy, Director of the Institute.

It is also found that the three main alternative products, for which the farmer has to be supported all the way, with the production of tobacco plants, are pure nicotine of 99.9 per cent for use (as nicotinamide) in the pharma sector; solanesol, which can be used for making anti-cancer drugs and tobacco seed oil, through solvent extraction, as a de-odourised product, for making soaps and detergents.

Tobacco seed, which contains 36 per cent oil, is also a good source of edible protein, he added. Suggesting that value addition in tobacco leaf can be achieved through close cloning and higher population (for extracting of chemicals), scientists have said that as a first step, the cost of cultivation for the farmer has to come down, if profitability from the cash crop has to be sustained.

The world trade in tobacco leaf is around 2,000 mkg, dominated by countries such as Brazil, the US and China; and India's share of this is 7 per cent at 140 mkg.

The CTRI director said that while the yield in the black soils of Andhra Pradesh was around 2,000 kg per hectare, at the farmers' field level, it could be around 3,400 per hectare, especially with the new high-yielding `Siri' seed variety, developed by CTRI scientists.

Besides integrated pest management, the senior scientist also called for a balanced use of fertiliser, with a focus on organic green manure, which can enrich the soil. The key, according to him, was "harvesting the ripe leaf at the right time".

These are the various steps that have been taken in India to use the tobacco plant in an alternative manner. And, if these steps are implemented to sustain and develop the tobacco industry, it will not only reduce the negative impact on society but also benefit the many people employed in tobacco related industries.

"Let's one-up our critics. Let's add anti-oxidants to our cigarettes."

Peat Moss: Laying the Path to New Age Farming

By providing an analysis about their availability and use, this article talks about turning to alternative sources like Peat Moss and Coir, to sustain horticulture, rather than relying on traditional means, which place a much greater stress on available resources.

Rakesh Kumar Singh - MMS

Peat moss is an environmentally friendly organic amendment, essential for many horticultural purposes.

What is Peat Moss?

Peat is a sedentarily accumulated material, consisting of at least 30% (dry mass) of dead organic material. A Peat Land is an area, with or without vegetation, with a naturally accumulated peat layer, at the surface.

How is Peat Moss formed?

Peat accumulation generally takes place as a result of the decomposition of plant material. An important factor for peat accumulation is the chemical and structural composition of the organic material, determining its 'ability to decay'. A large number of plant species that occur in mires, such as sedges, grasses, Sphagnum, and other mosses and woody plants can contribute to peat formation. Water is the most important external factor limiting decay. Because of its large heat capacity water induces lower than ambient temperatures. The limited diffusion rate of gases in water leads to a low availability of oxygen. Both factors hamper the activities of decomposing and decomposition facilitating organisms, leading to a decreased rate of decay of dead organic material and, consequently, to the accumulation of peat.

Peat from the tropical mires of the Upper Carboniferous (320 - 290 million years ago) and the sub-tropical mires of the Tertiary (65 - 3 million years ago) is currently found as coal and lignite. The great majority of present-day peat lands originated in the last 15,000 years. Since de-glaciation, mires have developed into unique organic landforms, with hydrological, biogeochemical, and biological links, to upland and aquatic ecosystems. It is estimated that 4 million kilometres on Earth, some 3% of the land area, is covered with peat lands. The largest known concentrations are found in Canada and Alaska. Mires store about one third of the soil carbon in the world and contain some 10% of the global, liquid, fresh water resources.

Types of Peat

Historically, peat lands were distinguished on the basis of where they were situated and the after-use of the remaining land, leading to the identification of:

- Bogs: Raised above the surrounding landscape. After peat extraction, which was normally carried out under dry conditions following drainage, mineral subsoil, suitable for agriculture, often remained.
- Fens: Situated in depressions. After peat extraction, which was carried out by dredging, open water remained.

Uses of Peat

Peat lands are specialised types of wetlands, whose value to human civilisation has been recognised for centuries, which are still in use. Its uses are as follows:

a) **Energy Generation:** Perhaps the most continued use of peat lands is as a fuel. Chunks of peat are cut from bogs, then dried and used for cooking and heating purposes. Peat is more beneficial a source of energy, where there is absence of other fuel and where energy supply entails transportation of conventional fuels, over long distances. Finland, Ireland, the Russian Federation, Latvia, Lithuania, Metal. are some of the countries, where peat is used as an alternative source of energy.

b) **As Humus and Organic Fertiliser in Agriculture:** Organo-mineral fertilisers, produced with peat, are in their organic matter, containing biologically active substances. Organic substances enrich the soil with trace elements, improve the physical properties of the soil, its pH level, and its productivity.

c) **Raw Material for Chemistry:** Peat organic matter is a valuable raw material for chemistry, to obtain a specific type of organic compound. Wet Peat wax is used for precision casting, in machine building as well as protective and preservative material, for engineering. Uses of peat in chemical processing include:

1. Water soluble humic preparations have been found to be effective, in the purification of metallic surfaces, from radioactive substances. They were used successfully in the Chernobyl zone in 1986–87, for the purification of technological equipment. It is considered that they may have the potential to purify the technological equipment, in active nuclear power stations.
2. Humic preparations, which are soluble in acids, have been used for the extraction of valuable metals from raw materials, especially in

underground extraction.

3. Activated carbon from peat is effective, in a number of applications, including the purification of soil and water, from organic contaminants, for example from pesticides.
4. Peat has been found to be an inhibitor of corrosion. Special preparations for the transformation of rust into metal have been widely used in Belarus, for example, to remove rust from automobiles.

d) **Filter and Absorbent Material:** Peat filters out suspended solids and microbiological contaminants. Secondly, chemical components are adsorbed or retained, within peat. Finally biological inactivation occurs as a result of the proliferation of a microbial population indigenous to peat.

e) **Drinking water:** The role of peat lands, for the provision of drinking water, is important both in catchment areas, which are largely covered by peat lands and in drier regions, where peat lands indicate a rare but steady availability of water. Significant areas of the British uplands are secured by various water authorities, who supply water to distant urban centres, for example, Welsh water to Liverpool and Birmingham, and Lake District water to Manchester. Haworth Moor of the 'Wuthering Heights' fame, for example, was owned by North West Water. In case of Yorkshire Water, some 45% of the water, for public supply, is obtained from reservoirs draining peat land areas. The water company owns a large area of the catchment and manages it for water quality improvement, by preventing pollution, limiting erosion, reinstalling high water tables and restoring moorland species, such as Sphagnum. Often this use is associated with the construction of water reservoirs.

Paradoxically, the destruction of peat lands is not yet recognised as a significant part of global climate change. Educational efforts regarding peat land conservation have gone in vain, as the industries assert that there are no substitutes for peat moss in horticultural applications. Since it is an exhaustible natural resource that accumulates at a glacially slow rate of 0.5 - 1.0 mm per year, or about $1/4^{th}$ of an inch, commercial use for horticulture application should be curtailed. An alternative product that can be used instead of peat is Coir Pith.

What is Coir Pith or Coco-Peat?

Coir is the outside layer of husk that surrounds the shell of the coconut. It consists mainly of fibres, which have traditionally been used to manufacture ropes, carpets, doormats, upholstery stuffing, brushes etc. Between these fibres is a corky substance called coir pith or coir dust, which has recently been widely recognised, as the superior growing medium, in which to cultivate tomatoes, roses and many other crops. The horticulture industry often calls this substrate coco-peat (or cocopeat) or coir-peat. Sometimes, it is known by similar sounding brand names.

The Production Process of Coir Pith

The entire coconut husk is soaked with water and the fibres removed at the fibre factory, for the production of brushes, rope, carpets, matting, etc. The coir pith is unused and becomes a by-product of the fibre factory process. Depending upon many factors, including the local climate, the soaking method and the particular processes, used in the coir fibre factory, the coir pith may be suitable for horticultural use.

If it is of suitable quality, it is moved from the coir fibre factory and the coir pith then undergoes various cleansing processes, such as sieving, to remove large fibres and unwanted articles, including sand and grit. Sieve size and thus particle size will be determined, by the customers' requirements. The coir pith is washed at this point, to reduce the unwanted salts, before being dried. The coir will then be compressed into a less bulky form, suitable for shipment. This may be in the form of grow-bags, small 650 grams briquettes or large blocks. Compression will vary according to customers' requirements, but will usually be between 4:1 and 8:1. Throughout this process, samples will be taken and tested by in-house laboratories, to ensure that each batch complies with the required specifications.

Why Coir Pith?

The global agro-industry has been facing a serious crisis, due to the steady build up of biological resistance, resulting from an over application of chemical fertilisers and pesticides. It is here that organic amendments become useful. While synthetic fertilisers are generally more available, less expensive and show quicker results, they have played havoc with our ecosystem.

Soil quality plays a key role in the making of Home Gardens, Terrace Gardens, Lawns, Nurseries, as well as in Horticulture and Floriculture. Factors like salinity and less water holding capacity makes soil unsuitable for cultivation. Coir pith is an ideal soil re-conditioner, soil structure improver and soil substrate, with excellent water holding capacity.

Special Features of Coir Pith Compost

- Contains the macronutrients - Nitrogen, Phosphorus and Potassium
- Contains the micronutrients - Calcium, Copper and Magnesium
- Contains natural enzymes
- Excellent water holding capacity
- Improves aeration
- Enhances strong heap root system

- Stimulates production of phytohormones
- Ideal pH level — 5.6 to 6.4
- Eco-Friendly

Coir Pith not only revitalises plants, it induces uniformity in growth, by enhancing water retention and microbial activity. Coir Pith contains a high quality of nutrients that keep the soil healthy, in a natural way. It acts as a top dressing that helps maintain moisture and reconditions the soil. It enhances the nutrient carrying capacity of plants. Sustainable agriculture practices, such as these, create a perfect loop from the table to the earth. Pure and natural, this organic biodegradable matter is an economical and natural alternative, for peat moss. This natural spongy coir industry by-product is a perfect organic growing medium for fruits, such as strawberry, vegetables such as pepper, cucumber, tomato, and flowers, such as gerbera, gladiola, lily, anthurium and rose. If the soil is fertile and contains components like micro and macronutrients, many gardening problems can be nullified. However, much attention needs to be paid, to keep it in good condition.
India annually produces about 280,000 metric tonnes of coir fibre. By weight, coir fibres account for about one-third of the coconut pulp and the other two-thirds is the coir pith. Coir Pith is also known as Coco Peat or Coir Dust. This by-product of the coir industry can be converted into organic manure, using biotechnology, making it ideal for gardening and horticulture.

In addition to that a wide variety of Coir Pith based products are also manufactured such as Coir Pith Grow Bag, Coir Pith Bale, Coir Pith Briquettes, Coir Pith Discs and Coco Chips, which are ideal for gardening and horticultural needs, and can be used as a commercially renewable product, replacing Peat Moss.

Why use Coir?

1) Excellent Air Porosity: Coir maintains excellent air porosity, even when saturated, and gives better crops with faster developing roots and more flowers and fruit per plant, when used correctly.
2) Excellent Water Retention: Coir has better water retention qualities than peat and other growing media. This has obvious advantages in dry climates or at times when plants cannot be watered frequently, such as during transit to the market.
3) Quickly Reabsorbs Water From Dry State: Coir Peat absorbs moisture immediately, even from a dry state, unlike Sphagnum Peat, which tends to shrink, when dry, and form a water-repellent crust, which causes water to run off, from the top surface and thus create water loss between the peat and the inside edge of the flower pot. Thus plants growing in coir tend to recover better and more quickly from dry conditions.
4) Irrigation Efficiency: The ease of re-wetting and the quick drainage characteristics of coir mean that coir needs to be irrigated less frequently and for shorter periods. This leads to reduced leaching losses of nutrients and lower water use.
5) Faster Germination Times and Quicker Seedling Rotations: The inherent qualities of coir and optimum water/air availability are ideal for quick rooting and propagation. In many cases this leads to more seedling rotations per year, a higher percentage of seedling and propagation take-up and more efficient use of greenhouse equipment.
6) Environment: In its unprocessed state, coir dust is a waste product, in its country of origin. Its use, therefore, does not involve the destruction of peat bogs and natural wetland wildlife habitat. It is a renewable resource, with no hazardous disposal problems (unlike some alternatives such as rock wool). Having carefully researched the question, Horticultural Coir Ltd. is quite satisfied that the environmental input, including the fossil fuel consumption, associated with the transport of the coir from Asia, is significantly less than the environmental cost involved in the production and transport of peat moss and rock wool. Coir is transported in a compressed, compact state on scheduled vessels.
7) Degrades Slower: The lignin content of around 45% ensures that an excellent water/air ratio is maintained over a longer period of time, than in the case of many other substrates. Thus, for example, good performance is maintained over the commercial life of a rose plant, which may be more than 5 years.
8) Free from Soil Diseases: Because Coir originates above the ground, it does not contain any soil diseases. In fact several studies have indicated that coir substrate brings increased resistance to pythium and other root diseases.

Some of the Coir Based Products are:

Compressed Blocks

- 5 Kg compressed blocks 32 x 32 x 20 cm (approx), which reconstitute with water to produce 60 litres of growing media.
- Approx 20 cm x 10 cm x 5 cm reconstitutes with water to produce 8-9 litres.
- Lightly compressed blocks shake loose immediately without water to produce 220 litres

Grow Bags

These products are used as an effective soil bed under green house conditions, in developed countries. Though, the industry is relatively nascent, our country has managed to establish its position, in the global arena. The industry is confident of achieving a business volume of Rs. 100 crore by 2010.

It is time that we turn to such alternative means to continue evolving by harnessing the environment, rather than damaging it.

Promoting Non Cricketing Sports in India

In the context of the fact that despite being a large and young country, India is unable to boast about performance in any sport other than cricket, the article chalks out a plan to improve performance as well as generate interest in other sports, making active participation and performance in other sports, a viable business proposition.

Salman Ali Sayed - MMS

For any country to become a super-power globally, concentration on sports is as important, as the other sectors. India has, for long, thrived on its participation as well as accolades in cricket, but has not been able to strike a similar performance in other sports. Its performance has been lacklustre, when it comes to 'non cricketing' sports.

India has always performed below-par in sports events of international magnitude, such as the Olympics. India first participated in the Olympics in Paris in 1900. Since that time, apart from hockey and a few fine performances in athletics, India's record in the Olympics paints a dismal picture, for a country with a population of over a billion people. In Olympics 2008, athletes were sent to compete in archery, athletics, badminton, boxing, judo, shooting, swimming, and wrestling. In most Olympic sports, such as soccer and basketball, India failed to even qualify. Therefore, it is high time that India concentrates on sports other than cricket.

As an approach towards resolving this problem, a possible solution could be to launch a media company by the name – 'Non Cricketing Sports in India (NCSI)', exclusively telecasting sports other than cricket, coupled with a systematic effort in coaching, training and audience-building. The company could target disciplines such as badminton, aquatics, athletics, table-tennis and shooting. These disciplines would have training academies spread all over India, in smaller towns.

An idea similar to this was first initiated and executed in the 1970s, by Kerry Packer, for the Australian television network - Nine Network. With Nine's ratings languishing, Packer sought to turn the network around, via an aggressive strategy that included more sports programming. First, he secured the rights to the Australian Open Golf Tournament. He spent millions of dollars, revamping the Australian Golf Club in Sydney, as a permanent home to the tournament. Packer was a fan of cricket, which was undergoing resurgence in popularity, during the mid-1970s. In 1976, Packer sought the rights to televise Australia's home Test Matches, the contract for which was about to expire. But the bid went against him. Determined to get some cricket on Channel Nine, Packer came up with a full series, between the best Australian players and a team from the rest of the world. The Packer Series ran successfully for the first two seasons, but started to incur huge losses thereafter.

Closer home, in India, Nimbus Sports Broadcast, a global leading distributor/owner of cricket rights and producer of cricket coverage, appointed STAR India, to exclusively distribute its bouquet of NEO Sports channels. NEO Sports annually broadcasts, on an average, three international cricket series featuring India, six domestic tournaments and several other international cricket matches. Beginning 2006, NEO Sports shifted gears to introduce 'NEO Sports Plus', telecasting non cricketing sports, by acquiring golf, tennis and football content. It also acquired all the major badminton rights, along with several football tournaments and some superbike and car action. But this non cricket version failed to create the kind of frenzy, that cricket did.

In a similar vein, Non Cricketing Sports in India (NCSI) would be involved in the telecasting of sports played in India, other than cricket, thereby aiming to build a large audience for these sports. It would also be involved in a systematic effort to coach the youth and train them, so that they would be able to compete at the national and international levels. The NCSI will work to create the market for these sports as well as develop these markets. Although cricket has been hugely followed and marketed by several independent bodies, the market for other sports, such as badminton, aquatics, athletics, table-tennis, shooting, etc., has not been addressed. The training academy would be equipped with all the modern amenities that would help in training the athletes. Coaches would be assigned to each training academy. Kids will be enrolled from age 10 onwards, and there would be a tie-up with local schools. Each academy would be sponsored by leading brands.

Situation Analysis

NCSI would offer several different sports to choose from, in order to cater to the needs of the market for non cricketing sports. It would bring in a new genre of programming, a combination of entertainment and sports. Rival sports channels may have been brandishing their non-cricket acquisitions, be it football or hockey, but NCSI, through its formula of reality television, will add another facet to this medium.

Market Summary

A survey could be carried out, throughout the country, in order to identify the type of sports, in which the different segments are interested. The target market would be different and would have to be noted by the NCSI.

Market Demographics

1. Geographic: The information obtained by the geographical survey would be leveraged, to better understand the youth's mindset, as well as their needs. The total targeted population would be around 400 million
2. Demographics: The ages 10-46 would be concentrated, upon with 50% clustering around the ages 23-35. The youngsters, between ages 10-25, would be trained in sports, such as badminton, aquatics, table-tennis and other such sports, while those above this age would be trained in archery, shooting, wrestling, etc.
3. Behaviour factors: The youngsters would enjoy the fitness activities, not as a means for a healthy life, but as an intrinsically enjoyable activity. Those with active lifestyles in rural areas would enjoy some sort of recreation once or twice a week.

Market Needs

NCSI would be providing the youth of India a wide range of sports to choose from, as per their interests. Currently, such programmes are carried out only in some parts of India, typically the metros. Therefore, this would be the first all round effort to spread non cricketing sports, through the whole country, particularly in the rural areas.

Where the television audience is concerned, they are not many channels telecasting such sports and thus this market has not been explored entirely. 'NEO Sports', which currently telecasts non cricketing sports, does so with minimal promotion activity. NCSI would be huge on promotion and thus would draw a larger television audience, both because of its sports programmes and the reality TV formula, where the family stories, personal struggles, failures etc., of the sportspersons, would form an active part of the programme.

Each training academy would be equipped with modern amenities that would help train the athletes. The trainers for a particular sport would include senior players from that particular category and they would be motivated towards contributing, in order to bring up the level of that sport in India.

Market Growth

The data provided by APMES (the Asia Pacific Media Economics), suggests that India's media communications industry was amongst the most positive in 2005, growing by 12 percent, propelled by increased strength in economic fundamentals, such as a positive outlook amongst domestic and global investors and continued growth in the economic power of Indian consumers. These positives are expected to continue.

Continued audience fragmentation and the onslaught of technology, coupled with the battle for attention with new formats, enhanced local and internationally sourced content will result in higher advertising costs for NCSI. Price inflation is a reality both in mainstream and new media, capitalising on the increased demand for advertising space from advertisers, hoping to tap the potential spending power of the market's one billion+ population.

The channel will be initially available as a free to air channel, to the various DTH services operating in India, such as Tata Sky, Dish TV, Big TV, etc.

SWOT Analysis

Strength – A creative and novel approach towards non cricketing sports; use of a highly efficient, flexible business model
Weaknesses - Reliance on outside capital, necessary to grow the business; difficulty in developing awareness about the channel as a start-up company.
Opportunities - Participation in a growing industry; ability to provide not just entertainment through television, but also coaching to the participants.
Threats - Potential competition from already established channels such as Star, ESPN, NEO sports, Ten Sports, etc.

Critical Issues: The critical issues for NCSI would be to establish itself as a premier sports channel, pursuing controlled growth that makes sure payroll expenses never exceed the revenue base and constantly monitoring customer satisfaction, ensuring that the growth strategy never compromises service and satisfaction levels.
The critical issues for NCSI would be to establish itself as a premier sports channel, pursuing controlled growth that makes sure payroll expenses never exceed the revenue base and constantly monitoring customer satisfaction, ensuring that the growth strategy never compromises service and satisfaction levels.

The marketing objective is to maintain strong and positive growth and achieve a steady increase in market penetration.

Financial Aspects

- The funds for the media company will be made available through a franchise system, with franchisers, from the health and fitness category, such as Hindustan Unilever, SNAP fitness, etc. The nationwide expansion of these franchisers would also be taken into consideration. The incentive for these franchisers would come with the subsequent penetration of the channel to cover all of India. Also they would be able to use NCSI to promote their business and build their brand.
- The financial objective is to increase profit margin every 3 months, through efficiency and economies-of-scale gains, maintaining a significant research and development budget.

- Target markets will be the young and the middle aged population of India, which accounts for more than 650 million of the total population. With an ever increasing number of youngsters trying to match their steps, with the likes of Sania Mirza, Anju Bobby George, et al, the niche has been created. NCSI would aim to utilise this market, by creating curiosity, through promotion and targeting the fitness and recreational groups.

Positioning

NCSI would position itself as a premier sports and entertainment channel, along with providing training and coaching for the sports it telecasts.

Marketing mix

The distribution and advertising of the channel rights/space would be greater, particularly in the initial stages. This would be done by tying up with top companies, such as Airtel, Pepsi et al, which would sponsor the different sports in different areas.

Another thing, which the NCSI would plan to achieve, is to bring into the limelight several sportspersons, who have achieved laurels in their respective fields but are unheard of, unlike their cricketing counterparts.

Players, in the disciplines to which NCSI caters, would perform a lot better, given the training environment. Players would first compete in state and national championships, graduating slowly to the international stage. Youngsters would be encouraged to participate actively in non cricketing sports. Meanwhile, the television channel would bring in the audience, to view sports, other than cricket. This would be a step towards India becoming a global sports power.

Recycle: The New Buzzword

Dwelling on the need to recycle, as a means of saving energy, resources, money and most importantly the environment, the article goes on to chart a course through which plastic and glass can be recycled, citing examples and urging people to turn to recycling, to reduce landfills.

Prem Sawant - PGDM

When one thinks of sustaining the development of our country, one cannot remain oblivious to the fact that the resources used for the development will get exhausted someday. Also, the damage that is caused to the environment by indiscriminate use of substances, like plastic, will be irreversible.

One therefore needs to look at the many areas, in which one can make a big difference by the prudent disposal of industrial waste, household waste and recycling materials like glass, plastic etc. Some studies show that only 10% of the plastic bottles created are recycled, leaving that extra 90% to take up space in landfills and kill ocean life. In the year 2000, India was placed 10th in the world for its use of plastic and other related products. But owing to its growth from 2000-2008, it's expected that India would be the 3rd largest consumer of plastics by 2010. Obviously with such a leap in this industry, the total contribution of the plastic industry to the Indian economy will also jump to USD 44Bn by 2010. There are over 22,000 plastic processing units and over 150 plastic processing machinery manufactures in India. The machinery units supply over 2,500 machines per annum. It was estimated that India generates 5,600 tonnes of plastic waste daily. The two main sources of scrap plastic in India are classified into two categories, namely consumer waste and industrial waste. While consumer waste includes household waste, hospital waste and street waste, as the name suggests, industrial waste includes all the waste plastic from industries. Plastic waste demands the highest cost in the recycled market i.e. 12-15 INR per kg. Studies in the U.S. show that even as plastic reprocessing/ recycling rates have increased, so has the amount of virgin plastic risen in production. Hence, there is a need to emphasise on reduction at source, so as to tackle the problem of waste disposal. Studies show that the energy saved by recycling a single plastic bottle—as compared to producing a new one from scratch—is enough to power a single 60-watt bulb for six hours. Plastic is also used in laying roads. K Ahmed Khan came up with an idea of mixing recycled plastic with asphalt to lay roadways. Khan has been running his company, K K Polyflex, for 20 years. About 8 years ago, he realised that the anti-plastics lobby had a point and that the industry was ignoring the problem of plastic waste. He rolled up his sleeves to create an opportunity out of the situation. The plastic appears to have strengthened roads by enhancing asphalt's bonding ability, and has made the roads long lasting, by rendering them impervious to water.

Daniel Burd, a 16 year old, won a $10,000 prize, a $20,000 scholarship and recognition, as he found a practical way to help the environment in a the Canada-Wide Science Fair, in Ottawa. He discovered plastic eating bacteria.

"Almost every week I have to do chores and when I open the closet door, I have this avalanche of plastic bags falling on top of me", he said. "One day, I got tired of it and I wanted to know what other people are doing with these plastic bags."
The answer: not much. So he decided to do something himself.

He knew that plastic does eventually degrade and figured that microorganisms must be behind it. His goal was to isolate the microorganisms that can break down plastic — not an easy task, because they don't exist in high numbers in nature.

First, he ground plastic bags into a powder. Next, he used ordinary household chemicals, yeast and tap water, to create a solution that would encourage microbe growth. To that, he added plastic powder and dirt. Then the solution was put in a shaker at 30 degrees. After three months of upping the concentration of plastic-eating microbes, Burd filtered out the remaining plastic powder and put his bacterial culture into three flasks, with strips of plastic cut from grocery bags. As a control, he also added plastic to flasks containing boiled and therefore dead bacterial culture.

Six weeks later, he weighed the strips of plastic. The control strips were the same. But the ones that had been in the live bacterial culture weighed an average of 17 per cent less.

That wasn't good enough for Burd. To identify the bacteria in his culture, he let them grow on agar plates and found that he had four types of microbes. He tested those on more plastic strips and found that only the second was capable of significant plastic degradation.

Usually three easy steps are used in a Plastic Recycle Plant:

1. Melting: The dried flakes are fed into an extruder, where heat and pressure melt the plastic. Different types of plastics melt at different temperatures.
2. Filtering: The molten plastic is forced through a fine screen, to remove any contaminants that might have slipped through the washing

process. The molten plastic is then formed into strands.
3. Pelletizing: The strands are cooled in water, then chopped into uniform pellets. Manufacturing companies buy the plastic pellets from recyclers to make new products.

Recycling Plastic

The confusion over what one can and cannot recycle continues to confound consumers. Plastics are especially troublesome, as different types of plastic require different processing to be reformulated and re-used as raw material. Some municipalities accept all types of plastic for recycling, while others only accept jugs, containers and bottles, with certain numbers stamped on their bottoms.

Recycling by the Numbers

The symbol code one is familiar with — a single digit ranging from 1 to 7 and surrounded by a triangle of arrows — was designed by The Society of the Plastics Industry (SPI) in 1988, to allow consumers and recyclers to differentiate between types of plastics, while providing a uniform coding system for manufacturers. The numbers on the bottoms of plastic jugs represent different formulae of plastic. When one melts aluminium to recycle it into cans, all of the aluminium melts proportionately and can be mixed up in one big vat. However, when one melts plastic, unless it shares the same number, and the same formula, it just won't stick together. So plastic needs to be sorted, either in homes (which is hard), or at recycling facilities (which is also hard).

The numbers, which the 39 U.S. states have now made mandatory, are moulded or imprinted on all eight-ounce to five-gallon containers that can accept the half-inch minimum-size symbol, to identify the type of plastic. According to the American Plastics Council, an industry trade group, the symbols also help recyclers, to do their jobs more effectively.

Easy Plastics to Recycle

The easiest and most common plastics that can be recycled are made of Polyethylene Terephthalate (PETE) and are assigned the number 1. Examples include soda and water bottles, medicine containers and many other common consumer product containers. Once it has been processed by a recycling facility, PETE can become fibrefill for winter coats, sleeping bags and life jackets. It can also be used to make bean bags, rope, car bumpers, tennis ball felt, combs, cassette tapes, sails for boats, furniture and of course, other plastic bottles.

Number 2 is reserved for high-density polyethylene plastics. These include heavy containers that hold laundry detergents and bleaches as well as milk, shampoo and motor oil. Plastic labelled with the number 2 is often recycled into toys, piping, plastic lumber and rope. Like plastic designated number 1, it is widely accepted at recycling centres.

Plastics Less Commonly Recycled

Polyvinyl Chloride, commonly used in plastic pipes, shower curtains, medical tubing, vinyl dashboards, and even some baby bottle nipples, gets number 3. Like number 4 (wrapping films, grocery and sandwich bags and other containers made of low-density polyethylene) and 5 (polypropylene containers used in Tupperware, among other products), few municipal recycling centres will accept it, due to its very low rate of recyclability.

Another Useful Plastic to Recycle

Number 6 goes on Polystyrene (Styrofoam) items such as coffee cups, disposable cutlery, meat trays, packing "peanuts" and insulation. It is widely accepted because it can be reprocessed into many items, including cassette tapes and rigid foam insulation.

Hardest Plastics to Recycle

Last, but far from least, are items crafted from various combinations of the aforementioned plastics or from unique plastic formulations, not commonly used. Usually imprinted with a number 7 or nothing at all, these plastics are the most difficult to recycle and, as such, are seldom collected or recycled. More ambitious consumers can feel free to return such items to the product manufacturers, to avoid contributing it to the local waste stream, and instead put the burden on the makers, to recycle or dispose of the items properly.

Recycling Glass

Glass recycling is the process of turning waste glass into usable products. Depending on the end use, this commonly includes separating glass into different colours. Once the glass is picked up by a recycling truck, it is separated by colours. Amber and green glass is made by adding a colouring agent, during the original glass-manufacturing process; this colour cannot be removed. Therefore, brown bottles can only make other brown bottles.

Compared to plastics, glass is a far more environmentally friendly packing container. Chemical contamination of food in a glass container is not likely. A glass container can be used up to 25 - 30 times, as it can be easily washed and refilled. Glass can be recycled because of its short molecular structure, whereas plastic becomes brittle with recycling Switzerland leads the world in recycling glass, with an estimated 91% of all glass products sold in the country, being recycled after use. It is closely followed by Austria and the Netherlands, both of which recycle over 80% of all disposable glass.

Glass normally comes in a number of colours.

Glass makes up a large component of household and industrial waste, due to its weight and density. The glass component in municipal

waste is usually made up of bottles, broken glassware, light bulbs and other items. Glass recycling uses less energy than manufacturing glass from sand, lime and soda. Every tonne of waste glass recycled into new items saves 315 kg of carbon dioxide.

By using recycled glass in making new glass containers, the glass container manufacturers reduce energy input to its furnaces. In fact, for every 10 percent increase in recycled glass used in manufacturing, 2.5 percent of the energy required is reduced.

Decreases Greenhouse Gas Emissions
For every six tonnes of recycled glass used in manufacturing new glass containers, one tonne of carbon dioxide, a greenhouse gas, is reduced.

Saves Raw Materials
For every tonne of glass recycled, more than a tonne of raw materials is saved, including 1,300 pounds of sand, 410 pounds of soda ash and 380 pounds of limestone.

Lessens Landfill Loads
Recycling glass lessens the load on landfills

The Recycling Process

Collection
Glass is collected and taken to a processor.

Sorted: Glass is sorted by colour, cleaned and broken.
Crushed: Glass is crushed into tiny pieces called cullet.
Mixed: Cullet is mixed with silica sand, soda ash and limestone.
Melted: The mixture is melted to a molten state in a furnace.
Moulded: The molten glass is poured into moulds.
Cooled: The glass is cooled slowly to increase its strength.
Packed and Shipped: New glass containers are filled and returned to the shelf for resale.

Reuse of glass containers is preferable to recycling according to the waste hierarchy (The waste hierarchy refers to the 3 Rs: reduce, reuse and recycle, which classify waste management strategies according to their desirability. The 3 R's are meant to be a hierarchy, in order of importance). In developing nations like India and Brazil, the cost of new bottles often forces manufacturers to collect and refill old glass bottles, for selling carbonated and other drinks.

Most collection points have separate bins for clear, green and amber/brown glass. Glass re-processors require separation by colour, as the different colours of glass are usually chemically incompatible. Jars, bottles and other containers are some of the everyday objects made from glass that can be recycled. Not all glass is recyclable. Glass found in light bulbs, cookware and window panes are made by incorporating ceramics with glass. This type of glass is not recyclable because doing so would introduce impurities into the recycling process. Heat-resistant glass like Pyrex or Borosilicate glass should not be disposed of in glass containers, as even a single piece of such material will alter the viscosity of the fluid, in the furnace, when it re-melts. The cost savings of recycling is in the use of energy. When glass is made from scratch, high temperatures are needed to melt and combine all the ingredients. Since cullet melts at a lower temperature, the more of it one adds to a batch of raw materials, the less energy one needs to melt it.

Recycling glass is not only cost-efficient; it benefits the environment in several ways. Glass produced from recycled glass instead of raw materials reduces, related air pollution by 20% and water pollution by 50%. Throwaway bottles consume three times, as much energy as reusable, returnable containers.

Given the overcrowding of our landfills and the impact they have on the environment, fewer and fewer landfills are being built. On the ones that exist, very tight regulations are imposed. Communities across the country are reacting to this, by developing and encouraging the use of recycling programmes. The goal is to preserve our natural resources and save precious space in our landfills.

Recycling products will help in conserving energy, time, money and most importantly resources. One needs to understand that it's not just important for our growth, but even for our survival. One normally wait for someone to take the lead, so that one can follow suit, but hopefully the awareness will make people shrug off their inertia and do whatever is in their capacity, without waiting for others to take the initiative. It would be great if everyone acts in a responsible manner rather than being regulated by the judiciary, the latter being the usual scenario in India.

"People try to recycle, but even well-intentioned efforts are not followed through."
- Ted Smith

Rural Empowerment for Sustained Growth

Taking a close look at various initiatives and the measures that are in place to support the income drawn from the agricultural sector, the article goes on to suggest new ways and rooting and expansion of those already in place, to strengthen the rural society and empower that section which forms the base of our agricultural economy.

Rommel Fernandes - eMBA (Insurance)

What is Sustainable Development?

Sustainable development implies using renewable natural resources in a manner, which does not eliminate or degrade them or otherwise diminish their usefulness for future generations. It further implies using non-renewable (exhaustible) mineral resources, in such a way that it does not unnecessarily preclude easy access to them for future generations. Sustainable development also requires depleting non-renewable energy resources at a slow enough rate, so as to ensure the high probability of an orderly society transition to renewable energy sources.

'The primary objective of Sustainable Development is to reduce the absolute poverty of the world's poor by providing lasting and secure livelihoods, that minimise resource depletion, environmental degradation, cultural disruption and social instability'.

The idea of sustainable development has evolved, as an attempt to deal with the environmental problems, caused by the economic growth, in contemporary India. There are varied interpretations of the theory of sustainable development, but its main objective is to achieve a process of economic development, without an indiscriminate destruction of our environment.

For Sustainable Growth, India Needs to Innovate

India needs to innovate, if it has to sustain progress, without further incurring the penalties that non-inclusive, inequitable, undemocratic growth imposes, on the society and the environment. Although much progress has been made, there still are problems of significant magnitude that India needs to address, if it wishes to attain the status of a 'developed nation', instead of embodying a potential that never gets realised.

The Challenge of Inclusive Growth

The Former President of India, Dr. A.P.J. Abdul Kalam, has been promoting, with single-mindedness, his vision for India, by the year 2020. The foundation of his vision is based on actions aimed at providing Urban Amenities to people in Rural Areas. Aptly named PURA, this initiative aims at bridging the Urban-Rural divide, to the extent of de-motivating people, from relocating from rural to urban areas.

The broad challenge is to improve the quality of life of the vast majority of Indians who, despite the unprecedented growth, continue to live in poverty – at the bottom of the pyramid, so to speak. Without this, it is unlikely that India can sustain its present levels of growth and not incur the ever-increasing costs that negate growth. How does India organise herself and structure a response to this challenge? The government, perhaps under the influence of short-term pressures, will respond to this challenge, by promoting subsidies and quotas.

Measures for Rural Development

Concerted efforts are being made, to improve the living standards of the rural masses. Improvement in rural infrastructure is one of the chief indicators of a nation's development and the government has started a special programme, Bharat Nirman, for the improvement of India's rural infrastructure. Bharat Nirman targets providing electricity to the residual 125,000 villages and to 23 million households.

- Rural development is also attracting major Corporate Social Responsibility (CSR) initiatives from various Corporate Houses.
- Airtel has tied up with IFFCO, to reach farmers directly. Farmers will receive free voice messages twice daily on farming techniques, weather forecasts, dairy farming, rural health initiatives, fertiliser availability, loan information and market rates. Additionally, farmers can also call a dedicated helpline, manned by experts from various fields, to get answers to their queries.
- Tata Group Chief, Ratan Tata, has expressed interest in making potable drinking water available, in villages across the country, and the company is conducting research, on ways to make brackish water potable.
- ITC's e-Chaupal has been a great developmental initiative, which has also added value to its own agricultural products. It comprises improving the lives of farmers and villagers.
- HDFC has started a 'village adoption' scheme, to improve the investment climate in Indian villages.
- Empower Villages, Taking the Example of Nagaland

Villages in Nagaland are empowered and prosperous villages, with fruits and vegetable production on the one hand, and financial powers and decision making capabilities on the other. However, there is a need for providing physical connectivity in Nagaland, through quality roads, for enabling faster movement of products, from villages to the market.

A scheme that attempts to empower villages, ensure their development and see that they are connected among themselves and with the urban societies is PURA, which includes provision of three areas of connectivity - physical, electronic and knowledge - leading to economic connectivity. PURA has health care centres, primary to post graduate level education and vocational training centres. This has resulted in large scale employment generation and creation of a number of entrepreneurs, with the active support of 1000 Self Help Groups.

Two hundred acres of wasteland has been developed into a cultivable land. The villagers are busy in cultivation, planting Jatropha, herbal and medicinal plants and in power generation, using biomass, food processing and above all running marketing centres. It thus provides a sustainable economic development model for the whole region.

During the last eight months, people of PURA villages, technologically supported by the Periyar Maniammai College of Engineering for Women, worked with experts from the Japan External Trade Organisation (JETRO), on various products, for which core competence and raw material were available in the Thanjavur district. They developed internationally competitive prototypes for 55 life style products, with support from JETRO specialists and with the feedback they received from exhibitions at Delhi and Tokyo. This co-operative venture has enhanced the innovative ability of the people of all the 65 villages, enabling them to develop and produce internationally acceptable products.

Ways to Empower Villages

Agriculture is the backbone of the Indian Economy. 85 percent of the population is directly or indirectly dependent on agriculture, whereas only 26 percent of the GDP comes from agriculture. 110 million farmers are dwelling in 6.25 lakh villages, producing more than 200 MT of food grains, feeding the country. However, adding additional income generating activities to existing agriculture would certainly increase contribution of agriculture to the national GDP. Serious efforts need to be made in this direction.

a. Agri-Tourism

An Agri-tourism farm is any land based farm or business that is open to the public. These specialised agri-tourism destinations, generally offer things to see and do, while also producing gifts to buy. These are open to the public, at least for some part of the year. Some agri-tourism farms are open 365 days, some for a few weekends in the fall. All offer a unique and entertaining farm experience and are generally appealing to all members of a family. It involves visiting a farm or any agricultural, horticultural, or agri-business operations, for the purpose of enjoyment, education, or active involvement in the activities offered. In general, Agri-Tourism is the practice of attracting travellers or visitors, to an area or areas, used primarily for agricultural purposes. Although often Agri-Tourism is small-scale, low-impact and in most cases, education-focused, the opportunities for uniqueness and customisation are limitless. Many agri-tourism activities require only a small farm crew, in order to be successful. For instance, farm tours, bed and breakfasts, tractor / bullock card rides, grapes, mangoes, and other horticulture farms, birds / animal zoos and many other activities may be operated, with little additional investment in labour.

However, Agri-tourism should ensure that it follows three basic principles

1. Have something for visitors to see, for example, animals, birds, farms and nature are some of the things. Apart from these, culture, dress, festivals and rural games would create interest and awareness among visitors.
2. Making visitors participate in agricultural operations and swimming, bullock cart riding, camel riding, buffalo riding, cooking and in rural games. This will prove to be a sense of adventure for the urban tourists and their families.
3. Have something for visitors to buy: Rural crafts, dress materials, farm gate fresh agriculture products, processed foods are some items, which tourists can buy as mementos.

The biggest advantage of Agri-Tourism is that it brings a major primary sector – agriculture, closer to a major service sector - tourism. This convergence is expected to create a win-win situation for both the sectors. While the tourism sector has the potential to expand, the agricultural sector has the capacity to absorb the expansion in the tourism sector.

b. Health Consciousness of the Urban Population

Modern lifestyles have made life stressful. Hence, people are in constant search of pro-nature means to make life more peaceful. Ayurveda, which is a pro-nature medical approach, has its roots in villages. Indigenous medical knowledge of villagers is respected. Organic foods are in greater demand in urban areas and foreign countries. In all, a health conscious urban population is looking towards pro-nature villages for solutions.

c. Cities Are Growing at the Cost of Villages

Villagers are migrating to cities in search of jobs, seeking comforts of modern life. Hence, yesterday's villagers are today's urbanites. Deep in the heart of urbanites lies the love and respect for their ancestors and villages. Hence, a visit to villages satisfies their desire. This is also expressed through the hatred of the urbanites, to flat culture and a love for farmhouses, located in the outskirts of cities. Any opportunity to visit villages and spend time with family is the dream of any urbanite. But finding minimum, decent facilities have always posed to be problem. Agri-tourism attempts to overcome this problem.

d. Rural Recreation

Villages provide a variety of recreation facilities to urbanites, through festivals and handicrafts. The village environment and the entire production process would create curiosity among an urban crowd. Places of agricultural importance, like the highest crop yielding farm, the highest animal yielding farm, processing units and innovative farming techniques also help in attracting the tourists' attention. Agricultural products like farm fresh foods, processed foods, organic foods etc. could lure urban tourists. As a result of the agri-atmosphere in the villages, there is scope to develop Agri-tourism products like agri-shopping, bullock cart riding, camel riding, boating, fishing, herbal walk, rural games and health (Ayurvedic) tourism.

e. Rural Electrification

The long-standing goal of rural electrification in India has been plagued by the lack of infrastructure and, where infrastructure exists, there are transmission and distributions (T&D) losses, amounting, at times, to as much as 40%. Consequently, schemes, targeting 100% rural electrification, have never met their targets. A massive injection of funds in building a new and efficient infrastructure is the option currently under consideration.

Issues Regarding Village Empowerment with Regards to Sustainable Development

1. Publicity

It is difficult to provide publicity to a remote Agri-tourism unit. Hence, such Agri-tourism operators can either provide publicity collectively or organisations like ITDC, State Tourism Development Corporations, NGOs, the press and tour operators can take up this responsibility.

Moreover, Information Technology can play a very important role in the promotion of Agri-tourism. An interactive website containing all the details about Agri-tourism locations and a toll- free 24 hours help line can provide the necessary information to Agri-tourists.

2. Transport

Reaching the remote rural units is the greatest challenge, due to lack of approach roads and poor transportation facilities in the rural areas. Tele connectivity is a must, but it has yet to reach villages. So the Government should play an important role in creating these facilities, namely roads, transport and telecommunication, in rural areas, especially where Agri-tourism units are established.

3. Networking

Networking among public and private stakeholders, at the national and state levels, to assist the rural people is necessary. This network can get policy support, infrastructure and publicity to Agri-tourism units too.

Enterprise at the Bottom of the Pyramid

Prof. C.K. Prahalad, in his book - 'Fortune at the Bottom of the Pyramid', suggests that it is the private sector that has the capacity as well as the opportunity to address the challenge of providing access to the benefits of globalisation equitably, i.e. "to the forgotten, to the underserved, to the bottom of the pyramid". He makes the point that typically the people at the bottom of the pyramid are also poor and that the poor pay a penalty for being poor. In real terms, these penalties translate into denial of access to information relevant to making informed choices and to world-class products and services. Prof. Prahalad shows how this basic inability to exercise consumer choice translates into a real squeeze in disposable income. Reducing the poverty penalty is thus seen as essential to raising real income, which then helps people out of poverty. It is important that Prof. Prahalad's ideas are put into practice.

Conclusion

India has a vast cultural diversity. The above examples are just glimpses of the richness of our tradition and the efforts being taken by different agencies to preserve it. Even while pursuing our economic growth, we need to do a lot to preserve the rich and diverse treasures of our culture and civilisation. It is our duty for our future generations. This has to be done on a much larger scale, through countrywide participation of multiple institutions. Our country is blessed with natural resources, has shown considerable progress in the last sixty one years and above all we have hard working people, particularly the power of millions of youth, in the country. Every sector of our country has given us the confidence that India can become a developed nation well before 2020.

We must become the change we want to see.
- M. K. Gandhi

Steering the Course towards Energy Sufficiency

Citing the examples of projects and activities already in place and the reason to adopt such technologies over and above devoting energies towards developing them, the article talks essentially about how tapping and adopting alternative energy resources will not only prove to be a positive step, but would also help in curbing excess expenditure on acquiring oil.

Rahul Nambiar - MMS

Nations around the world, including India, have joined the mad race, for securing energy reserves and the race is gaining speed at an immense rate. India has taken a series of steps in a bid to meet its ever growing energy needs. The first one being the discovery of crude oil in the Krishna - Godavari basin, which is being hailed, as one of the greatest finds in Indian oil exploration history. The second is the ambitious tri country pipeline project, to bring in oil from Iran. The third would be the country making in-roads into the resource virgin lands of Africa, especially Nigeria and Sudan.

India is one of the top oil and gas consuming countries of the world and this represents over 40% of the total energy consumption in India. India's existing annual crude oil production has peaked to about 32 million tonnes, as against the demand of about 110 million tonnes. An important point to be looked at is that, India is allocating its current limited funds, in order to secure a self sufficient future in energy. However, it has been a known fact the current known reserves of crude oil and gas will start depleting from the middle of this century. The nations of the Middle East, whom India relies on, for oil and gas, are investing heavily in infrastructure and tourism, as other sources of income.

With crude oil prices hitting $100 and subsequently the $150 mark in a short time span, it should bring the subject of renewable energy into the limelight. India's crude oil import bill rose by more than 70% between April and August this financial year, compared to the same period a year ago, as the international prices of crude rose by 75%. Between April and August this year, the volume of crude imports rose by 5.2% to 54.6 million tonnes, compared to 51.9 million tonnes a year ago, according to government data. During the period, the country spent Rs 36,844 crore for importing 8.6 million tonnes of petroleum products, while it incurred a lower amount of Rs 21,307 crore to import a higher volume of 9.1 million tonnes a year ago. India depends on imports for over one-third of its oil demand, which is growing at an annual rate of around 10%. Net oil imports during the April-August period have almost doubled to Rs 1,69,627 crore, from Rs 81,180 crore a year ago.

Of course, the prices have plunged down to an all time low of $50, in the last few weeks, but our future cannot be held at ransom, due to such drastic fluctuations and the resultant speculations. Another significant aspect is the rising concern about carbon dioxide emissions, around the world. India is one of the major contributors to global warming, due to rapid industrialisation and the boom in the auto sector. There is a growing consensus among nations that a permanent solution to curb global warming is the need of the hour. India needs to divert present funds into channels that help develop the nation's future prospects, for the long term. Relying on fossil fuels is not a sustainable option. It is the right time to find a permanent solution, to cut down on India's growing carbon dioxide emissions.

If India was able to allocate even a small percentage of this money to avenues that are devoted to the research and development of alternative sources of energy today, it would help lower our dependence on sources which are depleting and the prices of which are unstable, if one were to think about tomorrow. The budget allocation for new and non-conventional energy sources for the financial year 2008-09 was Rs. 624.09 crore. The highest allocation was for the solar energy programme at Rs. 115.75 crore, the biogas programme, which had Rs 65 crore came in second. These figures are miniscule, as compared to the crores being paid for our oil bill.

India at the moment may not be in a position to jeopardise its growth because energy sufficiency forms the core of its strategies, in order to guarantee the growth and development of its industries. Industries can be provided with incentives or tax rebates for taking up alternative sources of energy or for investing in its research and development. Industries can also be encouraged to reduce their dependence on fossil fuels.

Another area could be converting the extensive fleet of commercial vehicles plying on Indian roads, into using ethanol based engines, rather than the conventional diesel engine. Sceptics blame the rise in prices of food products to allocating farm lands for producing non-food based cultivation, mostly ethanol. Vehicles, including large number of trucks and goods carrying vehicles, have to be encouraged, to utilise sources other than petrol and diesel.

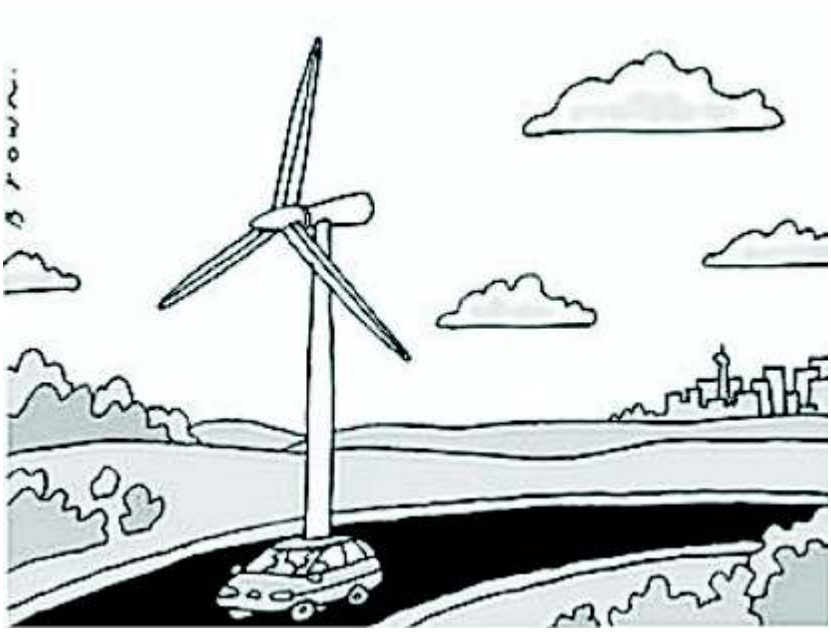
Moreover, our power supply is still coal based. Majority of the power projects coming up are also coal based. Even though coal does not form a part of our extensive import bill, as India has vast reserves of coal, it's still not feasible to keep using it in abundance, since the carbon foot print left behind is tremendous. Known alternatives could be solar, wind and tidal energy.

Unlike the United States of America, Europe has taken the lead in trying out and adopting new techniques in utilising renewable sources of energy. USA is still heavily betting on fossil fuels, as sources of energy, which are tactics to safeguard its age old industries which are major consumers of oil and gas. Moreover, USA has records of vast reserves of oil and gas in the mid east and mid central states as well as Alaska, which is relatively new. However, Europe used to be at the mercy of the Middle Eastern countries as well as Russia. Since the early eighties several European countries have started investing in other sources of energy and currently are world leaders in their respective fields. Denmark is the world leader in energy from wind and to a certain extent tidal energy. Their wind mill technology has improved tremendously over the years and is being put to use throughout the world. France and Germany have made head way, in harvesting solar energy. The European Union has decided to reach the ambitious target of achieving 20% of its energy requirements, from renewable resources. The leaders of the Union have earmarked 12 to 15 billion Euros, per year, for this purpose, since 2005.

India is blessed with an abundance of sunlight, water and biomass. States like Rajasthan and Gujarat have large scope for solar based technologies. Solar water heaters and cookers have been actively promoted, since a few decades. Punjab, Haryana, Himachal Pradesh and certain other states have already set up wind mills to harness the wind power available to them. Solar photovoltaics for decentralised power supply are fast becoming popular in rural and remote areas. The western coastline of India, especially the Konkan region as well as Kerala, has high scope for tidal based energy creation. India needs to take the next step right now, in terms of energy sufficiency, keeping the long term perspective of the country's stability, as a top priority; it can bypass the near future for a picture perfect distant future.

Almost 60% of India's population resides in villages, where electricity, one of the main factors in economic development, is absent. But one thing that is abundantly available is biomass, since the villages have an agrarian structure. Major sources of biomass are wood waste and agricultural wastes. In India development of biomass gasification has received serious attention, with the establishment of biomass research centres and gasifier action research centres, at various locations spread all over the country. These institutions have played a key role in the upgrading and adapting suitable technologies, testing, monitoring and development of biomass gasification systems. Studies reveal that the low grade of land suitable only for scrub vegetation can be turned to advantage, to form an excellent source of biomass – through fast growing trees and shrubs. In India, more than 2000 gasifiers are estimated to have been established with a capacity in excess of 22 MW and a number of villages have been provided with electricity with biomass gasifier based generators.

What is required is a will on the part of all of us, be it political will, economic will or social will, to make these kinds of alternative energy systems work, for the betterment of our future generations.



Quick to capitalise on high oil prices and rise of wind power, Japanese car makers introduce the 2004 Wind Cruiser.

Striving for the Olympics

Citing the efforts taken by China in hosting Olympics 2008 and making it a grand success, the article talks about how India needs to bring about massive changes, in numerous areas, and use its capacity, as the host of the Commonwealth Games in 2010, to create an ambience that would significantly propel its image, in order to bid for the position of host for the Olympics in the future.

Shruti Rane - MMS

The 2008 Olympics, marked as the most significant event in India as far as medal winning goes, was a grand spectacle and the neighbouring giants left no stone unturned in pulling off a successful event. The extravagant and magnificent opening and closing ceremonies held at the Birds Nest Stadium in Beijing left everyone speechless. Silver bell dancers, drummers, fireworks and authentic Chinese music portrayed a beautiful picture of the modern and contemporary Chinese civilisation.

According to the IOC, hosting such a mammoth and magnificent sporting event which comes once in four years is an honour for any country. The efforts put in by China to restore faith amongst their people and leave behind a mark is commendable. China not only made a spectacular profit but also set a record in Olympics revenues. They have reported a whooping profit of about $224 million. China has also seen a rise in its GDP growth to about 9%. The copious flow of money to China assures a balanced financial status in times of global recession; facilitating housing, education, employment, better infrastructure, thereby combating issues hindering developing countries.

Speaking of developing countries, India and China are always mentioned in the same breath. But the question that still exists is, whether India could hold an event as big as the Olympics, which would rather flatter, than embarrass the nation. The thought itself would give cold feet to anyone in comparison to the efforts made by China. After winning the bid to host the 2008 Olympics, China began a massive seven year effort to meet IOC's demands for hosting the game.

In 1990, China organised the 11th Asia Games in Beijing, which were considered as a rehearsal for the possible application to become the host city in 2000. Though China lost the election to Sydney by 2 votes, China bagged the 3rd rank behind USA and Russia, with 28 gold, 16 silver and 15 bronze medals in the 2000 Sydney Olympics. In 1999 the 'Beijing 2008 Olympic Games Bid Committee' (BOBICO), which was supposed to organise for Beijing's application was founded. The 'Bidding Cities' included Istanbul (Turkey), Osaka (Japan), Paris (France) and Toronto (Canada). The entire selection process lasted from 1st February, 2000 to 13th July, 2001 and Beijing clearly came out on top, against its competitors, because:

- By 2001, China's GDP rose 2.5 fold. China's transportation and communications infrastructure improved significantly. The construction of sports venues and environmental protection projects had also made impressive progress. In Beijing, the bidding city, GDP reached US$24 billion in 2001, increasing at an annual rate of 10 percent.
- A greater emphasis was placed on democracy and the rule of law. Also due to international diplomatic strategies and policies, the country's relations with the United States and European countries began to develop in directions favourable to China.
- Hong Kong in 1997 and Macao in 1999 returned to the sovereignty of China. They were functioning smoothly as two special administrative regions of China, which helped enhance China's international status.
- To cope with the impact of the 1997 Southeast Asian financial crisis, China adopted effective monetary policies, including maintaining the stability of the foreign exchange rate. This helped keep the crisis from spilling over to larger areas, while maintaining the stability of China's economy.
- The economies of China's neighbouring countries began to recover, thanks in part to the Chinese economy. China's role in maintaining regional economic stability was recognised by its neighbours and the world community.

The moment China realised that it had won the bid for the 2008 Olympics, they had a plan that was put in high gear.

1. Infrastructure Development

Altogether 37 stadia and sports halls were used during the 2008 Olympics, 12 of these were built especially for the games. By 2007 almost all building projects were completed. Not only was the speed of the construction impressive, but so was the architecture of the buildings. The National Stadium in Beijing, also called the 'Birds Nest', the natatorium called the 'Water Cube' and the sports hall - 'UFO' were the architectural highlights. Also many new sports parks were showcased during the Olympics. Planning for the Olympics had started way before time. According to Huang, who oversaw the planning and construction department, during the city's successful Olympics bid, the Olympic park appeared in their plan in 1993. She was referring to Beijing's 1993 Comprehensive Master Plan, which envisioned the city through to 2010.

Infrastructural development takes place by vision and planning. Also with the whole world viewing the host nation through media feed, it became necessary for any nation hosting such an event, to promote its places of historical importance. India has a plethora of heritage sites of architectural magnificence and can flaunt its diverse natural beauty. India has distinguished itself in infrastructural projects, only in

Delhi, where the metro is functional. For India the most challenging prospect would be to set up an infrastructural plan, from an international public relations point of view, which will develop habits and systems that maintain internationally acceptable public hygiene, as first time visitors would not be impressed to find garbage and filth on the streets of India. In short India needs to mandate not only sweeping plans for building outlandish sites for Olympic staging, but also needs a complete makeover for India itself and the 2010 Commonwealth Games will serve to be the right platform.

2. Development of Transportation Facility

In Beijing, the city's perimeter expanded, with the addition of the 4th, 5th and 6th ring roads, linking districts and satellite towns, while accommodating an estimated 3.5 million cars. In order to accommodate visitors, who were expected for the Olympics the traffic routes in and around Beijing were adapted. The underground system was developed extensively and underground lines were arranged attractively, according to the Olympics venue. The main station at Beijing was connected with the west station through the largest tunnel in China. The bus rates were lowered, to make public transport attractive for as many people as possible. China also made global transport to Beijing convenient, which involved the construction of a new terminal at the Beijing airport, covering a massive area of one million square metres, which is now the third largest in the world.

India has to do extensive work in transportation improvements and extending its subway system. It has to start maintaining the cities' railway system and formulate greater metro facilities, build highways that would connect all the major cities, construct and refurbish city streets and build roads in and around game sites.

3. Security

The security measures taken by China included an anti-terror force of 100,000 commandos, paramilitary police and soldiers, in Beijing and the five other cities, hosting the Olympic events. Another 100,000 police officers, 200,000 security guards and 600,000 volunteers patrolled the streets, during the games.

With the increase in terrorist attacks, India will have to be on a high alert and upgrade its security procedures every now and then.

4. Communicating Strategy

An important aspect in China's preparation for hosting the Olympics was the focus on addressing the approximately 120 sports, the country had never achieved any measurable success in, such as swimming, track and field and water events. 'China Project 119' was a simple and clear slogan for communicating the strategy for China's need to concentrate special resources on the 119 events, in which the country was the weakest. 'Impossible is nothing', an Adidas co-sponsor slogan, became one of the main public slogans, used for boosting the morale of the general public.

5. Inspiring People

Much before the Olympics, a 24-hour national television channel was launched, featuring Chinese athletes winning events and preparing for the upcoming games. The sole intention was to inspire athletes and draw public attention. China deployed an effective propaganda, to support its initiatives. The difference between winning 51 gold medals and just one lies merely in the intensity with which one perceives sports.

6. Public Cooperation

The Olympics could not have been a success, without the co-operation of the Chinese people. Even mountain goats in the Tibetan region had Olympic rings painted onto them. If that was purely propaganda, then how did traffic patterns in diverse cities change, in response to events in Beijing, with crowds gathering around television sets in the cities and around radios on trains, during various events? Olympics have not only changed the physical condition but also the behaviour of the Chinese people. It is purely evident from the fact that the habit of public spitting was suspended and people were seen following the traffic rules more than ever.

We too need to cultivate a sense of community cohesion, common attitude and reaction towards hosting such a mega event. Apart from leveraging the country's profile, it would also upgrade the profile, of the individual city, hosting the events.

7. Bringing in the Best

Great planners, architects, engineers, administrators and professionals of all types were brought in or consulted on the myriad aspects of the games. For instance, China had a global accounting powerhouse Pricewaterhouse Coopers working on the medal count spreadsheets. India too can start with the application of new ideas, concepts and knowhow.

8. The Selection, Screening and Training Process

A report in China Youth Daily estimated that the cost of preparing China's athletes for Beijing 2008 was close to $586 million. According to the General Administration of Sport, the funds, towards preparing athletes, come from two major sources annually: a budget allocation of 800 million RMB (Rs. 507 crore) and an equal amount from the National Lottery given to the National Olympics Committee. China brought about 50 top coaches from a dozen countries, to give their team the edge, needed to make it over the top. This was in addition to the 2500 coaches China has sent to over 100 countries beginning in the 1960s.

CBS News correspondent Barry Peterson recently reported that the nation is "so obsessed with Olympic gold that it is training 200,000 handpicked kids in state-run sports boarding schools. It's the same system the Soviets used to train gold medallists like Maria Filatova in their Cold-War sports duel with the United States."

On all counts, China was more determined than any of its rivals to get the formula right, which involved Olympic winners - talent identification, planning, funding and training. Most of the athletes have come through China's unified sports school system, which accounted for 3,000 schools all over the country and four lakh athletes approximately.

We need to make efforts, in order to incorporate accountability and transparency in the system. Funding and running of sports in a bureaucratic way leads to lack of accountability. If the government allots funds for something, clear directives need to be set about the way in which the funds would be utilised. The administrators of that particular sport should be held accountable for the outcomes. If significant underachievement is observed, then the finances for the future development of that sport could be curbed momentarily, till its standard is raised. The government has a critical role to play in all this.

Also while government funding is crucial, it's important that one has advisors from the private sector, who can provide additional funding and facilities and also assist in the running of major events like the Olympics. For a head start the government can set up the large physical infrastructure, people can volunteer for helping in organising events and the corporate sector can provide additional funds and professional training. In India a few sports are preferred over the others and there is a dire need to target other sports that are less visible, like cycling, gymnastics etc. These sports need a facelift and have to be driven by support, providing enough facilities, scholarships and overseas exposure. More so, sports needs to be seen as a viable career option and not a supplementary feature. Most of the athletes hail from rural India and an active participation from rural India would be another feather in the cap. Such efforts might prove to be fruitful and provide the solution to winning some medals for the country.

9. Meeting the Environmental Standards

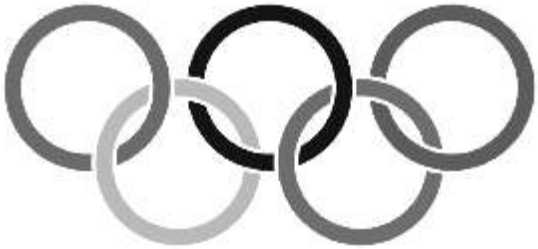
To keep a tab on pollution, millions of cars were banned from the streets and pollutant-rich manufacturing plants were shut down. As part of the preparations for the game transportation, infrastructure and the plumbing system were reworked. Also, the sewage and industrial wastewater pollution standards were substantially upgraded.

In India, cleanliness would have to be given due importance. Emphasis could also be on efficient waste practices, like cutting down on the waste, from all participating hotels, reduction in water consumption, etc. Planting more and more trees could be seen as a viable option for enriching the quality of air.

Having met almost each and every condition, through effective participation, monetary and political help, China's efforts have been generously applauded. If Beijing 2008 is an eye-opener for India as far as managing such events goes, the litmus test for India would be putting up a successful event as the host of the 2010 Commonwealth Games, to be held in Delhi. So, in order to pass this test India will have to recognise the critical factor in creating a successful plan, which can be propelled by proper coordination, between the operating committee and the nation's government. For this, the quintessential factors are transportation and infrastructure, architecture and urban revamp, pageantry and high technology. To gauge the success of the event, a proper feedback system could be put in place and feedback could be taken from the local residents, local and International Business communities (for its potential economic impact) and visitors to the country.

Beijing was swarmed by tourists, teams, the media and members of the organising committees. This goes on to prove that holding an event of such a degree fosters an immense pride amongst the citizens and it inculcates multi-dimensional benefits. Some of the pecuniary benefits being an increase in the number of tourists, long term benefits from construction, creating job opportunities (The Beijing government had estimated that by 2008, the Olympic economy will create as many as 2.1 million new job opportunities) etc.. Finally the non pecuniary benefits associated with hosting the tournament include political gain, portraying a positive public image and the potential "feel good" factor. So too, the Olympics acquainted the world with the Chinese culture.

The Beijing 2008 Olympic Games marked the beginning of a new chapter for China's tertiary industry, involving tourism, finance, culture exhibition, sports and the real estate sector. If hosted in India, the Olympics would leave behind a positive legacy that would enhance the quality of life and also increase the global recognition of India's status, as an international events holder.



Sustainability - The Need of the Hour in e-Waste/WEEE Management and Regulation

One of the major problems facing the world today in the wake of development and progress is the management of e-waste. While throwing light on the various hazards of e-waste and the rules and regulations that are in place to deal with the problem on a global scale, the article suggests two models that can be used to locally tackle this menace is order to ensure balanced and continued sustainability in progressive development.

Amit Mehta - eMBA

Introduction

With the advancement of technology and the onset of the IT revolution in India, the entire country was reaping the benefits of modern technology and businesses flourished, networks expanded, usage of electricity and electronic appliances increased drastically.

The dot com bubble and IT revolution made computers and other electronic equipments an integral part of our lives. The sales of consumer electronics shot up as there was an increasing dependence on computers and allied products. As newer technology and product upgrades kept coming in, people started purchasing the latest products in the market and this led to the accumulation of electronic products that were either broken or obsolete and were yet discarded by their original users.

Electronic Waste or 'e-waste' is a term used to describe old, end-of-life electronic appliances such as computers, laptops, TVs, DVD players, mobile phones, mp3 players etc., which have been disposed of, by their original users. It is also sometimes referred as 'Waste Electrical and Electronic Equipment' (WEEE)

Public perception of e-waste is restricted to only telecommunication equipment and consumer electronics. However e-waste is a subset of WEEE. Thus any appliance that consumes electricity and has reached its end-of-life would come under WEEE

What constitutes e-waste/WEEE

1) Large and small household appliances
2) IT and telecommunications equipment
3) Consumer equipment
4) Lighting equipment
5) Electrical and electronic tools (with the exception of large-scale, stationary industrial tools)
6) Toys, leisure and sports equipment
7) Medical devices (with the exception of all implanted and infected products)
8) Monitoring and control instruments

If not treated properly, e-waste is a major source of toxins and carcinogens.

Toxic substances in electronic waste include lead, mercury and cadmium. Carcinogenic substances in electronic waste may include polychlorinated biphenyls (PCBs). These substances are harmful to the environment and to the health of people, who deal with the improper recycling of e-waste.

In short, the development of India due to Information Technology is phenomenal but its repercussions in the form of e-waste are a potential threat to the environment and society. As long as consumers discard e-waste, this is one sector that will not face the heat of the economic slowdown.

Current Scenario in India for e-waste management and recycling

The e-waste generated by India in 2007 was 3.3 lakh tonnes. However, only 5% of the e-waste [in India] is recycled by licensed recyclers. The rest finds its way to illegal recyclers. Moreover, India has become a major dumping ground of e-waste after China.

10 states namely Maharashtra, Tamil Nadu, Andhra Pradesh, UP, West Bengal, Delhi, Karnataka, Gujarat, Madhya Pradesh and Punjab generate 70% of the total e-waste in India. Among cities, Mumbai ranks first followed by Delhi and Bangalore in generating e-waste.

Ironically, in India, there are no specific environmental laws or guidelines on e-waste. There is no explicit legislation and the general environment laws indirectly touch upon the aspect of e-waste. There are no rules formed by the Indian government and only a rough draft has been prepared under the IT ministry. However, of the existing environmental laws several provisions of the laws may apply to various

aspects of electronic waste. Since e-waste or its residues fall under the category of "hazardous" and "non-hazardous waste, they are covered under the purview of 'The Hazardous Waste Management Rules, 2003'.

With only 3-4 authorised e-waste recyclers like E-Parisara, Ash recyclers and Infotrek Syscom Ltd., most of the e-waste lands in the hands of unauthorised (illegal) recyclers and scrap dealers, who use burning of components, acid washing and similar techniques to extract valuable metals like gold, copper etc. These methods are detrimental to the environment as well as to the health of people, who engage in such activities.

Existing e-waste related laws in India

Hazardous Waste (Management and Handling) Amended Rules, 2003:
The existing e-waste related laws in India define hazardous waste as "any waste which, by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics, causes danger or is likely to cause danger to health and environment, whether alone or when on contact with other wastes or substances"

Schedule 1 and 2 has a mention of waste generated from the electronic industry as hazardous waste.

DGFT (Exim Policy 2002-07)

So too, second hand personal computers/laptops are not permitted for imports under the EPCG scheme, under the provision of para 5.1 of the Exim Policy, even for service providers. Second hand photocopiers, air conditioners, diesel generating sets, etc., can also not be imported under the same clause, even if they are less than 10 years old.

Despite the above law, 75% of the e-waste in India originates from several developed countries.

The Ministry of Environment & Forests (MoEF), Government of India, as the highest national authority with regard to environmental legislation provides the policy and legal inputs in these areas, while the Central Pollution Control Board (CPCB), an autonomous body under the MoEF is involved in developing the draft legislation as well as providing technical inputs at the national as well as state levels.

International Legislation for e-waste management

World over, almost 50 million tonnes of e-waste is generated annually and if we recycle this entire quantity in a systematic manner, we may avoid a burden on our ecology to a great extent and save our environment from further damage.

The major international legislations that have been implemented are:

The Basel Convention

The Basel Convention on the Control for the Transboundary Movement of Hazardous Wastes and their disposal, in force since 1992, is the only global environment agreement on waste. The global agreement regulates trade in hazardous waste, including WEEE; it seeks to ensure that e-waste is disposed of safely and that the generation of such waste is minimised. An amendment to the convention, known as 'Basel Ban' calls for the prohibition of export of hazardous waste from developed nations like the U.S, U.K et al to developing countries like India, China, Nigeria et al. However the U.S is the only developed country that has not agreed to the Basel convention. And so, even today, 80% of the electronic scrap from the US is shipped to such countries as China, Pakistan, and India, where recycling is done by hand, with no protective gear.

RoHS

RoHS stands for 'Restriction of Hazardous Substances'. The RoHS directive was adopted in 2003 by the European Union. The purpose of this along with the WEEE directive is the prevention of e-waste and, in addition, reuse, recycling and other forms of recovery of such waste, so as to reduce the disposal of e-waste. It also encourages manufacturers (OEMs) to minimise the use of toxic substances like Lead, Mercury, Cadmium, Polybrominated biphenyls et al. It is therefore often referred to as 'lead-free directive'.

ORDEE

The Swiss Ordinance on the Return, the taking back and the Disposal of Electrical and Electronic Equipment (ORDEE) was brought into force on 1st July, 1998 and was the first the first worldwide legal regulation on WEEE. Under ORDEE, retailers, manufacturers and importers are required to take back, at no charge, appliances of the kind that they normally stock. Consumers, on their part, are obliged to return end-of-life appliances and are not allowed to dispose of them via household waste or bulky item collections.

The ElectroG Act

The German electrical and electronic equipment Act came into force in March 2005 and is governing the sale, return and environmentally sound disposal of electrical and electronic equipment. It also implements the EU directives on WEEE and RoHS. The goal of this Act is to prevent waste from electrical and electronic equipment, to reduce waste volumes through reuse, provisions for collection, recovery and recycling quotas and to reduce the content of hazardous substances in equipment. A ban on the use of certain hazardous substances in the production of new electrical and electronic equipment aims to prevent damage to the environment and health right from the outset and to prevent disposal problems from arising at all. With this legal regulation producers are compelled to incorporate the entire life of their products into their calculations.

The United Nations StEP initiative

StEP stands for 'Solving the E-waste Problem'. The United Nations in March 2007 released global guidelines governing the environmentally responsible recycling and disposal of e-waste. The objective of the programme is global harmonising of e-waste recycling, best practices and legislation, encouraging vendors to extend the life of electronic products and provide more upgradeable components and promoting recycling and re-use to end users.

Several other countries like Japan, Netherlands, Austria have their own e-waste laws.

In Japan, since April 2001, manufacturers have had to recycle appliances, televisions, refrigerators and air conditioners. Under a new law, manufacturers would charge a recycling fee to the consumers.

The Netherlands have passed a law in 1998 that requires manufacturers and importers of electrical and electronic equipment sold in the country to take back their end of life products.

Recycle IT Austria (RITA) is an initiative in Austria to collect used computers from manufacturers and other companies, upgrade and repair the computers, and then sell them at reasonable prices to low income households or schools.

The Finnish WEEE legislation in Finland rules that producers must organise the collection, transport and treatment of e-waste; finance the recovery and other waste management of WEEE and ensure that equipment is properly marked.

Models for e-waste handling

The three words that are of paramount importance in e-waste handling and management are **reduce, reuse and recycle**

Reduce: By less generation of e-waste with the help of maintaining and increasing the lifespan of the product, one can reduce the amount of e-waste that is piling up. Many companies are adopting the idea of 'Green IT', where effort is made to produce clean toxic-free electronic products.

Recycling and reusing: During recycling only 50% of a product/good is recycled and the rest is just dumped, thus polluting the environment. However, recycling of e-waste helps recover important natural resources like silver and gold for reuse and decreases the need for surface mining. Hence it has become imperative to recycle as many components as possible, so that landfill is reduced. There are only a handful of authorised recycling companies in India that engage in eco-friendly recycling of e-waste. Some of them are 'Eparisara' in Bangalore, Ash Recyclers, Infotrek Syscom limited in Mumbai et al, who recycle or refurbish the e-waste in compliance with the international e-waste laws, that ensure that the environment will not be harmed in any way.

It is important that every manufacturer should concentrate on all the three terms equally in order to decrease the impact of e-waste on the environment

There are two competing models for managing, handling and financing e-waste recycling plants for a sustainable future.

Advance Recycling Fee (ARF)

This model is a comprehensive financing system for the management of end of life electronics. The model is based on the national solution developed by the National Electronic Product Stewardship Initiative (NEPSI). Here, an additional charge is imposed on the consumer, when s/he purchases an electronic product and this charge goes to the government. This charge is in the name of 'electronic waste recycling fee' and is 1% of the purchase amount. However the fee may vary from producer to producer and is not a deposit. This helps in funding a proper recycling system for e-waste. The legislation of California adopted this model, which is favoured by television manufacturers. Sony and IBM support this type of model.

Fund management and recycling services are performed and co-ordinated by a private, non-profit, third party organisation, with a central role played by manufacturers and the local, state and central governments. It ensures that everyone selling in the market today shares the cost of the recycling of end of life products and neutralises the system impact on market players. An important feature of ARF is that ARF on new equipment finances the take back of old equipment bought at a time, when ARF had not yet been implemented. It can be safely said that the ARF that consumers pay is used to fund the recycling of the existing pile of e-waste. However, opponents of this model argue that today's electronic purchasers are subsidising yesterday's consumers.

Extended Producer Responsibility (EPR)

This model is used by many companies like Dell computers, Hewlett Packard, Apple, Toshiba et al and is the favoured model amongst computer manufacturers; however the television manufacturers oppose it. In this model, manufacturers become responsible for the complete lifecycle of the product they make, right from the products inception to its end. This means that firms, which manufacture, import and/or sell products and packaging, are required to be financially or physically responsible for such products after their useful life. They must either take back spent products and manage them through reuse, recycling or delegate this responsibility to a third party (Producer Responsibility Organisation).

The key components of EPR are:

1. Consumers can return e-waste to various collection centres of a company, free of charge. Individual producers will have to bear the costs of organising, disposing, recycling and reusing of all the end of life products. The financing of the individual recycling plants of various companies can be made by taking additional front end fee. Nokia has installed tack-back bins in 650 care centres across India.
2. Manufacturers must clearly label their products for identification and to provide the information that e-waste is banned from municipal waste and must be handled separately.
3. EPR will make the manufacturers turn to producing 'greener' electronic products with minimal use of harmful substances and reduction of their carbon footprint. Wipro and HCL launched RoHS compliant desktops and Pcs in early 007. In fact, products need to be designed keeping in mind their future implications, disposal, dismantling and recovery.
4. Customer awareness of the take-back programmes through popular media like T.V, radio, Internet etc. is a must in EPR. The HP ' Planet Partners Recycling Program' has a trade-in programme, wherein customers are provided with cash payment for their old equipment of any brand, when new products are purchased.
5. EPR should take into account historic and orphan waste.
6. EPR can extend the life of the electronic product by refurbishing the end of life product, so that the companies can initiate CSR initiatives, by donating the refurbished product to schools of underdeveloped states.

Thus EPR will force manufacturers to conserve resources through changes in product design and process technology, providing them with the financial incentive to design their products with less hazardous and more recyclable materials.

Conclusion

Green Technology will be the buzzword in the years to come. As concerns of e-waste disposal reach fever pitch, it is time for the government to take immediate steps and formulate a proper e-waste legislation, that will strictly stop the illegal recycling of e-waste, which not only pollutes the environment but also harms the health of innocent children and workers, who engage in the activity of recycling without any formal training and protective gear. E-waste is going to be one of the major problems facing the world after climate change and poverty. India, with a growth rate of 15% in the production of e-waste, is a major contributor to e-waste. A combination of the two models analysed above will undoubtedly provide a good financial backing for companies and governments to set up recycling plants and collection centres, with a strong reverse logistics mechanism. It has now become an obligation for the companies to effectively tackle the problem of e-waste.

So too, along with the adoption of strict rules and ban on import of second hand electronics, public awareness will and always be the key in the sustainable management of e-waste. Thus only a collective effort from the citizens of India will curb this menace so that the sustainability of the future generations will not be compromised, while the country will yet continue to cash in on the benefits of Information Technology and its allied services.

"I traded a mother board for three DVDs. They were bogus, so I tossed them out of the window..."

Sustainable Agriculture


Drawing on the fact that India is essentially an agricultural economy, the article deals with the grim reality of how this sector has been neglected and the impact that this has had while also suggesting measures with which sustainability in agriculture could be easily ensured.

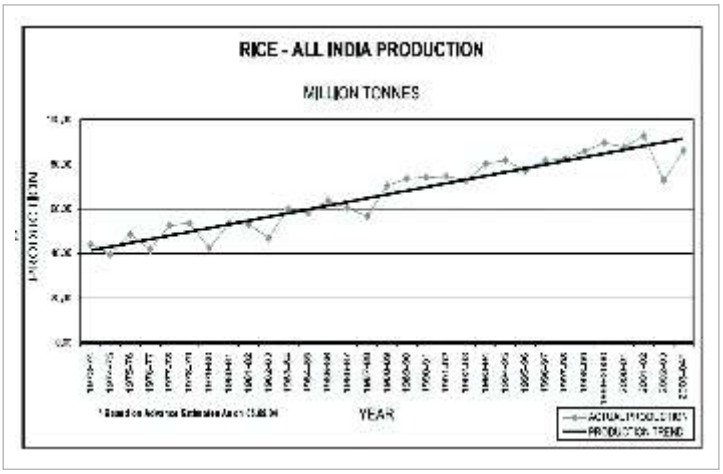
Ashwinkumar Arora, Raju Borkar - MMS

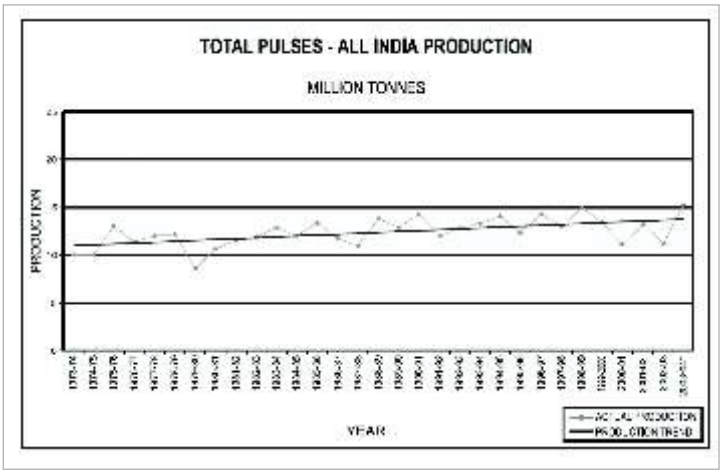
Agriculture in India

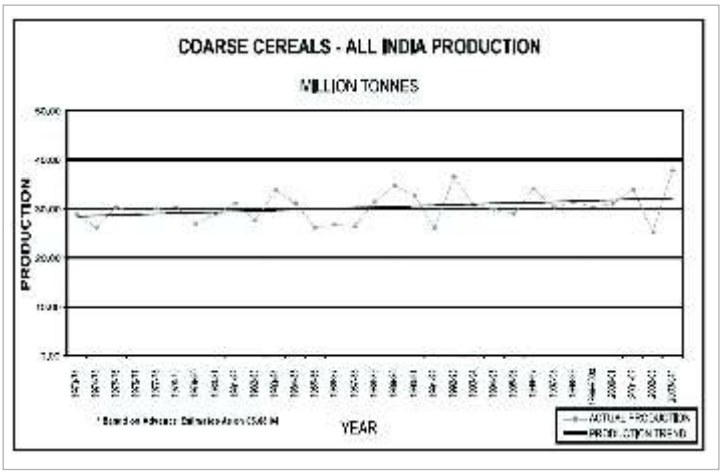
Agriculture is one of the most important economic sectors in India. The major occupation of the people in the country is agriculture and jobs related to agro based industries, which has been so for ages, as is evident from India's glorious history. Agriculture accounts for almost 24% of India's G.D.P., employing about 65% of the country's working population. Agricultural products account for nearly 18% of all the exports from India. India is the largest producer of pulses, tea and milk, as also a producer of 51 major crops. This makes India the second largest producer of food and agricultural products, with the apex position being occupied by India's neighbour, China. The agro processing sector in India employs about 12 million from the Indian workforce. This accounts for more than 13% of India's manufacturing G.D.P.

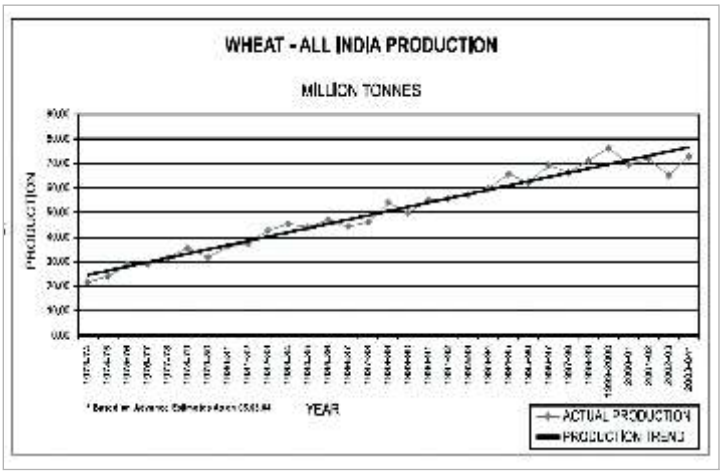
India enjoys this competitive advantage due to its diverse agro climatic conditions, sufficiency of inputs and the availability of cost effective labour. The total geographical area of the country is 328 million hectares, out of which a mammoth 142 million hectares is sown area. India's agricultural and agro based industries make up for about 1.5% of the International food trade.

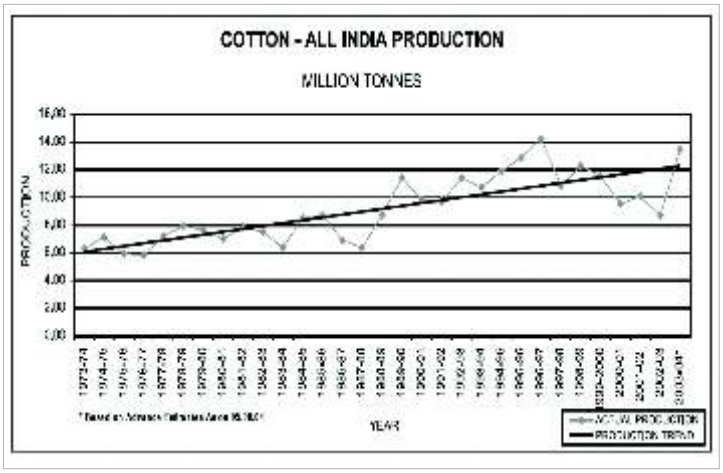
Problems faced by Indian Agriculture











Indian agriculture has many factors that support its growth. Despite this however, the Indian agriculture growth story doesn't paint a beautiful picture. The growth rates in Indian agriculture, most of the times, have been below par, as per the targets set by the planning commission. The growth rates of production and revenue from this sector also have been only average. The yields haven't been good either. The average growth rate of the agricultural produce has been about 2.46% in the period 1994-95 to 2006-07 as per the data obtained from the Ministry of Agriculture's website. The area under agriculture has grown by a meagre average of 0.34% in the same period.

The reasons for such a performance of the Indian agricultural sector are many. The first being that farming practices are still not modernised. Even though there are plentiful examples of the use of advanced technology for farming, a major portion of the Indian agricultural sector still isn't aware of it. Another major reason for the inefficiency of Indian agriculture is the improper education of the farmers regarding farm practices as regards new methods and chemicals for farming. To add to all this, a major part of agricultural produce is wasted merely due to improper material handling systems and improper treatment and processing of the produce.

All the above factors ultimately lead to improper usage of resources. The yields suffer and the available capacity remains unutilised. This leads to huge losses to marginal farmers and their sustenance on the basis of agriculture is lost. Also, due to improper use of chemicals in agriculture, the land is rendered barren in addition to straining the various resources available to get the maximum output out of such a low yielding land. This also leads to more pollution of the nearby water bodies, due to washing away of the chemicals as a result of rain or any other source of flowing water.

Thus sustainability in agriculture has become a major issue to dealt with by the government and the farmers.

What is sustainable agriculture?

Sustainable agriculture is the use of farming systems and practices, which maintain or enhance the economic viability of agricultural production, the natural resource base and other ecosystems, which are influenced by agricultural activities.

Thus, based on the above definition, the functions of sustainable agriculture essentially imply that:

- farm productivity be enhanced over the long term
- adverse impact on the natural resource base and associated ecosystems are ameliorated, minimised or avoided;
- residues resulting from the use of chemicals in agriculture are minimised;
- net social benefit (in both monetary and non-monetary terms) from agriculture is maximised; and
- farming systems are sufficiently flexible to manage risks associated with the vagaries of climate and markets.

Need for sustainable agriculture

The land area available for cultivation is limited in nature. As against the limited availability of land, the demand for food is growing at an ever increasing rate. The uncontrolled growth of population further strains the land area available for cultivation. With the growing number of manufacturing industries that area is further getting used up in the form of creation of Special Economic Zones and other such areas.

To address the above situations, the only available option is to adopt measures that contribute to sustainable agriculture and employ the techniques associated with it.

Ensuring sustainable agriculture

As discussed above, the main objective of sustainable agriculture is the optimal utilisation of the available resources, without straining the other natural environmental factors. There are many methods and innovations that contribute to sustainable agriculture.Some of them are as follows:

Organic farming

Organic farming involves the use of organic chemicals in farming. The organic chemicals are used as fertilisers in agriculture. These fertilisers provide the necessary nutrients to the soil. Relatively small quantities of organic chemicals are required to supply vital nutrients to the soil, in comparison to the inorganic fertilisers. An argument related to the use of organic fertilisers is that it deteriorates the quality of soil over a period of use. However, with research being conducted in this field by various institutions and agro based industries, safer and more reliable alternatives are now available.

Genetically modified crops

Genetically modified crops are obtained using the ingenuity of biotechnology. The most popular example of the use of genetically modified crops in India is BT Cotton, which is cultivated from genetically modified seeds giving comparatively high yields. However, there are various crops that are cultivated from genetically modified seeds in various foreign countries. The potential scope and present benefits of genetically modified crops, which are a result of agro biotechnology, is clear from 40 case studies done in USA. An increase of 14 billion pounds in the produce, an economic impact of 2.5 billion USD and reduction of 163 million pounds of chemical pesticides as is evident through insect resistant corn and cotton, herbicide tolerant papaya comprise the major success stories. In India, with industry and government participation, various genetically modified crops can be developed, as developing such crops is an expensive affair.

Greenhouse farming

This is a technique in farming, which involves farming in controlled conditions. Certain greenhouses are prepared, covering a small area of the field. The greenhouse prepared is provided with the facilities required for carrying out the cultivation of certain delicate crops. This technique is mostly used for floriculture. The plants grown in green houses are generally cash crops involving greater profit margins. The yield in this case is very high. This is also an expensive technique. This technique can be used even by small farmers to grow crops in unutilised parts of the land thereby earning extra returns. Greenhouse farms are developed by professionals for large farmers. But this technique can be taught to small farmers and they can themselves do it within the available resources. Such initiatives can be taken up by Corporate Houses as Corporate Social Responsibility initiatives, which are based on government mandates.

Low cost technologies

Low cost technologies are the need of the hour. The involvement of the government and other agencies in this sector has been meagre. A low cost technology for agriculture known as a treadle pump was developed by an engineer in a small town in UP. Treadle pumps cost merely a thousand rupees and the installation of this pump is also very easy. The pump proves to be a vital solution for the marginal farmers. This cheap technology has enabled farmers to undertake farming activities throughout the year with the help of irrigation facilities. This has led to a better utilisation of the land that used to remain idle for a large part of the year. This has also enabled farmers to stay back and continue agriculture instead of migrating to cities in search of jobs for the unproductive part of the year.

Better logistics and storage facilities

One of India's major problems in agriculture is the lack of proper handling of equipment and food grain storage facilities. The agricultural produce in India is capable of producing so much of food, so as to easily fulfil the needs of India's entire population. However due to the inadequacy of facilities and the ineffectiveness and inefficiency of the current systems, a major part of the produce is wasted due to spoilage. This leads to unnecessary losses in vast varieties of food grains. The unnecessary losses lead to huge monetary losses to the government and approximately only half of the produce is actually utilised. This extra wastage consumes resources that are unproductive and as such economic as well as ecological sustainability, as more resources are consumed than those actually required. A government as well as a private initiative could lead developments in this area. The entry of private players in the field of storage and handling of agricultural produce would serve as a good business opportunity and create a win-win situation for all. Of late, players like Reliance Fresh have entered this field, however their scope is confined to small patches in the vast field of such an opportunity.

Conclusion

Thus, as evident from the above instances, it is clear that sustainability in agriculture is the need of the hour, keeping in mind the current economic and ecological circumstances. Sustainability, here, implies sustainability in economic as well as environmental terms. With the growing need for sustainability, the various aspects involved have given rise to innumerable opportunities to the government and private companies alike, in various forms. The government can take up educational programmes for farmers, educating them about the relevant technologies and new methodologies available, leading to their all round development. The government can also involve private players in the various initiatives, which would serve as business opportunities to them, activities which could be taken up with the expertise of the private entities. Moreover, the various activities leading to sustainable development can be taken up by various companies as CSR initiatives helping them discharge their social responsibilities and gain returns and tax benefits. Some research should also be taken up by various companies in order to develop more products, serving the purpose of sustainability. Such products may serve as commercial products that may yield returns for the company. Such innovations can also be sponsored by the government by subsidising and promoting such products.

All the above suggested courses of action should be undertaken through a strong sense of co–operation between the Corporate Houses and the Government. It should be backed by a strong ideology that the benefit of one party in such an initiative would be the benefit of all. With all these actions in place, sustainable development would no doubt prove to be a viable business proposition.

Sustainable Biofuel Production and Use

Detailing the various types of existing Biofuels, their means of production and the advantages /disadvantages associated with them, the article, while talking about the necessity to tap them, as an important alternative energy source for economic as well as environmental reasons, goes on to defining the steps that India needs to take in this direction.

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Biofuel is defined as solid, liquid or gas fuel, derived from recently dead biological material and is distinguished from fossil fuels, which are derived from long dead biological material. Theoretically, Biofuels can be produced from any (biological) carbon source; although, the most common sources are photosynthetic plants. Various plants and plant-derived materials are used for Biofuel manufacturing. Recent technology even allows for the conversion of pollution into renewable Biofuel.

Common strategies used in producing Biofuel

There are two common strategies used in producing Biofuels. One is to grow crops high in sugar (sugar cane, sugar beet, and sweet sorghum) or starch (corn/maize), and then use yeast fermentation to produce ethyl alcohol (ethanol). The second is to grow plants that contain high amounts of vegetable oil, such as oil palm, soybean, algae, or jatropha. When these oils are heated, their viscosity is reduced, and they can be burned directly in a diesel engine, or they can be chemically processed to produce fuels, such as biodiesel. Wood and its byproducts can also be converted into Biofuels such as woodgas, methanol or ethanol fuel. It is also possible to make cellulosic ethanol from non-edible plant parts, but this can be difficult to accomplish economically.

Types

First Generation Biofuels

First Generation Biofuels are those made from sugar, starch, vegetable oil, or animal fats, using conventional technology. The basic feed stocks for the production of first generation Biofuels are often seeds or grains, such as wheat, which yield starch that is fermented into bioethanol, or sunflower seeds, which are pressed to yield vegetable oil, that can be used in biodiesel. These feed stocks could instead enter the animal or human food chain, and as the global population has risen, their use in producing Biofuels has been criticised, for diverting food away from the human food chain, leading to food shortages and price rises. The most common first generation Biofuels are Vegetable Oil, Biodiesel, Bioalcohols, Biogas, Syngas, and Solid Biofuels.

Second Generation Biofuels

Supporters of Biofuels claim that a more viable solution lies in increasing political and industrial support for, and rapidity of, second generation Biofuel implementation, from non food crops, including cellulosic Biofuels. Second-generation Biofuel production processes can use a variety of non food crops. These include waste biomass, the stalks of wheat, corn, wood, and special-energy-or-biomass crops (e.g. Miscanthus). Second generation (2G) Biofuels use biomass to liquid technology, including cellulosic Biofuels from non food crops. Many second generation Biofuels are under development such as Biohydrogen, Biomethanol, DMF, Bio-DME, Fischer-Tropsch Diesel, Biohydrogen Diesel, Mixed Alcohols and Wood Diesel.

Cellulosic ethanol production uses non food crops or inedible waste products and does not divert food away from the animal or human food chain. Lignocellulose is the 'woody' structural material of plants. This feedstock is abundant and diverse, and in some cases, (like citrus peels or sawdust) it poses a significant disposal problem.

Producing ethanol from cellulose involves a difficult technical problem that needs to be solved. In nature, ruminant livestock (like cattle) eats grass and then use slow enzymatic digestive processes to break it into glucose (sugar). In cellulosic ethanol laboratories, various experimental processes are being developed to do the same thing, so that the sugars then released can be fermented to make ethanol fuel.

Scientists are also working on experimental recombinant DNA genetic engineering organisms that could increase Biofuel potential.

Third Generation Biofuels

Algae fuel, also called Oilgae or Third Generation Biofuel is a Biofuel from algae. Algae are low-input, high-yield feedstocks that can be used to produce Biofuels. They produce 30 times more energy per acre than land crops such as soybeans. With the ever increasing prices of fossil fuels (petroleum), there is much interest in alga culture (farming algae). One advantage of many Biofuels over most other fuel types is that they are biodegradable, and so relatively harmless to the environment if spilled.

The United States Department of Energy estimates that if algae fuel replaced all the petroleum fuel in the United States, it would require 15,000 square miles (38,849 square kilometers), which is roughly the size of Maryland.

Algae, such as Chlorella vulgaris, are relatively easy to grow, but the algal oil is hard to extract.
Second and Third Generation Biofuels are also called Advanced Biofuels.

Fourth Generation Biofuels

An appealing Fourth Generation Biofuel is based on the conversion of vegoil and biodiesel into gasoline.

Issues with Biofuel production and use

There are various current issues with Biofuel production, which are presently being discussed, in the popular media and scientific journals. These include:

Rising food prices — the "food vs. fuel" debate

Internationally, this topic is highly debated. There are those, such as the National Corn Growers Association, who say that Biofuel is not the main cause of rising food prices. Some say the problem is a result of government actions to support Biofuels. Others say it is just due to oil price increase. The impact of rising food prices is greatest on the poorer countries. And so, some have called for a freeze on Biofuels. In May 2008 Olivier de Schutter, the United Nations food adviser, called for a halt on Biofuel investment. In an interview in Le Monde he stated: "The ambitious goals for Biofuel production set by the United States and the European Union are irresponsible. I am calling for a freeze on all investment in this sector." In fact, 100 million people are currently at risk due to the rising food prices.

Soil erosion, deforestation and biodiversity

It is important to note that carbon compounds in waste biomass that is left on the ground are consumed by other microorganisms. They break down the biomass in the soil, to produce valuable nutrients that are necessary for future crops. On a larger scale, plant biomass waste provides small wildlife a habitat, which in turn sends ripples up, through the food chain. The widespread human use of biomass (which would normally compost the field) would threaten these organisms and their natural habitats. When cellulosic ethanol is produced from feedstock like switchgrass and saw grass, the nutrients that were required to grow the lignocellulose are removed and cannot be processed by microorganisms, to replenish the soil nutrients. The soil then degenerates to a poorer quality. Loss of ground cover and root structures further accelerates unsustainable soil erosion.

Significant areas of the native Amazon rainforest have been cleared, by slash and burn techniques, to make room for sugar cane production, which is used in large part for ethanol fuel in Brazil and to serve the need for growing ethanol exports. Large-scale deforestation of mature trees (which help remove CO_2 through photosynthesis — much better than does sugar cane or most other Biofuel feedstock crops) contributes to un-sustainable global warming, through manipulation of atmospheric greenhouse gas levels, loss of habitat and a reduction in valuable biodiversity. So too, the demand for Biofuel has led to clearing land for Palm Oil plantations.

Impact on water resources

Increased use of Biofuels puts increasing pressure on water resources in at least two ways: water used for the irrigation of crops is used as a feedstock for biodiesel production; and water is used in the production of Biofuels in refineries, mostly for boiling and cooling.

Impact on society and water for Palm Oil production

In some locations such as Indonesia deforestation for Palm Oil plantations is leading to displacement of Indigenous peoples. Also, extensive use of pesticide for Biofuel crops is reducing clean water supplies.

Steps to resolve these issues

Responsible policies and economic instruments would help to ensure that Biofuel commercialisation, including the development of new cellulosic technologies, is sustainable. Sustainable Biofuel production practices would not hamper food and fibre production, nor cause water or environmental problems, and would actually enhance soil fertility.

This can be achieved by using sources such as Jatropha plants and Pongamia Pinnata for Biofuel production:

Jatropha plants

Jatropha are plants, which can be produced even on barren land. The hardy Jatropha is resistant to drought and pests, and produces seeds containing up to 40% oil. When the seeds are crushed and processed, the resulting oil can be used in a standard diesel engine, while the residue can also be processed into biomass, to power electricity plants.

Pongamia Pinnata

It is a deciduous tree that grows to about 15-25 meters in height, with a large canopy that spreads equally wide. The tree is well suited to intense heat and sunlight and its dense network of lateral roots and its thick, long taproot make it drought tolerant. Withstanding temperatures slightly below 0°C to 50°C and an annual rainfall of 5–25 dm, the tree grows wild on sandy and rocky soils, including on oolitic limestone, and can grow in most soil types, even with its roots in salt water. Recently the seed oil has been found to be useful in diesel generators and along with Jatropha, it is being explored in hundreds of projects, throughout India and the Third World as a feedstock for biodiesel. It is especially attractive because it grows naturally through much of arid India, having very deep roots that reach water, and is one of the few crops well-suited to commercialisation, which can be undertaken by India's large population of the rural poor.

Using Second and Third Generation Biofuel processes

Second and Third Generation Biofuel processes can ease the pressure on land, because they can use waste biomass and existing (untapped) sources of biomass, such as crop residues and potentially even marine algae.

Retaining a Portion of Biomass

A portion of the biomass should be retained onsite to support the soil resource. Normally this will be in the form of raw biomass, but processed biomass is also an equally attractive option. If the exported biomass is used to produce syngas, the process can be used to co-produce biochar, a low-temperature charcoal used as a soil amendment, to increase soil organic matter to a degree not practical, with less recalcitrant forms of organic carbon. For co-production of biochar to be widely adopted, the soil amendment and carbon sequestration value of co-produced charcoal must exceed its net value, as a source of energy.

Advantages of Biofuel as an Alternative Energy Source

Oil price moderation

The International Energy Agency's World Energy Outlook 2006 concludes that rising oil demand, if left unchecked, would accentuate the consuming countries' vulnerability, to a severe supply disruption and resulting price shock. The report suggested that Biofuels may one day offer a viable alternative. According to the Francisco Blanch, a commodity strategist for Merrill Lynch, crude oil would be trading 15 per cent higher and gasoline would be as much as 25 per cent more expensive, if it were not for Biofuels. Gordon Quaiattini, President of the Canadian Renewable Fuels Association, argued that a healthy supply of alternative energy sources will help to combat gasoline price spikes.

Carbon emissions

Biofuels offer the possibility of producing energy, without creating a net increase in carbon in the atmosphere. This is because the plants used in the production of the fuel remove CO_2 from the atmosphere; unlike fossil fuels, which release the carbon that is stored beneath the surface, for millions of years, back into the atmosphere. Therefore, Biofuel is, in theory, more carbon neutral and less likely to increase the atmospheric concentration of greenhouse gases.

Potential for poverty reduction

Researchers at the Overseas Development Institute have argued that Biofuels could help to reduce poverty, in the developing world, through increased employment, wider economic growth multipliers and energy price effects. With regards to the potential for poverty reduction or exacerbation, Biofuels rely on many of the same policy, regulatory or investment shortcomings that impede agriculture, as a route to poverty reduction. Since many of these shortcomings require policy improvements at the country level rather than the global one, they argue for a country-by-country analysis of the potential poverty impact of Biofuels. This would consider, among other things, land administration systems, market coordination and prioritising investment in biodiesel, as this 'generates more labour, has lower transportation costs and uses simpler technology'.

Biofuel as a Business Prospect

With demand for energy increasing all over the world and in the context of rising environmental concerns, sustainable Biofuel production with all its advantages such as no carbon emissions, potential for poverty reduction (through increased employment, wider economic growth multipliers and energy price effects), the ability to tap any valuable source of energy is emerging as a great business prospect. There are countries, like U.S.A., U.K., New Zealand, Sweden, Spain, Germany, France, China, Israel, Colombia et al, who are actively involved in the production of Biofuels and the development of Biofuel processes.

- Initiatives that need to be taken up by the Indian Government for promoting Biofuel production
- Identifying major intervention areas for India in the form of policy, incentives, research and Public Private Partnerships (PPPs), for generation of groundswell in Biofuels investments in the country
- Acquiring strategic experience from countries highly successful in the development of the Biofuels sector and global Biofuels trade
- Disseminating information on successful and emerging research, on the development of appropriate feedstocks for Biofuels and the resultant technologies and business models
- Bringing to the fore information on successfully applied, cost effective technologies available for First and Second Generation Biofuels development.

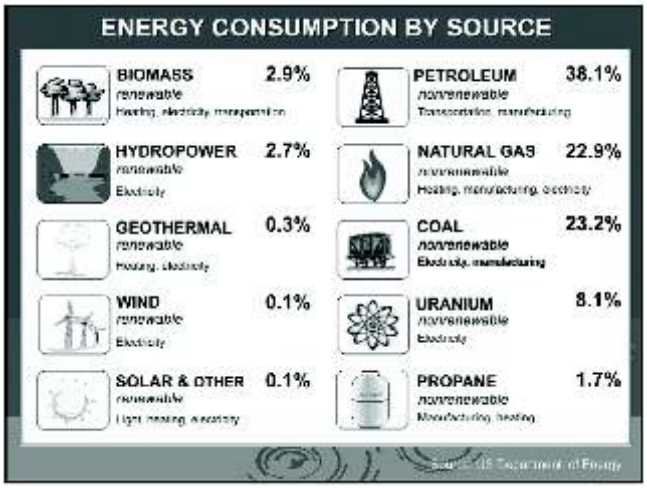
Sustainable Development in Biofuels


By taking a close look at the available sources of biofuels in the world and in India, the article comments on their use, efficiency and means of their cultivation and larger production, not merely to address environmental issues but also as a means of strengthening the Indian economy by reducing the colossal amounts spent on the import of fossil fuels.

Ashwinkumar Arora - MMS and Krunal Shah - eMBA (Insurance)

Introduction

The world is now facing a lot of heat, as a result of the increasing levels of global warming, due to increasing emissions from the use of fossil fuels. Moreover, fossil fuels themselves prove to be a scarce resource now. In the face of these problems, biofuels are gaining more and more importance. Biofuels, as is apparent, are not new innovations and have been used in some form or the other, since centuries. Biofuels were first used in a combustion engine. As the famous scientist, who discovered the engine that initially ran on vegetable oil, remarked, engines in the distant future would run on biofuels rather than on petrodiesel.



India is a developing country with huge energy needs. These energy needs are serviced by fossil fuels, which are imported from other countries. This accounts for a huge part of the country's foreign exchange. According to recent estimates, where the trade deficit of the country amounted to US$ 500 million, the cost of the import of petroleum itself constituted US$ 600 million. Thus, a significant amount of foreign exchange is required to service this purpose and this is only expected to grow, given the current requirements of the growing economy of the country. Biofuels, as such, would prove to be a great boon, even if it can substitute a small portion of the fuel requirements. Furthermore, this would also lead to a reduction in the levels of pollution.

Biofuels and their applicability

Bi fined broadly as any type of fuel derived from biological sources like biomass. They include biodiesel, bioethanol, b ol, bio methyl ether and bio–oil. Of these currently the main ones used in transport are bioethanol, a petrol a made from starchy materials like cereals, sugar beet or fodder beet and biodiesel, a diesel alternative made from a r d vegetable sources, including recycled vegetable oils and fats from the food chain.

B od substitutes for fossil fuels. Biodiesel is a close substitute for petro–diesel and has almost similar physical properties. However, it differs slightly in flash point. That is why it cannot be used in its pure form, directly, in engines designed for the combustion of petro–diesel. It can be easily used by blending it with ordinary diesel, without any modifications, in ordinary diesel engines. Biofuels are commonly blended with petro-diesels, where the level of blending of biofuel in petro–diesel goes upto 20%. In certain countries, it has become mandatory, by the order of the statute, to blend ordinary diesel with biofuel to a level not less than 5%.

A Comparison of Petro & Biodiesel Vs Green Diesel

	Petroleum Diesel (ULSD)	Biodiesel (FAME)	Green Diesel
% Oxygen	0	11	0
Density g/ml	0.83 0.85	0.883	0.78
Sulfur content	<10ppm	<10ppm	<10ppm
Heating Value (lower) MJ/kg	43	38	44
% change in NOx emission	baseline	+10	0 to -10
Polyaromatic content (wt%)	4	0	0
Cloud Point °C	-5	-5 to +15	-10 to -5
Distillation 10-90% pt, °C	200-300	340-355	265-320
Cetane	40-55	50-65	70-90
ASTM	D 975 06	D 6751 06a	D 975 06

The distribution of biofuels doesn't require separate infrastructure for distribution. It can be easily distributed through the available infrastructure. Biofuels can also be used to run generators. This can be done by carrying out certain modifications in the generators, one of them being introduction of catalytic converters. This is required, as the by products of combustion of pure biofuels, consist of fatty acids and other such substances that may prove to be deteriorating agents for certain engine parts, as such substances are generally affect certain special polymeric materials.

Currently biofuels are also being increasingly tested for applicability in jet turbines, with experiments being conducted by various airlines, like Virgin Atlantic, Air New Zealand, etc. Of these, the experiments conducted by Air New Zealand are

approved by international agencies for the development of biofuels.
Biofuels are also used in running railway locomotives. The Indian Railways has also established tie ups with other agencies for the development of biofuels for their use. The Indian Railways has with great success started using oil (blended with diesel fuel in various ratios) from the Jatropha plant to power its diesel engines. Currently the diesel locomotives that run from Thanjavur to Nagore, Tiruchirapalli to Lalgudi and Dindigul to Karur sections run on a blend of Jatropha and diesel oil.

According to an article published on the Audarya Fellowship website (a group which functions as a guide to natural medicines in India), the oil obtained from the biodfuel source Jatropha, can be used to treat diseases like cancer, piles, snakebite, paralysis, dropsy etc.

There are many such uses of biofuels. In fact, the residue left after extracting oil from the oil bearing seeds can be used in the form of fuel cakes that can be used as domestic fuel or as natural manure during cultivation. The fatty acids obtained as a by-product of the trans–esterification process of biofuel production can be used for a wide variety of purposes including the production of medicines, industrial chemicals, etc.

Sources of Biofuels

There are various sources of Biofuels that are available. Oil can be extracted from a variety of plants and oilseeds. Under Indian conditions, only such plant sources, which are not edible in appreciable quantity and which can be grown on large- scale on wastelands, can be considered for biodiesel production,. Moreover, some plants and seeds in India have tremendous medicinal value, and so considering these plants for biodiesel production may not be a viable and wise option. Considering all the above options, probable biodiesel yielding trees in India are:

- Jatropha curcas or Ratanjot
- Pongamia pinnata or Karanj
- Calophyllum inophyllum or Nagchampa
- Hevea brasiliensis or Rubber seeds
- Calotropis gigantia or Ark
- Euphorbia tirucalli or Sher; and
- Boswellia ovalifololata.

Of all the above prospective plants as biodiesel yielding sources, Jatropha curcas stands at the top and sufficient information on this plant is already available. These plants can grow on poor degraded soils and do not need much irrigation. Thus, it ensures reasonable production of seeds with very little inputs. Animals do not like to make it a meal and the plant is highly pest and disease resistant. Within 2 to 5 years of plantation, kernels vary from 0.5 to 12 tonnes per year, based upon soil and rainfall conditions. The seeds contain 55-60% oil that can be converted into biodiesel by trans-estrification. A yield of 0.3 to 0.8 tonnes of biodiesel could be expected per acre per year from the fifth year onwards. Jatropha plantations yield over long periods of time. However, the most commonly used oils for biodiesel in USA and European countries are those made from soyabean and rapeseeds.

Biofuel can also be obtained from certain types of algae like pond scum. The yield of biofuel from the same quantity of algae, when compared to other plants like Jatropha, is comparatively very high. The yield of biofuel from a given area of Algae cultivation is almost 20 times the quantity of biofuel obtained from the same cultivated area of Jatropha. The various places where algal cultivation can take place are as follows:

Large - scale, natural sources

- Bogs, marshes and swamps
- Salt marshes
- Salt lakes

Small - scale sources

- Wastewater treatment ponds
- Animal waste
- Other liquid wastes

Waste vegetable oils are also important sources of biofuels. Waste vegetable oils from various sources like domestic uses, hotels, restaurants, etc. can be collected and be treated to convert them into biofuels. These are the cheapest sources of biofuels that are available. There are many instances where people have experimented with such sources and have adopted different means of collection and conversion for their own use.

Advantages of Biofuels

- Biofuels are close substitutes for fossil fuels, with various advantages as follows:
- Reduced carbon dioxide (CO_2) emissions - It is found that biodiesel, containing merely 20% of biofuel oil, contributes to a reduction of almost 11% of emissions.

- Provide income and employment opportunities - Cultivation of biofuel crops and the extraction of the fuel oil from the seeds of biofuel plants provides a lot of employment opportunities in rural areas.
- Contribute to overall energy security - The use of biofuels as substitute fuels would lead to a reduction in strain on the use of fossil fuels.
- Improve air quality, especially in congested areas - The reduction in emissions from the combustion of biofuels helps in maintaining a cleaner environment.
- The use of biofuels also enables the companies using them to earn carbon credits under the Clean Development Mechanism of the United Nations made in order to arrest the increasing effects of Global Warming. This would help the companies gain more from their initiatives.

Problems with Biofuels

Biofuels, as pointed out earlier, cannot be used directly as a fuel, in conventional diesel engines. Moreover, there are also certain problems involved with the cultivation of biofuels. Cultivation as a process is not a problematic area as crops like Jatropha can be practically grown on any kind of land with or without irrigation facilities. However, the seeds of Jatropha are, to some extent, toxic in nature. But by educating farmers and other people about it, any harm to humans and animals in the vicinity can be prevented.

Furthermore, there is an argument that growing plants for fossil fuels would hamper the supply of food, as farmers may increasingly switch to growing oil seeds, as they are more profitable in nature and lead to higher returns as compared to the other crops cultivated. This has led to various governments laying limitations on the growth of such plants, as otherwise the emphasis on growing non food crops may affect the food security of the country.

Also, biofuel, in the present situation is not produced in such large quantities as to achieve the economies of scale and as such it results in higher costs for producing biofuel, as the extraction and the trans-esterification treatment of biofuels is an expensive affair, when not carried out on a massive scale.
These are some of the major programmes that may lead to retardation in the growth of biofuels. But considering the current situation and the need for substitute fuels, ways and means need to be adopted to overcome these problems in an effective manner.

Jatropha Oil Extraction Cost

Parameters	1 t/day cap	1 t/hour cap	2 t/hour cap
Installation cost	Rs. 70,000	Rs. 3,00,000	Rs. 5,00,000
Power consumption	45 KWH	30 KWH	24 KWH
Cost of power consumption	Rs 225	Rs.125	Rs. 120
Steam	600 kg/ton	150 kg/ton	125 kg
Cost of steam	Rs. 180	Rs. 45	Rs. 37.50
Man Power	3/day	3/day	6/day
Cost of manpower	Rs. 450/ton	Rs. 20/ton	Rs. 20/ton
Processing cost/ton			
Investment	Rs. 885	Rs. 215	Rs. 177.5
Depreciation	Rs. 45	Rs. 7.5	Rs. 6.5
Total cost of Processing/ton	Rs. 900	Rs. 222.5	Rs. 184

Sustainable development in biofuels

Addressing all the above issues regarding biofuels would result in sustainable development in biofuels. Sustainability, in this context, would be mainly related to conserving the land resources for cultivation of biofuel crops, without straining the resources for cultivation of food crops.

There are various options available for the cultivation of biofuel crops. The most productive of all the biofuel crops is the jatropha plant. It gives the maximum amount of oil output per hectare of land. It can also grow on any kind of land under any kind of environmental conditions irrespective of the availability or non availability of irrigation facilities. The government and various agencies have played an important role in promoting this crop. The various agencies involved in the promotion of the growth of these crops include the Indian Railways, the University of Pune et al, who conduct research on resource availability for the growth of these crops on barren, fallow and unproductive lands in Maharashtra. Various state governments like the Governments of Chhattisgarh and Karnataka have also formulated policies for the growth and development of biofuels. These governments have taken initiatives to promote the cultivation of biofuels on barren and unutilised parts of land in their states.

Life cycle of Jatropha

There are also certain live examples of how an entire village has become self sufficient through the use of biofuels. The following case study illustrates this:

Case Study

This is a case study which analyses the initiative of Winrock International India, for the development of the village Ranidhera, which is situated in a remote location, in the state of Chattisgarh. In this village, the villagers were devoid of even basic facilities and had no electricity, as a result of which the farmers could barely sustain themselves. Winrock International India started an initiative, which would lead to the development of the village, through the development of biofuels in the village. The members of the organisation persuaded farmers to cultivate the biofuel crop jatropha on the barren parts of their farm and as bordering plants on their farmlands as well as on bunds. In a short period, the farmers planted about 25000 saplings. After two years the plants started bearing seeds. In the meantime, the member of the organisation planted the required infrastructure for the extraction of fuel oil from the seeds of jatropha. They also established facilities for the generation of electricity from the fuel oil, by making certain modifications, which could make it compatible for use in generators, for the generation of electricity, directly using the untreated fuel oil, as the trans-esterification process involved to convert the fuel oil into biodiesel is a costly affair. After these developments, the seeds obtained from the plants were first used to extract the fuel oil and then this oil was used to obtain electricity. The villagers pay for this through their labour and have to pay only a small amount of money to carry out the process. As a result of the availability of the electricity, the education and various other means of business being facilitated, this has led to the development of the village and has led to a complete transformation, which has made the village self sustainable.

Another important source of biofuels, as mentioned earlier is algae. The algae can be commercially cultivated in artificial shallow ponds. Such ponds can be made in the waste area of manufacturing units. Certain amount of effluents can be routed into the pond to assist the growth of algae. In such a manner, the effluents from industries are treated or reduced before they are let out into the atmosphere. This gives a rich source of biofuels in a comparatively lesser area of cultivation.

Bio fuels are also obtained from sources like corn, sorghum, etc. These sources of fuels are relatively less yielding as compared to jatropha. But these sources are common in countries like U.S.A. and U. K. In India, there are various companies like Tata, which have started such plantations for extracting biofuels in order to discharge their Corporate Social Responsibilities.

In India, there is a lot of land that is barren. Given the characteristics of jatropha, these areas can be used for its cultivation. Also, there are many areas in which jatropha is grown merely as a bordering plant, without awareness about its fuel yielding abilities. According to a recent research conducted by an agricultural agency, the major problems regarding biofuel crop production are as follows:

- Lack of knowledge about the fuel yielding capability of jatropha.
- Lack of proper knowledge about the methods and new means for the cultivation of jatropha.
- Lack of availability of saplings for cultivation, etc.
- Lack of means of extracting fuel from the seeds.

Conclusion

Thus, proper means should be adopted to educate farmers about these developments. The farmers must also be provided with required resources like saplings. So too, companies should also participate in the process of training the farmers and helping them in cultivating biofuel crops. There is a lot of participation by the companies in the production of biofuel crops. However, there is a lack of research in the field of biotechnology related to the development of high yielding biofuel crops and methodologies of cultivation.

If all the above means are adopted and the shortcomings are overcome, India can harness the huge potential of its biofuels and reduce to some extent, the level of dependence on imported fossil fuels and thereby reduce the associated foreign exchange deficit to some extent.

Sustainable Development in the Indian Railways




Through a detailed case study of the Indian Railways, which have gone on to become a profit making venture from a loss making one, the article goes on to illustrate how minor innovations brought about by thinking creatively and practicably can bring about major changes, leading to sustainable growth.

Aayush Poddar, Nandini Asthana, Megha Sheth, Vinesh Subramaniam - eMBA (Insurance)

When one thinks of the Indian Railways the first thought that crosses one's minds is the overly crowded trains, generally running behind schedule, tobacco stains in compartments and beggars sleeping on the platform benches, as well as people standing for hours on the platform, patiently waiting for trains, which are delayed, without any idea about the status of the train. Thankfully this has changed!

Never mind if the railways have a reputation of running late. Compared to the years of cross-subsidising passenger tariff, by overcharging on freight, it's far cheaper to travel by train today than it is by road. A journey in a bus by road would cost nearly four times more than a ticket for a second class compartment. For example, the journey from Hyderabad to Mumbai costs Rs 69 by train and Rs 216 by bus. This makes the passenger travel cost by railways the lowest in the world, whereas the freight, which earns maximum revenue, costs the highest. As a result 90% of the freight in the country, which used to move by railways in the 1950s, eventually declined to a mere 30%. Freight, incidentally, is the real revenue earner, as the railways make losses in passenger traffic, since it is highly subsidised.

It was predicted, by a government appointed expert group in 2001, that the Indian Railways was on the verge of a financial crisis and the business would soon drive it to fatal bankruptcy, and in 16 years, the Government of India would be saddled with additional financial liability.

The Indian Railways had no doubt been a loss making venture, until Mr. Laloo Prasad Yadav took over as the Railways Minister. He took over this government giant with an employee strength of a whooping 1.5 million and transformed it into a profit making enterprise and interestingly, he did all this without downsizing the railway staff or hiking the fares. In fact he reduced the fares and still managed to increase the revenue by 15.5%. In the very next year, Indian Railways generated profits of Rs. 20,000 crores, double that of India's largest private company, Reliance Industries.

Till Mr. Laloo Yadav took over, the railways were considered to be a social obligation, to the citizens of the country, by our leaders. Laloo looked at the railways as a commercial enterprise and not a social welfare institution.

So how was this transformation possible?

1. **Increasing the speed of all Mail and Express trains**
   Indian Railways have trains, which are capable of reaching speeds of 150 km/h. This reduces the time taken in reaching destinations. There are permanent speed restrictions on the track, as there are weak sections, acute curves and other infrastructure related issues. There have been improvements made in these sections but the permanent speed restrictions have not been removed. Such permanent speed restrictions have been studied and removed wherever possible. This has increased the speed of trains.

2. **Adding more coaches to every train**
   The number of coaches was increased from 12 to 24, which helped transport double the number of passengers in the same train, without much change in the fuel cost or manpower cost. 800 more coaches were to be attached in popular trains, thus resulting in increased earnings and convenience to passengers.

3. **Implementation of the Freight Operating Information System (FOIS)**
   FOIS allows transporters to get instant access to information, regarding the current status of their consignments, in transit. FOIS uses state-of-the-art technology and is poised to bring about an IT revolution, in railway management systems, on a scale that has not yet been attempted in any South Asian railway system. Once all the phases and modules are integrated and implemented, it would place the Indian Railways at par with any other railway system in the most developed countries of the world.

4. **Many efforts taken to reduce bottlenecks in traffic.**

5. Thrust given to sundry earnings like catering and publicity, which leads to increased revenue.

6. Allowing up-gradation of tickets for passengers to higher classes, if vacancy is available

7. Rake overload advantage
   The rake overload has benefited the railways, by increasing freight earnings, without increasing freight charges. The axle load had traditionally been 20.3 tons; this was increased to 22.9 tons. Every extra ton loading on a wagon would result in additional revenue of Rs. 500. This extra loading would result in 10 million tons of extra loading, which means an additional revenue of Rs. 500 crores for the railway.

8. Garib Rath
   Literally meaning Poor-Man's Chariot, this is the first air conditioned low cost train costing 50% of the fare of any other air conditioned express train. This train will have 24 coaches as against an average of 17, which means that it would carry 1828 passengers, as compared to the usual 799.

9. Carbon Credits
   Carbon Credit is an International emission trading scheme, which is implemented, to mitigate global warming. In this scheme the entity, which reduces its carbon and other greenhouse gas emissions, is awarded with a certificate, which can be traded in the market for money.

Indian Railways with an aim to become environment friendly has taken a lot of initiatives to earn these Carbon Credits. In 2008-09 the Railways have allocated a specific budget towards the same.

This year the Indian Railways spent Rs. 4,000 crore, for setting up green toilets in 36,000 coaches. It has been observed that the human waste from the trains have been corroding the tracks within a span of two years. Railways have been testing three models for its toilets - controlled discharge, biodegradable and vacuum retention.

In controlled discharge, waste from toilets is discharged on the tracks, only when the train travels beyond 30km/hr. Biodegradable toilets convert the waste via a microbial or chemical process into non-corrosive carbon dioxide or chlorinated liquid and vacuum-retention toilets, like in aeroplanes, retain the waste in a storage tank.

Mr. Laloo Prasad Yadav also announced that, in an energy-saving measure, the railways would replace 2.6 million bulbs with CFLs (Compact Fluorescent Lamps) in 600,000 rail staff quarters. CFLs will also light up all stations, offices and other railway premises and save 200 million units of electricity annually.

Apart from this Indian Railways has been planting jatropha, in its vacant areas, with an aim to use jatropha to produce biodiesel, to run the trains, which would earn more Carbon Credits.

10. Railway Security
- The number of dogs, in the existing dog squads, will be increased.
- Door frame and hand held metal detectors, to detect explosives, are being installed in many sensitive divisions and CCTV, smart video cameras etc. Are being installed on sensitive stations.
- To achieve reduction in the rate of accidents per million train kilometres from the present level of 0.44 to 0.17 by the year 2013.

With these minor improvements in every area and minimal investment Mr. Laloo Yadav has achieved phenomenal growth and success in the Indian Railways and has sustained it year after year.

Future planning and Investments

hIndian Railways have taken up the biggest ever annual plan for the Railways in the fiscal year 2008-09; entailing a massive investment of Rs. 37,500 crore, signifying 21 percent increase over the previous year.

Some improvements to be seen in the railways over the next few years are:
- Planning for triple-stack container trains on the diesel route and double-stack container trains on the electrified route, for increased freight carriage.
- Countrywide Train Enquiry call centres.
- 300 more stations to be developed, as modern stations.
- Special campaign to ensure cleanliness in station complexes, passenger trains, railway lines, waiting rooms etc.
- High speed passenger corridors, to be constructed, to run trains at speeds of more than 300 km/hr.

Conclusion

Over a span of five years, 1999-2000 to 2005-06, the railways fund balance increased by a whopping 7953% to Rs 12000 crore; from a

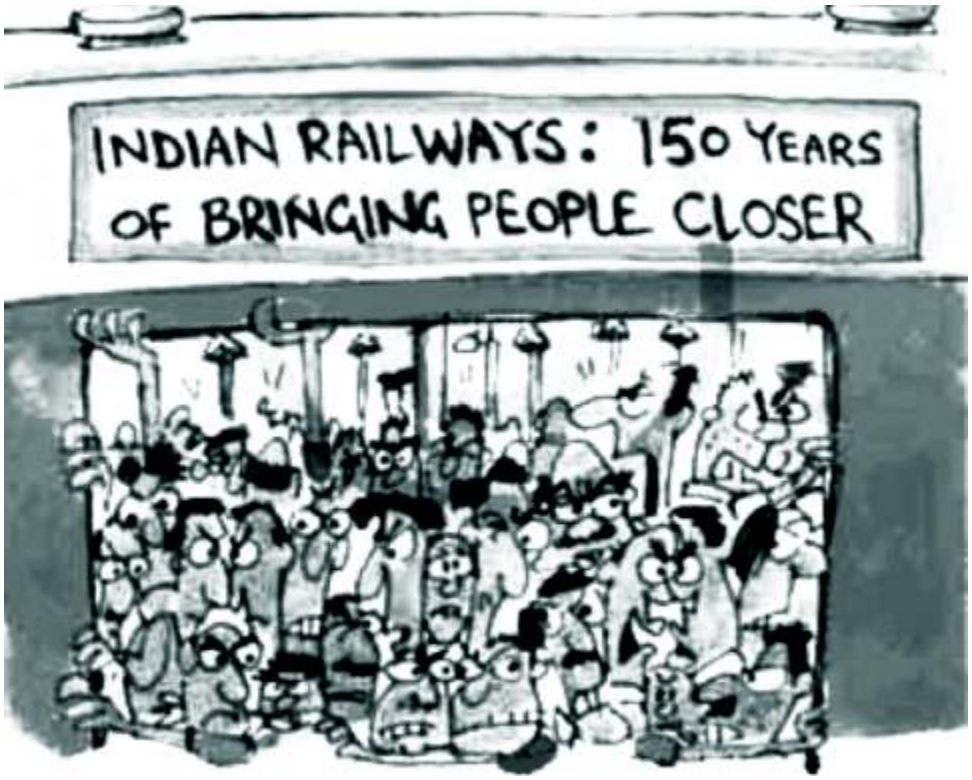
meagre Rs 149 crore, at the end of the fiscal year 1999-20. This was achieved due to economies of scale, which is the biggest strength of the Indian Railways. The profit can be attributed to efficient utilisation of resources as well.

The services are meant for everybody, from the industrialists to the backbenchers of the society. The poor people and the farmers, everybody uses the railways. One cannot earn profit at the cost of the common man. Hence the biggest task of the Indian Railways has been to ensure the fulfilment of its duties towards the society, while focusing on its business objectives.

Mr. Sudhir Kumar, advisor to the Railway Minister says, "It was like preparing an omelette without breaking any egg. It may appear to be an impossible proposition. But what looks an impossible proposition for preparing an egg omelette may not be an impossible proposition if it is a business omelette. In business, you can achieve this by playing on volumes. By increasing volumes you can reduce your unit cost, you can reduce your tariffs, and you can improve your margin and market share. Hence you can earn profits."

Indian Railways have been able to create a real win-win situation, by reducing the passenger fares of all the classes and reducing passenger losses by Rs 3000 crore. The passenger loss, which at one point of time was about Rs 8,400 crore, has come down to about Rs 5,500 crore. If the length and occupancy of the passenger trains is increased and the layouts of the coaches are optimised, along with increased sundry earnings like catering, advertising, publicity, parking, land leasing, the losses could be brought down further, without increasing the fares.

What is heartening is that the initiatives taken up by the Indian Railways have gone on to ensure not only sustained development but also accelerated growth, just like in any business organisation.



Sustainable Development through Efficient Poverty Reduction and Economic Growth


Drawing upon the plight of the rural poor, the article analyses the reasons that poverty is prevalent in the rural areas and suggests simple and practicable means for alleviating the problems, so as to ensure balanced development.

Sonal Mehta, Vinit Salpe - eMBA

The concept of sustainable development has received growing recognition, but it is a new idea for many business executives. If sustainable development is to achieve its potential, it must be integrated into the planning and measurement systems of business enterprises. And for that to happen, the concept must be articulated in terms that are familiar to business leaders.

For a business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future.

The business directors should therefore apply the concept of sustainable development to their own organisations. However, it is important to emphasise that sustainable development cannot be achieved by a single enterprise (or, for that matter, by the entire business community) in isolation. Sustainable development is a pervasive philosophy, to which every participant in the global economy (including consumers and government) must subscribe, if we are to meet today's needs, without compromising on the ability of future generations, to meet their own.

The role of business in contributing to sustainable development remains indefinite. While all business enterprises can make a contribution towards its attainment, the ability to make a difference varies as per the sector and organisation size. From a broader perspective, it is clearly in the interest of business to operate within a healthy environment and economy. It is equally plain that, on a global basis, growing and sustainable economies in the developing countries will provide the best opportunities for expanding markets.

The concept of sustainable development needs to be incorporated into the policies and processes of a business, if it is to follow sustainable development principles. This does not mean that new management methods need to be invented. Rather, it requires a new cultural orientation and extensive refinements of systems, practices and procedures. The concept of sustainable development must be integrated both into business planning and into management information and control systems, by the senior management of the organisation. Sustainable development means more than just 'the environment'. It has social elements as well, such as the alleviation of poverty and distributional equity.

The first step in the sustainable development of our country begins with rural development, as an integrated concept of growth and poverty elimination. Concerted efforts should be made to improve the living standard of rural masses, as this is where the problem of extreme poverty, malnutrition, illiteracy, unemployment, food crisis etc. persists. Also, due to the lack of infrastructure and proper government policies in place, the process of economic development has not really taken shape. Therefore, business houses should focus on improving the conditions, in these rural and semi-urban places, which have the potential of economic growth.

Rural development holds a challenge and a promise for India, which in the past has adopted different rural development strategies. These strategies were only partially successful mainly because of rapid population growth, inconsistency of policies, a top-down development approach, the politicisation of community development programmes and initiatives and finally, poor governance. Since rural development is multidimensional, rural development strategies should encompass economic, social, political and institutional aspects. In addition, the process of developing the rural and semi-urban villages should be carried out in phases, with the involvement and active participation of rural people, by making them aware of their contribution towards national development as well as their role, responsibility, power and status in national reconstruction.

The main issues in rural development are:

1. Education (everyone should be educated irrespective of age")
2. Construction of Roads (also a major concern)

3. Generation of self-employment
4. Health awareness
5. Making rural people aware of available employment opportunities.
6. Family planning

Other important issues which need to be tackled are waste management, alcohol (and tobacco) prohibition, organic farming and drainage management.

Thus, a holistic approach should be adopted towards rural development, which should include the following elements:

1. Appropriate policies

Appropriate policies that are aligned with emerging socioeconomic trends, as well as national and international challenges, need to be introduced. These policies should respond to rural needs and create an integrated system, to provide production inputs and extension services, in a timely manner, so as to support prices and to improve yields and market access. They should also:

- Create productive employment opportunities for the rural poor, through the use of labour intensive technologies
- Strengthen rural and agricultural information systems
- Improve asset distribution by reducing inequalities
- Promote human resource development.
- Develop rural institutional capacities.

Economic growth is the primary engine of rural poverty reduction. Generally, benefits for the rural poor come from labour-intensive growth approaches. This, in addition to technologies, institutions and efficient sustainable use of natural resources, help economic growth and poverty reduction.

2. Increasing productivity

Rural development strategies should aim at increasing agricultural and non-agricultural productivity, through better farming and non-farming practices, diversification of cropping systems, adoption of environmentally sound practices, a focus on agriculture in dry-land and mountainous areas and investments in agricultural research and extension. Irrigation systems are essential for increasing agricultural productivity. Action plans should be prepared to overcome water scarcity, through augmentation and conservation, i.e. through the construction of small, medium and large dams, efficient utilisation of irrigation water, restoration of soil productivity through control of water logging, salinity and floods, drainage and groundwater management and more equitable water distribution.

Agricultural productivity for major crops in India ranks far below the world average. Low productivity in agriculture contributes to low farm incomes and wages, low farm employment generation, and relatively high food prices. Raising agricultural productivity is important for the economic growth and food security for the population of India. There is substantial scope for creating new jobs, by expanding the area under irrigated cultivation. This raises crop yields, which in turn increases labour intensity and encourages diversification, from low-value to high-value crops, such as fruits, vegetables and flowers for domestic consumption, processing and export. Strategies should also focus on developing the livestock sector, agro-industry and agri-business.

3. Rural employment generation

Access to gainful employment is an important factor for poverty reduction in India. Future rates of unemployment will depend on a range of factors, including the growth rate of the labour force, changes in the structure of employment in different sectors and the growth rate of the economy. Achieving full employment will require a reorientation of national priorities and policies. Until now, planning, to achieve national goals, has been largely done, on a sector by sector basis, by line ministries. These parallel lines of planning need to be integrated, to achieve full employment. Policy reorientation, to strengthen the sectors, with the largest gross employment potential per unit of output, such as agriculture, is urgently required.

Labour-intensive infrastructure programmes should be undertaken to generate employment and income opportunities for the rural population, such as the construction of feeder roads, upgrading of rural transport and communication systems and the development of endogenous power sources. Public work programmes have been effectively used in many countries to generate short-term employment and income for poor households. Similarly, the development of high, value-added agricultural products, such as dairy products, fish, vegetables, fruits and flowers, can create substantial employment opportunities.

The rural non-farm sector also plays a significant role in India, as it is a big source of employment and income, for the poor, in rural areas. Further development of the non-farm sector will help to absorb the incremental population increase in the rural labour market.

4. Development and improvement of physical infrastructure

Adequate, affordable and reliable infrastructure services should be an integral part of a rural development and poverty reduction strategy. Investments in telecommunication services, rural electrification and clean water supply and sanitation will have positive impact on the investment climate, on farm and non-farm businesses, and on the diversification of agricultural production.

An integrated area-based planning and development approach should be introduced at the district level, to prepare a needs-based development plan. The implementation of district plans should be strengthened by involving communities and NGOs and by establishing effective monitoring and evaluation systems, including third-party evaluations and impact assessments.

5. Decentralisation

The Indian government should make efforts to strengthen local government structures, by devolving powers and responsibilities, including social services, from the central and the provincial government levels, to the grass-root level. The focus of these efforts should be on:

- Political structures and systems with districts forming the basis of future democratic structures and systems.
- Law enforcement structures and systems from district to central levels
- Public employment systems.
- Primary health-care systems that provide affordable and accessible health care, to all citizens, at affordable rates.
- An educational system that links education and training with employment needs.
- A public information system that promotes free access to information for all citizens, taking into account national security issues.
- Economic structures and systems that promote GDP and per capita income growth.

Without common direction and overall cohesive development efforts, rural development attempts cannot be effective or successful, when programmes are undertaken in only a few isolated sectors. The creation of sustainable local institutions requires a longer time commitment, by the government, business enterprises, NGOs and involvement and active participation of the rural people themselves. Representative participation is not a substitute for community participation. The most effective way to promote sustainable village-level development is to foster community organisations, to carry out activities. There is an increasing trend towards the decentralisation of government-provided services, the promotion of local government and capacity building of local people and local government authorities to plan, initiate, coordinate, manage and execute development policies and programmes, in co-operation with local communities. This approach allows for better needs assessment, increased responsiveness to local requirements, improved flow of information between rural dwellers and local governments, and improved transparency and accountability for activities and funds.

6. Enhancing the access of the poor to financial resources

The positive effects of micro finance on poverty reduction are well acknowledged. Also, women's access to credit would result in a significant improvement, in the position of the women, in society. It will enhance their contribution to the economy and increase their ability to hold assets in their own name. In addition, it will also improve their purchasing power and their political and legal awareness. The access to credit will also lead to higher levels of mobility, political participation and involvement in major decision making.

Although banking services have expanded rapidly in rural India, in recent years, majority of the rural poor have not benefited much from these services. NGOs along with business enterprises have considerable potential for serving the poor, in a better manner.

7. Enhancing women's capabilities

In India, over 90 per cent of rural women workers are unskilled. The wage rates for women in agriculture are 30 – 50 % less than those for men and female casual labourers have the highest incidence of poverty. The severity of poverty in India is usually higher for women than for men and they face greater hardship in lifting themselves (and their children) out of the poverty trap, due to the lack of education, fewer employment opportunities, early marriage and poor child health care.

Therefore, development efforts should focus on programmes, for increasing work opportunities and the productivity of land, cultivated by female farmers. Women's access to productive land can be increased by leasing and share cropping arrangements and utilisation of uncultivated agricultural land, by women's groups. Collective efforts to bring wastelands under cultivation and provision of incentives for women, to engage in low-input subsistence/agriculture can also reveal immediate benefits, in terms of household "goods security" and women's empowerment, along with additional employment generation.

8. Good governance

Unless governance issues are addressed, proper operation of plans and policies will not be possible and the objectives of development plans, programmes and projects will not be achieved. Improvement in governance is the key to better implementation of plans, programmes and projects. At present, various services and inputs concerning rural development are provided by the government (central

government, state government and local government) private and non-governmental agencies. Therefore, coordination of rural development activities becomes difficult and there are many distortions. There is a need to reinforce coordination and accountability mechanisms, at the local level, by strengthening district government institutions and empowering district governments, to improve governance. The creation of organisations, to support line agencies, local government institutions and community organisations, in undertaking rural development, is likely to improve the situation.

9. Human resource development and institutional capacity building

Human resource development is an essential component of poverty reduction efforts. The lack of access to basic services such as education, health, water and sanitation is a major constraint in rural areas. Rural development strategies must improve the health, nutrition and schooling facilities of the poor. Training in rural development can impart knowledge and skills and can modify the behaviour of the rural people. Training should be comprehensive and involve all stakeholders. The formulation and implementation of a national rural development training policy will improve the work environment and strengthen institutional capability, to build the capacity of the poor.

The ultimate goal is for people in the participating communities to have the access, confidence and competence, to make informed choices from a range of appropriate development options.

10. Community empowerment and inclusion

The rural communities have not been empowered in the past. So they do not participate in the development process. A participatory model that mobilises the community and makes it responsible for its own well-being is bound to find greater success. The attempt should be to turn villagers into entrepreneurs and keep the ownership of the various projects, with the community. Given the vastness and diversity of the geographies involved, business enterprises would do well to leverage the potential of villagers themselves by creating entrepreneurial communities and making them an extended team of the business, thus, letting them grow as the business grows.

Conclusion

The Indian development experience suggests a strong link between rural development and poverty reduction. Therefore rural development should be at the centre of any poverty alleviation strategy, particularly in the context of globalisation. Conventional ideas and methods are fast becoming outmoded, in the face of unprecedented changes taking place in the world in the new millennium. Innovative approaches and strategies are needed for effectively dealing with the problems of rural development and transformation.

Long-term commitment is the key to creating a sustainable impact. Consequently rural development programmes in India have helped create replicable models that can be quickly adapted to a variety of contexts, as well as sustain long-term relationships with donor agencies and business organisations for the mobilisation of funds, human resources and expertise.

Ensuring sustainable impact requires consistent efforts over considerable time periods. In the case of rural development programmes, concerted efforts at the grassroots level should be undertaken, the results of which, in the form of the subsequent impact on the quality of life of the poor, will be then visible for all to see.

Sustainable Development through Farming and Rural Development

In the context of the fact that India is necessarily an agricultural economy, the article looks at simple initiatives and measures that need to be put into place in order to ensure that development measures are directed at the farming and rural sectors, as only this can actually result in balanced development.

Nirbhay Kumar Patel - PGDM

The agriculture sector in India provides employment opportunity to about 60% of India's work force, and contributes 1/5th to the national GDP. The late 60s witnessed gradual improvements in Indian agriculture, with the introduction of high yielding varieties of seed and chemical fertilisers. The state of agriculture remained good until the late 80s, but there onwards agricultural production started declining.

In the last 4 to 5 years, some food crops, pulses and oil seeds etc. have almost reached a state of stagnation, as regards their production. This is an indicator of a critical position, particularly in view of the ever rising population and increasing quantum of food requirement. If this problem is not addressed urgently, our food security might be at risk, like that experienced by many African nations. Therefore, one cannot think of the sustainable development of a country without the betterment of the agricultural and rural sectors.

Plan for Sustainable Agriculture

The stagnation in agricultural production is due to many factors like erosion of soil, drop in soil fertility, depletion of water resources, multiple crop rotations on the same piece of land etc.

The following measures can be implemented, in order to increase crop production:

1. The fertility of the soil can be restored and sustained by measures like Organic Farming, using Biofertilisers, rotation of cereal and leguminous crops, fertilizer application based on soil testing etc.
2. More efficient irrigation techniques, e.g. drip irrigation etc., should be used
3. Integrated Pest Management (IPM)
4. Minimising post harvesting loss
5. Availability of better warehouses for agricultural goods
6. Activities allied to agriculture, e.g. dairy, piggery, goat breeding, apiary, should be promoted
7. Providing 100% agricultural insurance, on a compulsory basis, to all the farm produces and livestock.
8. Exploring avenues like dry land farming
9. Green house farming could be a good opportunity to improve productivity for limited farm lands.

Plan for Sustainable Social Development in Rural India

The social structure of rural India comprises 3 categories and hence the categorical strategy for their improvement could include:

1) Families with land ,livestock, ponds etc.

These families should be assisted in enhancing the productivity of their resource endowments, on an environmentally and economically sustainable basis.

The smaller the holding, the greater is the need for marketable surplus. Therefore the highest emphasis should be laid on increasing the output per unit of land, water, nutrients and labour. Economically and ecologically sound technologies should be used for this purpose. For this, we need more research on development of eco-technologies based on traditional ecological prudence, with frontier technologies like information technology, bio technology, space and renewable energy technologies.

2) Landless agricultural labourers

Nearly a third of the rural population and a large proportion of women earn their livelihood through wage employment. They have no assets like land or livestock or fishponds and are also often illiterate. The challenge in case of landless agricultural labourers is enhancing the economic value of their time and labour, by bringing about a paradigm shift from unskilled to skilled work.

A massive effort in the area of knowledge and skill empowerment of the women and men constituting the landless labour work force is essential, if economic value is to be added to their time and labour.

They will have to be trained to take to skilled nonfarm employment, through market driven micro-enterprises, supported by micro credit.

Self Help Groups (SHGs) for women and men without assets will have to be made sustainable, through backward linkages to credit and technology and forward linkages with the market. Common property resources will have to be developed and managed, in a manner that they can serve as a support system, in areas such as fodder and feed for livestock, as well as fuel wood.

At the same time the unfinished segments of land reforms, including distribution of ceiling surplus land, to families without assets, should be attended to, with speed and commitment. The interest of unregistered cultivators, tenants and tribal cultivators will have to be safeguarded.

3) Rural Artisans Working in the Secondary and Tertiary Sectors

The third group that needs attention comprise rural artisans working in the secondary and tertiary sectors of the economy. Their skill will have to be mobilised, in order to enhance the competitiveness of agriculture, through value addition to primary products and diversification of livelihood opportunities.

This needs a three pronged strategy that consists of improving the productivity of land, water, livestock and labour in case of asset owning farm families, converting unskilled agriculture labour into skilled entrepreneurs, engaged in organising market driven non-farm enterprises and enhancing the skills of families involved in the secondary and tertiary sectors of the rural economy, so that they are able to assist in agricultural efficiency and competitiveness, which will result in ending the prevailing mismatch between production and post harvest technologies.

Threats to Rural Development

First, the ecological foundations essential for sustained advances in productivity, such as soil, water, biodiversity and forests are under sever anthropogenic (human originated) pressures.

The quantity and quality of ground water, which is now the dominant source of irrigation water, is fast deteriorating. Although India has over 20 percent of the world's farm animal population, good grazing lands are rarely available in India.

Second, the area of farm economies, i.e. the resource flow to the agricultural sector is declining and indebtedness of small and marginal farm families is rising. So too, input costs are rising, while productivity per unit is declining.

Third, technology fatigue has further aggravated the problem of farmers; since, smaller the farm the greater is need to have sustainable market surplus, in order to have a cash income. Moreover, linkages between the laboratory and the field have weakened. Good quality seeds at affordable prices are in short supply and spurious pesticides and biofertilisers are being sold, in absence of effective quality control systems.Therefore, for the wholesome development of the farming and rural sectors, one need to address these issues as soon as possible.

In the area of technology, there is also the need to bridge the growing digital and genetic divide. Initiatives like e-Chaupal should be encouraged and corporate involvement should be promoted.

The Economic Perspective

Since farmers are also consumers, an increase in their income will proportionally increase their purchasing power. This increased purchasing power will also benefit industries like the FMCG etc. Therefore agricultural and rural development will not only increase agricultural production, but will also augment other industries as well as exports, resulting in greater GDP growth for the country.

> Agriculture not only gives riches to a nation, but the only riches she can call her own.
>
> **- Samuel Johnson**

Sustainable Development through the Use of Renewable Resources of Energy


By creating a model that can be executed in the context of investment in renewable energy resources, this article deals with their importance, in the context of the future and the need to go beyond merely tapping their potential into using them as an investment strategy to create financial gains for individual investors.

Priyanka Bagaria, Sonal Mehta – eMBA

The concept of sustainable development has emerged as an endeavour, to address the environmental problems caused by economic growth in contemporary India. The main objective is to achieve a process of economic development, without an indiscriminate destruction of our environment.

Sustainable development implies using renewable natural resources, in a manner which does not eliminate or degrade them or otherwise diminish their usefulness for future generations. It further implies using non-renewable (exhaustible) mineral resources, in a way which does not unnecessarily preclude easy access to them by future generations. Sustainable development also requires depleting non-renewable energy resources at a slow enough rate, so as to ensure the high probability of an orderly society transition to renewable energy sources.

Therefore, development plans have to ensure that sustainable and equitable use of resources, for meeting the needs of the present and future generations, without causing damage to the environment, prevent further damage to our life-support systems and conserve and nurture the biological diversity, gene pool and other resources, for long term food security.

Also, the projected climatic changes likely to occur in the future will have implications on food production, water supply, biodiversity and livelihoods. Therefore, India has a significant stake in scientific advancement as well as an international understanding to promote the cause. The government as well as private companies together need to take some serious efforts for sustainable development. In addition to improving the overall quality of life, sustainable development can also improve India's long-term international competitiveness, in attracting 'socially responsible investment'.

India, along with Brazil, is among the countries with the world's most environmentally sustainable lifestyle. Therefore, to sustain in today's competitive world, India should make maximum use of renewable resources of energy like solar, wind power, geothermal energy, tidal energy, bio fuels, ocean thermal energy and hydro energy, in all its activities of conducting business.

The main focus of the country should be on the use of solar energy in the country over the next decade, as it is the most easily available form of natural resource. Also, the use of bio-fuels will be an eco-friendly option, for the country, as compared to fossil fuels, to cut carbon emissions. The use of ethanol, along with wild plants like jatropha, will reduce the country's dependence, on petroleum fuels.

Compared to other developed nations, our country's industrial production is also lagging behind, due to the shortage of all forms of energies, like electricity, coal, petroleum products, etc. Therefore, it becomes imperative on the part of the government, to take some serious proactive measures and encourage the use and production of renewable resources of energy. The government should provide subsidies and the necessary infrastructure; and if need be, participate in offering equity share, to the companies taking steps in this direction.

Today, the market conditions are weak. The sub-prime crisis in the US has had ripple effects across the globe and India is no exception, as the inflation rate and bank rates are high. Also, the threat of global warming and climate change, due to excessive use of fossil fuels, increases the urgency of finding environmentally benign ways of generating energy. How long can we depend on these depleting resources? Despite the interim hiccups of these kinds, India will continue to attract global attention in the long run, with a steady supply of investment-worthy companies, whose long term growth dynamics are strong and fundamentals intact.

Therefore, to encourage the use of renewable resources, we have thought about the concept of a business house, which deals in the diversification of funds into appropriate sectors and streams in a proper manner. It is about adopting the right investment strategy, as companies dealing in renewable resources need financial backing and encouragement from investors by showing faith and confidence in them. The need for a feasible strategy arises as there is no political, financial or social stability in the economy.

Also, India's landscape provides opportunities for using solar, wind and small hydro resources; and its vast land resources can sustain the

production of significant quantities of biomass, which is yet another form of renewable energy. India is blessed with an abundance of non-depleting and environment friendly renewable energy resources, such as solar, wind, biomass and hydro energy. The companies that one focuses upon should have a larger synergy, in terms of capabilities and culture, which would lead to the unlocking of a greater value. As a service provider, one needs to combine domain expertise, with knowledge of the infrastructure, applications and business processes, to fulfil all the expectations.

Renewable resources have an enormous potential, to meet the growing energy requirements of the increasing population, in today's developing world, while offering sustainable solutions, to the global threats of climate change. This is the reason why one should think of investing in a business, which not only guarantees one good returns but also sustenance.

The rapid economic growth in emerging economies, like India and China, has tremendously increased the demand for renewable resources, like industrial commodities and energy. With no new mega reserves of coal, crude oil, natural gas, metals etc., likely to be discovered in the foreseeable future, the prices of resources are likely to remain high and may even go higher. However the general view is that India's growth model promises more stable, sustainable expansion and bigger returns for investors. There exists a very positive view for sectors like Agriculture, Manufacturing, Service and Renewable Resources, which contribute, substantially, to our GDP. In general view all these sectors are looking quite attractive and bullish over a long period.

The Indian Investor, like his/her counterparts in the emerging economies, is exposed to the economic risks scheme that allows diversified participation to Indian investors, in the renewable resources sector.

Building a Model

The Concept
Building and functioning of a Fund of Funds house, dealing in companies involved in Renewable Energy Resources and their products.

The Basic Plan
Essentially, one needs to raise money from High Networth Individuals, Financial Institutions, etc., for a given period and then invest it in opportunities, as and when they arise, either in the early stage, maturing or even public companies, through Private/Public Equity Funds. One needs to first value the company and decide the worth of our stake in the company, what the company's growth prospects are etc. Structuring the transactions for tax- efficiency and industry-specific reasons would also be a part of the job. Post-stake taking, day-to-day monitoring and growth plans would be monitored. Since the target is to exit the investment in a few years and return the money to the investors, one could closely monitor the Capital Markets, for suitable times, so as to create an Initial Public Offering or find a strategic investor to sell to.

The Business Proposition

Product description
Type: An Open Ended Equity Scheme

The product would have four strategies.

The available funds could be invested in the following manner:
- 70% of the investment in the companies will be allocated to things involved in Renewable Sources of Energy, 10% in Debt Markets, 10% in Gold and the remaining 10% should be kept for Hedging.
- The first 70% can be invested by buying a stake in an unlisted Company, involved in Renewable Sources of Energy, and selling the stake, when the company gets listed, for buying equity shares from the secondary market.
- The next 10% (Debt Markets) can be invested in either debentures or bonds or in any other debt instrument, which can be redeemed whenever required.
- The 10% in Gold can be invested, either through the Commodities Market or directly in a physical form.
- The remaining 10% (Hedging) can be invested by trading in the Stock markets, for either a short term or a long term. This can be done by trading in the stocks already invested in, by trading in the Derivatives Market, like trading in Nifty Futures. For this, there are various hedging tools, which can be used.

The Differentiating Factor
In this product, the funds of the client are diversified in different strategies, in a proportionate manner, so as to balance the portfolio of the client and protect the client from the risks involved. Even if one strategy fails to give the desired returns, the other one compensates for it. In effect, the client gets a fair percentage of returns. This is the USP, which would create the difference and keep the company ahead in competition, in comparison to other Fund Houses.

The second powerful point would be Research and Investment, with respect to buying stakes and debentures, in the companies which are involved in renewable energy resources products. The main element is that, if one is buying a stake in an unlisted company, at a pre-

determined price, one would acquire the shares of the Company, when it gets listed. But if one applies through an IPO, one may or may not acquire any shares in the Company. Investment in the companies dealing in renewable resources of energy will be a profitable venture, as it is an innovative product, and will complement the current portfolio of funds, if it is diversified across various resources, as it will invest in future growth areas like renewable resources, agriculture, and water management.

The primary investment objective of the fund is to seek to generate capital appreciation and provide long term growth opportunities, by investing in companies principally engaged in the discovery, development, production, or distribution of natural resources, which have the highest growth potential and sustenance for investors.

The Government and the people of the country should understand that renewable resources of energy are going to be the dependence of the world, in the future. Therefore, it is important to adopt the designed investment strategy stipulated above, which not only focuses on capitalising returns, but would also contribute to the sustainable development of the nation.

In the words of Thomas Edison, "I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait 'til oil and coal run out before we can tackle that!"

"Jenkins has always been good at saving energy."

Sustainable Procurement of Wood and Paper Based Products

Drawing upon the paradox that, while on the one hand rampant deforestation is taking its toll on the forest cover, on the other the reliance on wood and wood based products is increasing, the article deals with the manner of ensuring sustainability in procurement, while addressing legal, social and environmental issues.

Mayuri Chary - PGDM

Almost half of the earth's original forest cover has been converted to other land uses. Deforestation occurs, when forest areas are transformed to other land uses such as:

Agriculture: This includes shifting cultivation (traditional and colonist shifting cultivation), permanent cultivation (subsistence or commercial cultivation), and cattle ranching (small and large-scale cattle ranching). Palm oil, soy crops, and fuel crops, likely in the near future, are considered the leading proximate cause change, in the use of forest land in the tropics.

Human settlement: Urban development, colonisation, transmigration, industrial settlement, urban settlements.
Infrastructure: Transport infrastructure, market infrastructure (mills, food markets, storage, etc.), public services (water, sanitation), hydropower, energy and mining infrastructure.

Although estimated rates of net loss seem to indicate a slowdown, the total forest area continues to decrease; today forests extend only over an estimated 30% of the total land area.

On the other hand, interest in procurement of wood and paper-based goods, produced in a sustainable manner is growing. Decisions regarding the purchase and use of wood and paper-based products can have far reaching, long-term impact. Concerned consumers, retailers, investors, communities, governments and other groups increasingly want to know that in buying and consuming these products, they are making positive social and environmental contributions. Will their purchase today help or hurt the availability of similar products or important natural resources for future generations? These decisions are also changing rapidly as forests are being recognised as important renewable resources, for addressing the problem of global warming and for renewable energy. Sustainably managed forests are a renewable source of raw materials. These forests also provide benefits such as clean air and water, wildlife habitat and sometimes recreation opportunities In what is often described as 'sustainable procurement', organisations are looking beyond price, quality, availability and functionality. Sustainable procurement can also be used to align companies with their stakeholders' values and make organisations along the supply chain (from forest owners and producers to retailers) more resilient to changing business conditions.

Sustainably produced wood and paper-based goods can be a wise choice as compared to using other materials, because:

- they come from a renewable resource
- they store carbon over the long term
- they are recyclable

Wood and paper-based products can be an environmentally and socially sound purchasing option. The essence of sustainable procurement is to select these products, which have an acceptable and even beneficial environmental and social impact. The following aspects need to be considered for sustainable procurement

These aspects can be achieved by providing answers to eight questions-

Sourcing and Legal Aspects

Q1) Where do the products come from?
Traceability is the ability to track sources of wood from final products, through the supply chain to their origins, in a manner that is as close as is practical. A clear sense of all the links in the products' supply chain will be useful for the procurement manager to assess:

- Whether the sources of wood can be accurately identified.
- Whether the products have the properties they are claimed to have. For instance, whether:

1. the wood was harvested and processed in compliance with relevant laws;
2. the wood comes from sustainably managed forests;
3. the unique ecological and cultural features of the forest, where the wood was sourced have been maintained;
4. the products were manufactured with environmental controls in place.

Tracing the origin of wood and paper-based products is not always straightforward. Supply chains can sometimes link many wood producers and dealers across several countries and procurement portfolios can be complex, due to multiple supply chains.

It may be easier to establish traceability for solid wood products than for paper-based products. Paper products are manufactured in pulp mills that typically draw wood from many sources. In the most complex cases, a network of dealers buying wood from many different loggers, landowners and sawmills may supply a pulp mill. Understanding the position of a company in the supply chain can help identify priorities and key areas of influence. Requesting documentation from suppliers is a common method of tracing the origin of raw materials. All these documents should however carry appropriate stamps and seals from the relevant governmental agencies.

Areas with a higher risk of encountering unacceptable practices require more diligence and more detailed information than areas with a lower risk.

High-risk source areas may include:
- Areas that have unique ecological and socio-cultural features (special places)
- Areas of political and social conflict.
- Areas where avoidance and violations of workers and/or indigenous rights are known to be high.

Low-risk source areas may include:
- Sites that have been independently certified to appropriate credible standards.
- Sites, where there are no ownership disputes or there are clear processes to resolve them fairly and where illegal activity in the forestry sector does not typically occur.
- Areas known to have low corruption and where law enforcement exists.

Q2) Have the products been legally produced?

There is no universally accepted definition of illegal logging and trade. Strictly speaking, illegality is anything that occurs in violation of the legal framework of a country. It is generally acknowledged that legality is not a synonym for Sustainable Forest Management, and that what is sustainable may not always be legal. Illegal logging is a fundamental problem in certain nations, suffering from corruption or weak governance. International trade is one of the few sources of influence, sufficient to create the political will to make improvements. Several international processes have taken up this issue, and national efforts have started to appear as a result. During the last 5 to 10 years, illegal logging and trade have risen to the top of the international forestry agenda. Illegal logging of wood and paper-based products entails a complex set of legal, political, social, and economic issues. Poverty, lack of education, financial issues, population growth and weak governance are all enabling factors, for illegal activity. These factors are often associated with a range of items from short-term economic gain to local and national factors including communities and governments:

- Local (and often national) governments may receive higher revenues as a result of illegal land conversion and increased timber production.
- Because illegally logged wood can be sold at lower prices, it depresses the profitability of legally harvested wood while improving the competitiveness of industries that use illegal wood.

Examples of illegal trading activities:
- Harvesting of wood in protected areas without proper permission (e.g., in national parks and preserves). This may include instances, where authorities allocate harvesting rights, without properly compensating local people.
- Logging of protected species.
- Logging in prohibited areas such as steep slopes, riverbanks and water catchments.
- Harvesting wood volumes below or above the limits of the concession permit as well as before or after the logging period, stated in the harvesting license.
- Harvesting wood of a size or species not covered by the concession permit.
- Trespass or theft, i.e., logging in forests, without the legal right to do so.
  Violations of workers' rights (e.g., illegal labour, underpaying workers, etc.), labour laws and international standards, and violation of traditional rights of local populations and indigenous groups.

Between 8-10% of global wood production is estimated to be illegally produced, although the great uncertainty of these estimates is also acknowledged. However, most of this illegally produced wood is used domestically, although a significant portion enters international trade, either as finished products or raw materials.

Environmental Aspects

Q3) Have forests been sustainably managed?

Sustainable Forest Management (SFM) is a management regime that integrates and balances social, economic, ecological, cultural and spiritual needs of present and future generations. Essential aspects of SFM include the following:

- Economic – The capacity of forests to attract investment and support economically viable forest uses, in the present and the future, is undiminished.
- Social – This includes a variety of aspects such as:
  1. To ensure that the rights of indigenous peoples and local communities are respected and protected
  2. Forest workers are healthy, safe, and their rights are protected (e.g., freedom of association, right to bargain, prevention of child labour, forced labour, non-discrimination and offering equal remuneration)
  3. Sites of religious, spiritual, archaeological, historic, as well as of aesthetic and recreational value are preserved.
- Environmental – Forest use protects biodiversity (ecosystems, species, genes and ecological processes) and the capacity to maintain ecosystem processes and services such as watershed protection, pollination, protection against mudslides, aesthetic beauty, carbon storage, etc.

Q4) Have special places, including sensitive eco-systems, been protected?

There is no universally agreed upon definition of special places. Existing definitions combine scientific and political dimensions, through different features, but they often do not prioritise the features that take precedence. In general, stakeholders deem a forest 'special', if it includes one or more of the following characteristics:

Biological, ecological and landscape features

- **Species richness:** number of species within a given area
- **Species endemism:** number of species found exclusively in that location
- **Rarity:** species and/or ecosystems that are naturally rare
- **Representation:** a site that represents all the different ecosystems in the area of concern

Conservation features

- **Threatened species:** species, that have been identified as threatened or endangered
- **Species decline:** species, whose populations have undergone significant decline in recent years
- **Habitat loss:** areas that have lost a significant percentage of their primary habitat or vegetation

Ecosystem services

- Ability to supply basic and/or critical services such as watershed protection, erosion control and fire/flood control, among others

Cultural, livelihood, historical and spiritual features

- High value to the people, who live within or around the site, these include religious, historical and archaeological sites
- Stakeholders have recommended management regimes for these special places, including:

Precautionary management – ensuring that special values are identified and protected, before management plans are developed.

Sustainable Forest Management (SFM) – integrating and balancing environmental, social and economic aspects, across the landscape. Small scale adaptations in management, to promote conservation, that do not significantly reduce the economic potential of the land, are usually considered an inherent part of good forest management.

Conservation management – managing to retain or enhance ecological and biological values.

Q5) Have climate issues been addressed?

Climate and forests are intrinsically linked. As a result of climate change, forests are stressed, through higher mean annual temperatures, altered precipitation patterns and more frequent and extreme weather events. At the same time, forests play a dual role in climate change. Forests mitigate climate change, through the uptake of carbon and, when sustainably produced, wood-based bio-fuels to replace fossil fuels. Wood-based bio-fuels recycle the carbon captured through tree growth, releasing it into the atmosphere. Burning wood-based bio-fuels result in no net effects on atmospheric CO2. Compared to fossil fuels, which transfer carbon from geologic reserves into the atmosphere, wood-based biomass fuels are considered 'carbon neutral', when the forests, from which the fuels have been taken, remain as forested areas. They form a mosaic across the landscape, in which the growth of trees, over a large area, will compensate for the carbon lost, through annual logging of a much smaller area. In a sustainably managed forest, logging is balanced by re-growth, but when forest land is converted to other uses, there can be a significant net contribution to greenhouse gas emissions.

Q6) Have appropriate environmental controls been applied?

Different types of pollution can occur in many different places, along the supply chain for wood and paper-based products. The degree of deviation (i.e., lack of compliance) from legally established emission thresholds is also an important factor and the opportunity for continuous improvement exists.

Types of pollution include:

Emissions to air

- Processing emissions, resulting from processes such as pulping, bleaching, pressing, evaporating and chemical recovery systems.

Solid emissions
- Sludge from wastewater treatment plants
- Miscellaneous solid waste, including wood, bark, non-recyclable paper and rejects from recycling processes.

Emissions to water
- Large amounts of water are needed to carry the fibres, through each manufacturing step, in making paper products.

Noise
- A concern in the immediate vicinity of a mill. Its impact depends on the proximity of human settlements and the mitigation measures taken.

Best management practices, in the forest industry, to deal with pollution include:
- Minimising the generation of effluents, air emissions and solid waste, through the use of better technology
- Increasing reuse and recycling of waste materials
- Increasing rates of chemical recovery from pulping and bleaching processes
- Use of high-efficiency washing and bleaching equipment

Q7) Has the recycled fibre been used appropriately?

Recycling is common to the paper-making industry. The main raw material for paper used to be recycled clothes, until scarcity of clothes, rising demand and technological improvements allowed the use of wood fibres. Today, a significant amount of wood by-products from industrial processes are used, including trees that are too small or crooked to be cut into lumber, sawmill residue and residue from the making of wood pulp. The use of recycled fibre is exclusive, to paper based products. Recycling has increased significantly in many countries and one reason for the growth in demand for recycled fibre is that some governments and institutions have established requirements for recycled content. However, in some regions, the availability of recycled fibres may not be sufficient to meet the demand, and fibre collection can be a major bottleneck. In addition to the paper industry, collecting fibres to be recycled involves many actors such as city governments, municipalities, and waste management facilities.

- Recycling can be part of a sustainable procurement policy in several ways. Apart from purchasing specifications for recycled content, a company may also set targets, for increasing the proportion of recycled content, in its products and support measures and for helping local governments, to collect recycled fibres in sufficient amounts, to meet demand.

Social Aspects

Q8) Have the needs of social communities or indigenous people been addressed?

Protection of indigenous people and workers' rights in the forest, as well as in manufacturing facilities, is an important part of sustainable procurement. Forests and forest-products' manufacturing facilities are potentially dangerous work environments. Initial processing of the wood often occurs in remote and sparsely populated areas, where job opportunities, social support systems, government supervision and adequate infrastructure may be limited. Forces and conditions beyond the control of government authorities can sometimes be found in forest areas. A number of international conventions, treaties and processes, including the International Labour Organisation's core labour standards, incorporate considerations about social aspects of forest-based industries.

Some of the most pressing social issues related to sustainable procurement include:
- **Violation of property rights, and the rights of the local people** (including indigenous groups): Forestry operations (logging and processing) should consider, and be compatible with, the local land tenure rights regime, which may include community-based forest management systems.
- **Participation and consultation:** Forest operations should include the meaningful participation of and consultation with local communities and indigenous people, appropriate to the nature and scale of the operation, the type of ownership (public vs. private) and local legal regimes and customs.
- **Capacity building:** Building the capacity of local people (including indigenous groups), to work in the industry sector, as well as understanding, negotiating and participating in agreements, regarding the management of their resources.

Sustaining the Profitability of Banks by Credit Risk and Interest Rate Management

Citing the problems that can result in the absence of Credit Risk and Interest Risk Management, this article talks about the various instruments, which the banks need to manage effectively, to prevent this from happening.

Nirbhay Kumar Patel - PGDM

The last two decades have witnessed unprecedented crisis in the banking sector across the world, in developed and developing countries alike. Even developed nations, like the US, are suffering from 'the subprime crisis.' The problem in the financial sector is not only limited to the shareholders, depositors and creditors, but also affects the taxpayer's confidence and the system's credibility. Therefore, in the modern banking scenario, one needs more modern risk management tools for better Asset Liability Management in Banks.

The following are the most common risks in the banking industry -

1. **Credit risk:** Credit risk is one of the material risks, to which banks are exposed. It may arise due to various reasons e.g. instalments not paid, restrictions imposed by some country in cross border transactions, non realisation of funds in case of the Letter of Credit and bank guarantee etc.

Effective management of credit risk is therefore a critical factor for the bank's risk management process and is essential for the long term financial health of banks. Credit risk management constitutes identification, measurement, monitoring and control of the credit risk exposures.

Credit derivatives can also be used as an effective tool in credit risk management. These are privately negotiated bilateral contracts that allow users to manage their exposure to credit risk.

Credit derivatives may be used for variety of reasons. These include:

a) Reduction in the capital required to support credit risk exposures
b) Releasing of credit exposure limits to counterparty
c) Reduction in concentrations by shedding exposures to a counterparty or to a sector
d) Affording exposures to a counterparty or to a sector to diversify risks in credit quality spectrum
e) Providing for leverage or gearing

Types of Credit Derivatives: Credit derivatives are fundamentally divided into two categories of products - funded credit derivatives and unfunded credit derivatives. An unfunded credit derivative is a bilateral contract between two counterparties, where each party is responsible for making its payments under the contract (i.e. payment of premiums and any cash or physical settlement amount) itself, without recourse to other assets. In a funded credit derivative, the credit derivative will be embedded in a bond (which will usually either be issued by Special Purpose Vehicles i.e SPVs or a financial institution), and bondholders will ultimately be responsible for payment of any cash or physical settlement amounts. The credit derivative products can be broadly classified under the four types, ranging from plain vanilla products to complex structures, mentioned below:

I) **Credit Default Swaps (CDSs)**
A Credit Default Swap is a bilateral derivative contract on one or more 'reference assets', in which the protection buyer pays a premium, through the life of the contract, in return for a 'credit event payment', by the protection seller, following a 'credit event' of the reference entities.

ii) **Total Return Swaps (TRSs)**
A Total Return Swap transfers credit risk, by swapping an underlying asset's specified total return (capital growth and interest), between two counter parties, in return for regular payments of the London Inter Bank Offered Rate (LIBOR), plus spread in as well as any depreciation of the capital value, unrelated to the creditworthiness of the reference asset, especially where the payments are based on the same notional amount. Instead of the payment in the event of default, the TRS guarantees the risk seller (the protection buyer) a specified economic value for the reference credit for a specified term.

iii) **Credit Linked Notes (CLNs)**
A Credit Linked Note is a form of a funded credit derivative or cash instrument, where the repayment of the principal is linked to the

credit standing of a reference asset/entity. It is structured as a security with an embedded CDS, allowing the issuer, to transfer a specific credit risk to the credit investor. The issuer is not obliged to repay the debt, if a specified event occurs. This also eliminates the need for a third party insurance provider.

iv) Credit Spread Options (CSOs)

Buying or selling an option on a borrower's credit spread, provides an opportunity, to gain exposure on the basis of the borrower's future credit risk. One can lock in the current spread or earn premium for the risk of an adverse movement of the credit spreads. It also presents a method of buying securities, on a forward basis, at favourable prices. CSOs are normally associated with bonds, which are priced and traded at a spread over a benchmark instrument of comparable maturity. The yield spread represents the risk premium which the market demands for holding the issuer's bonds relative to holding riskless assets.

2. Interest Rate Risk: Interest rate risk is a risk, where changes in the market interest rates might adversely affect a bank's financial condition. In the long term this results in the impact of changing the interest rates based on the bank's net worth, since the economic value of the bank's asset, liabilities and off balance sheet positions gets affected, due to a variation in the market interest rates.

Management of Interest Rate Risk

There are many analytical techniques, to measure and hedge/manage interest rate risk. The most commonly used techniques are -

a) Maturity gap analysis
b) Duration gap analysis
c) Simulation
d) Value at risk

However, managing interest rate risk by changing the composition of assets and liabilities, though feasible, involves transaction costs, resulting in an unwanted size for the balance sheet and lack of flexibility. It is here that one finds the advantage of using derivatives to hedge the interest rate risk.

Hedging interest rate risk with derivatives: The following are the major derivatives that can be used for managing interest rate risk.

i) Forward Rate Agreements (FRAs)

A Forward Rate Agreement is a contract between two parties, by which they agree to settle between themselves, the interest differential on a notional principal, on a future settlement date, for a specified future period.

ii) Interest Rate Futures

A Future Contract is an agreement to buy or sell a standard quantity or quality of a given underlying, on a future date, through the medium of an Exchange House, at a price which is predetermined.

iii) Interest Rate Swaps (IRSs)

An Interest Rate Swap is invariably an over the counter contract. It is a contract between two parties, who agree to exchange interest payments, on a notional principal, at pre-agreed intervals of time, for a given maturity. Mostly, interest payments are based on a fixed rate on the one hand and a floating rate on the other.

iv) Interest Rate Options (Interest Caps, Floors , Collars)

An Option Contract is essentially a contract between two parties, wherein one party buys the right to sell (Put Option) and the right to buy (Call Option) a given underlying, at a future date, at a pre agreed price and others sell this right. In other words, Options are basically Forward Contracts on rights and they are simply insurance products, against adverse movements in the market prices.

Interest rate options (IROs) are fundamentally of two types, the Cap and the Floor.

Caps: A Cap is an IRO, in which the buyer of the Option, with the intention of locking himself/herself to a ceiling, in interest costs, for his/her borrowing, reserves the right, to receive the difference in interest rate, on a notional principal. S/he does so, in case the interest rate on the underlying borrowing goes higher than the ceiling, s/he has chosen at pre agreed periodic intervals, for a given time maturity.

Floors: A rise in the interest rate could expose one to an interest rate risk, while borrowing, whereas a fall in the interest rate could expose one to interest rate risk, if one is to lend money or create an asset, which Floors help address by hedging the fall.

Collars: A Collar is a combination of a long position in Cap and a short position in Floor. A Collar enables an Interest Rate Option buyer to minimise his/her cost.

In the worst case scenario Credit Risk and Interest Risk can completely erode the bank's net worth, by resulting in an adverse impact, on the economic value, of the bank's asset and liabilities. It is in this context that effective management of interest rate risk and credit risk assumes greater significance in sustaining the economic viability of country's financial system.

The Automotive Industry's Contribution to Sustainable Development





The flip side of development is that it has largely been at the cost of the environment and if we want to ensure a smooth future we need to work towards damage control and reversibility to the extent possible. This article examines the initiatives taken by the automobile industry in this regard in the areas of environmental protection, economic growth and social equity.

- Aditya Avasare, Neel Merchant, Bhavik Shah, Prathamesh Desai, Sheldon Nailer - PGDM

Introduction

It all started thousands of years ago. Man, animals and the flora combined to make our earth the most beautiful planet in the universe. All three blended well with man and animals making their habitat in the forests and mountains. Natural resources were shared by all. But with some of the animals being at the top of the food chain, others felt threatened by their presence. Physically being weaker than the animals, man had to plan for his survival and that started the process of development.

As we moved on, we realised how much deforestation had taken place. The forests had been cleaned up to create cities, villages, agricultural land and varied industries. This resulted in loss of habitat for wild animals, killing of animals, natural resources being exploited and all round pollution in water and air. This is what we have got from our development.

The question is what we are going to leave for our future generations - barren lands, vehicles but no petrol, factories with no power to run them, mountains of concrete and jungles of sky touching buildings? Can it be recognised as development? Is this the development that can be sustained? We all are aware that the answer to this is in the negative.

Wood from forests has been used up to meet the energy requirements or for building houses. The overall result is increase in pollution levels, global warming, depletion of natural resources and ecological imbalances. The sea levels are rising and that is causing a major threat to human survival in the coastal areas. Depletion of the ozone layer has added to the woes and can result in many problems.

The increased pollution levels are already serious matters of concern. During peak traffic hours, one might see people wearing pollution masks. We are responsible for such high levels of pollution in air and in water.

Growing pollution has also been a cause of Global Warming. The result - the snow on mountain peaks is melting; even at the North Pole the polar cap has melted. This melted snow is causing a rise in sea levels, floods in rivers and catastrophes like the Tsunami. Isn't our lopsided development responsible for this? When we disturb the ecological balance by killing animals and cutting down trees, we are destabilising the food chain cycle and doing a great disservice to humanity.

In order to bring things back on track, we need to rely more on renewable energy sources like wind power and solar power. These energies are unlimited and don't create any pollution. Recycling can relieve at least some pressure from our limited resources. Vehicles using non-conventional energy can reduce the pollution and so can the factories by following pollution norms. Together, we can script the tomorrow of our planet. For that, we need to aim at sustainable development.

Explaining Sustainable Development

Sustainable Development is a pattern of resource use that aims to meet human needs while preserving the environment, so that these needs can be met not only in the present, but also in the indefinite future. The most often-quoted definition of sustainable development is development that "meets the needs of the present without compromising the ability of future generations to meet their own needs."

Sustainable development ties together concern for the carrying capacity of natural systems with the social challenges facing humanity. As early as the 1970s, 'sustainability' was employed to describe an economy 'in equilibrium with basic ecological support systems'. Ecologists have pointed to the 'limits of growth' and presented the alternative of a 'steady state economy' in order to address environmental concerns.

The field of sustainable development can be conceptually broken into three constituent parts: environmental sustainability, economic sustainability and socio-political sustainability.

Ensuring Sustainability in The Automobile Industry

With the question of sustainable development established as a central concern in developed societies and for all major international institutions, the automobile industry is facing a new economic, technological and political environment. The potential scarcities of future energy resources and escalating fears about climate change have become powerful forces for change in the industry.

The world vehicle industry is actively addressing sustainable development through three major areas:

1. Environmental protection
2. Economic growth and
3. Social equity.

Environmental Protection

Automobile manufacturers have clearly committed themselves to supply the market with ever safer and more environment friendly products and are continuously investing huge R&D resources in furthering product improvements and in developing radically new propulsion systems. The results clearly show that most road traffic related environmental concerns are in the process of being addressed with all studies indicating gradual air quality improvements.

For example

The electric car

An electric car is a type of alternative fuel car that utilises electric motors and motor controllers, instead of an internal combustion engine. The electric power is usually derived from battery packs in the vehicles. In general terms, an electric car is a re-chargeable battery powered vehicle. The electric car was among the oldest automobile systems, on the model of which the diesel engine and petrol engine were developed. Somewhere down the line, electric cars lost their appeal to faster, meaner, stronger and bigger fuel powered cars. However, today's scenario of high oil prices and better environmental protection has brought electric cars back in vogue, for example REVA.

Hybrid cars

Vehicles using both electric motors and other types of engine are known as Hybrid Electric Vehicles (HEV) and are not considered pure Electric Vehicles (EV) because they operate in a charge-sustaining mode. Hybrid vehicles with batteries that can be charged externally are called Plug-in Hybrid Electric Vehicles (PHEV). Honda has come up with hybrid versions of their CIVIC and ACCORD models.

The impact

a) Fuel Consumption

Hybrid vehicles are the best bet to get the most out of each tank of fuel, during city driving. Current HEVs reduce petroleum consumption under certain circumstances, compared to otherwise similar conventional vehicles, primarily by using three mechanisms:

1. Reducing wasted energy during idle/low output, generally by turning the Internal Combustion Engine (ICE) off.
2. Recapturing waste energy.
3. Reducing the size and power of ICE as also inefficiencies from under-utilisation, by using the added power from the electric motor to compensate for the loss in peak power output from the smaller ICE.

Any combination of these three primary hybrid advantages may be used in different vehicles to achieve different fuel usage, power, emissions, weight and cost profiles. The combustion engine in a hybrid vehicle can be smaller, lighter, and more efficient than the one in a conventional vehicle, because the combustion engine can be sized for slightly above average power demand rather than peak power demand. The power curve of electric motors is better suited to variable speeds and can provide substantially greater torque at low speeds, when compared to internal-combustion engines. The greater fuel economy of HEVs has implication for reduced petroleum consumption and vehicular air pollution worldwide.

b) Pollution

Reduced air pollution emissions, due to lower fuel consumption, will lead to improved human health with regard to respiratory problems and other illnesses. Pollution reduction in an urban environment may be particularly significant. However, battery toxicity is a concern. In this context Toyota and Honda say that they will recycle dead batteries and that disposal will pose no toxic hazards. For this, Honda puts a phone number on each battery and they pay a 'bounty' for each battery to help ensure that it will be properly recycled.

Another pollution control method brought into force is the setting up of emission standards. They are sets of requirements defining the acceptable limits for exhaust emissions of new vehicles sold. They are basically requirements that set specific limits to the amount of pollutants that can be released into the environment. Many emission standards focus on regulating pollutants released by automobiles (motor cars) and other powered vehicles but they can also be used to regulate emissions from industry, power plants and small equipment such as lawn mowers and diesel generators.

In this light, Honda has come up with hybrid cars and Hyundai has introduced the Euro 4 version of cars.
However, remarkable results, owing to vehicle and fuel improvements and fleet renewal, can equally be obtained in other less developed regions. By ensuring that vehicles and fuels meet at least some minimum requirements, the vehicle industry strongly supports the concept of promoting the technology, which is best available in terms of efficiency and affordability.

Economic Growth

In terms of economic growth, it should be recalled that road transport is inherently linked to economic development. The vehicle industry plays a key role in developing economies. Massive investments in production facilities all over the world ensure steady economic growth and create employment, enabling developing economies to play a competitive role in the ever increasing globalisation and to fully participate in International trade. These vehicle production facilities act as a magnet, inducing a positive economic spiral by attracting suppliers and a whole vehicle distribution network. As per the automobile plan from 2006 to 2016 there would be an increase in turnover to $145 billion by 2016 from the present $35 billion. This would provide employment to an additional 25 million people by 2016. Moreover, by 2016 the automobile sector is expected to contribute 10% to a country's GDP and 30-35% to the industry turnover.

So too, one needs to acknowledge that the automotive industry is a major industrial and economic force worldwide. Despite problems with overcapacity and low profitability, the automotive industry retains strong influence and importance. It makes 60 million cars and trucks a year and is responsible for almost half the world's consumption of oil. The industry employs 4 million people directly, and many more indirectly.

The industry also provides well-paying jobs with good benefits, has heavy linkages with supplier industries (which gives it an oversized role in economic development) and has a strong political influence. Its power of linkages can be illustrated by looking at the following table of the forecasted economic impact of a proposed automotive assembly plant:

The industry's contribution on a macro-economic level also contributes significantly to a positive micro economy, thus allowing a growing

	Direct, Indirect And Induced Impacts					
	2006	**2007**	**2008**	**2009**	**2010**	**2011**
Employment	189	3,583	7,800	10,611	12,240	12,242
Personal Income*	7,114	141,912	368,820	561,168	684,180	735,696
Revenue, State Government*	1,032	20,585	53,498	81,399	99,242	106,714
Sales*	16,620	318,492	1,405,080	3,024,000	3,792,960	3,864,240

(*000 of 2002 dollars)Source: CHLG Study Assumptions: Plant employment-2,000; Investment-$845 million

number of individuals and their families to benefit from a stable income.

Social Equity

Social equity is the result of, among others, the internal manufacturers' policies of equal opportunities for all employees and of continuous improvement processes. Manufacturers devote huge amounts in employee training, not merely because of the ever increasing complexity of the products and their production processes, but also as an initiative that aids the process of creating and maintaining an environment that naturally enables employees, dealers, suppliers and communities to achieve their fullest potential. It's widely recognised that managing diversity includes race and gender as well as the broader aspects of age, education level, family status, language, military status, physical abilities, religion, sexual orientation, union representation and years of service.

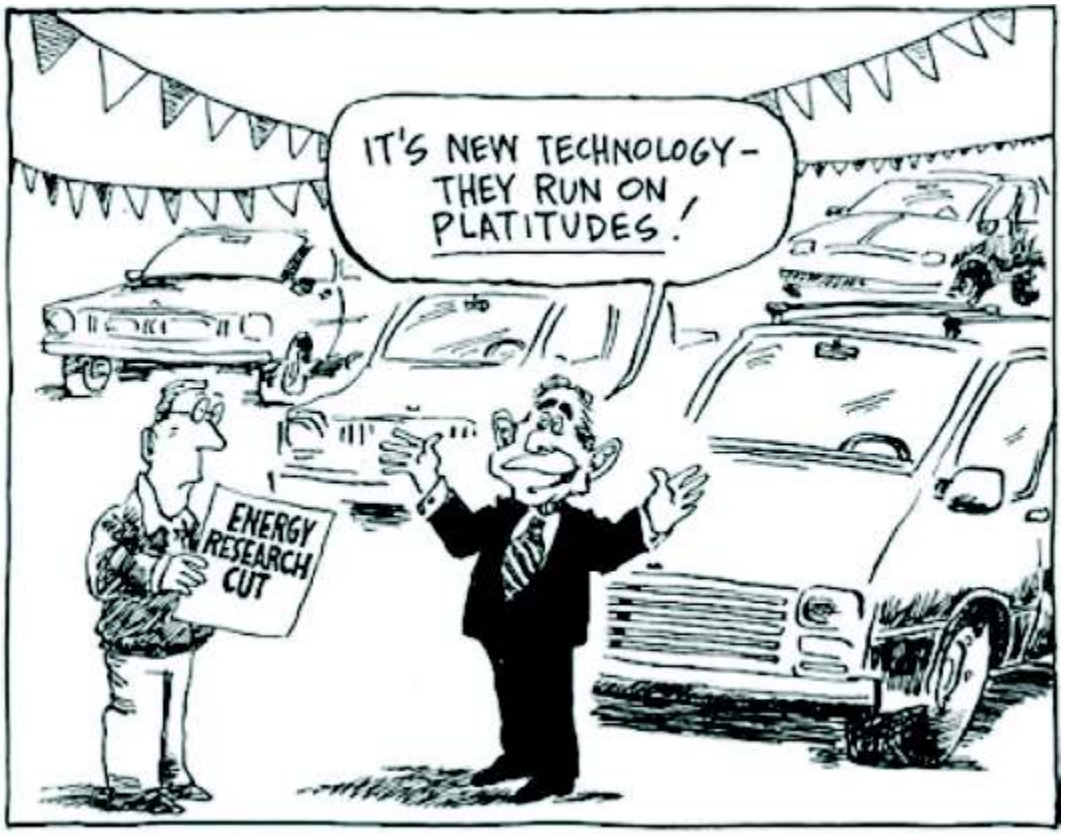
Moreover, workforce diversity also adds to competitive advantage. Working with a diverse group of individuals with differing backgrounds and perspectives, creates and maintains competitive advantage and assists in achieving global success. Many car manufacturers seek to create an environment that optimises the contributions of its diverse work force, suppliers, customers and the communities, in which they function. This initiative often results in a highly qualified workforce, with manufacturers setting up their own educational systems for all, which include:

- Philanthropy
- Memberships, Sponsorships, and Contributions
- Health and Safety Performance
- Supplier Management
- Employee and Job Satisfaction
- Wages and Benefits
- Equal Opportunities and Diversity
- Human Rights and Labour standards

- Training and Education
- Security
- Philanthropy Performance and Initiatives

Conclusion

In conclusion, it can be surmised that the vehicle industry is actively committed towards sustainable development. It is of course equally clear that much remains to be done, which is why support from all stakeholders is strongly needed. In fact, vehicle manufacturers need stable and economically sound policies, following the rules of open markets, so that ongoing and future investment strategies can be sustained.



Tidal Energy

In the light of the ever increasing demand for energy and the ever growing shortage that is staring us in the face, this article discusses tidal energy as a potential alternative source, while detailing the numerous ways in which it can be tapped and casting a brief glance at the projects in this area.

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Introduction

Tidal power, also known as tidal energy is a type of hydropower, that utilises the rise and fall in sea levels, due to tides or the movement of water caused by the tidal flow, to rotate the turbine and generate electricity in return.

Tidal power is generated by the gravitational pull of both the sun and the moon on water. Due to these gravitational forces, water levels follow periodic highs and lows. The height of the tide produced at a given location is the result of the changing positions of the moon and sun in relation to the earth, coupled with the effects of earth's rotation and the local shape of the sea floor. The tidal energy generator uses this phenomenon to generate electricity. The higher the height of the tide, more promising it is to harness tidal energy.

Two types of tidal energy can be extracted - kinetic energy from currents, due to the tides, and potential energy from the difference in height (or head) between high and low tides. The former method - generating energy from tidal currents - is considered much more feasible today than building ocean-based dams or barrages, and many coastal sites worldwide are being examined for their suitability as regards producing tidal energy. Various categories of tidal power along with their advantages and disadvantages have been mentioned in this paper.

A major drawback of tidal power stations is that they can only generate, when the tide is flowing in or out; in other words, only for 10 hours each day. However, because tides are totally predictable, it can be arranged for other power stations to generate at those times, when a particular tidal station is out of action. Another problem concerns the ecological effect that tidal barrages may have on the estuaries they span.

India has enormous potential for producing electricity from tidal energy, as it has a coastline of 3530 miles, a continental shelf of 10000 miles and a large number of gulfs and bays along the coast. In India, the potential sites for tidal energy development are the Gulf of Cambay and the Gulf of Kutch on the west coast, where the maximum tidal range is 11m and 8m respectively.

The National Hydro-electric Power Corporation (NHPC) and The West Bengal Renewable Energy Development Agency (WBREDA) will jointly set up the 1st tidal power plant on Durgaduani Creek near Gosaba in South 24-Parganas. NHPC will execute the process through the turn-key method, and it is expected that by 2010, the project will be commissioned. The identified economic tidal power potential in India is of the order of 8000-9000 MW with about 7000 MW in the Gulf of Cambay, about 1200 MW in the Gulf of Kutch and less than 100 MW in Sundarbans.

Categories of Tidal Power and Their Functioning

There are two options for getting energy from tides - a tidal barrage or utilising tidal streams.

The Tidal Barrage

Introduction

A dam or barrage is built across an estuary or bay that experiences an adequate tidal range. This tidal range has to be in excess of 5 metres for the barrage to be feasible. The purpose of this dam or barrage is to let water flow through it into the basin, as the tide comes in. The barrage has gates in it that allow the water to pass through. The gates are closed, when the tide has stopped coming in, trapping the water within the basin or estuary and creating a hydrostatic head. As the tide recedes, gates in the barrage that contain turbines are opened and the hydrostatic head causes the water to come through these gates, driving the turbines and generating power.

The construction of a barrage requires a very long civil engineering project. Various turbines such as bulb turbine, tubular turbine and rim turbine are available for use in a tidal barrage. However, the barrage is bound to have environmental and ecological impacts not only during construction but also as they will change the area affected forever. Just what these impacts will be is very hard to measure as they are site specific, and each barrage is different.

Tidal Streams

Introduction

Tidal streams are fast flowing volumes of water caused by the motion of the tide. These usually occur in shallow sea, where a natural constriction exists, which forces the water to speed up. The technology involved is very similar to wind energy, but there are some differences. Water is 800 times denser than air and has a much slower flow rate; this means that the turbine experiences much larger forces and movements. This results in turbines with much smaller diameters. The turbines must either be able to generate power on both ebbs of the tide or be able to withstand the structural strain. This technology is still in its infancy, despite the potential for serving as a reliable and predictable source.

Tidal Stream technology has the advantage over tidal barrages, when one compares environmental and ecological issues. This technology is less intrusive than on and offshore wind and tidal barrages, and so any hazard to navigation or shipping would be no more than that experienced by current offshore installations. Tidal Stream systems often have to be installed in difficult coastal waters and the installation and maintenance methods are often complicated, but these hold the key for ensuring the success of the technology.

Energy can be captured from Tidal Streams using Tidal Turbines.

Tidal Turbines

This form of generation has many advantages over its other tidal energy rivals. The turbines are submerged in the water and are therefore out of sight. They don't pose a problem for navigation and shipping and require the use of much less material in construction. They are also less harmful to the environment. They function best in areas where the water velocity is 2 - 2.5 m/s, above this the turbine experiences heavy structural load and below this not enough generation takes place.

The 'Swan Turbines' design is different from other devices in a number of ways. The most significant is that it is based on principles of direct drive, where the blades are connected directly to the electrical generator, without a gearbox in between. This is more efficient since there is no gearbox that can go wrong. Another difference is that it uses a 'gravity base', a large concrete block to hold it to the seabed, rather than drilling into the seabed. Finally, the blades are fixed pitch, rather than actively controlled; this again helps to design out components that could be unreliable.

Advantages

- Once a tidal turbine is built, tidal power is free.
- It produces no greenhouse gases or other waste.
- It needs no fuel.
- It produces electricity reliably.
- It is not expensive to maintain.
- Tides are totally predictable and a natural source of energy.

Disadvantages

- A barrage across an estuary is very expensive to build
- Barrages affect fish migration and other wildlife.
- Barrages may affect the tidal level - the change in the tidal level may affect navigation and recreation, cause flooding of the shoreline and affect local marine life
- Affects a very wide area - the environment is changed for many miles upstream and downstream.
- Only provides power for around 10 hours each day, when the tide is actually moving in or out.
- They must be located far off the shore. Therefore, there are limited construction locations

The biggest hindrance in producing tidal energy is very similar to any other alternative source of energy and that is per unit cost. There should be many technological advances to make tidal energy very efficient by bringing down per unit cost, to make it comparable to the conventional power projects, namely those using thermal energy. Technological advancements in turbine technology may eventually see large amounts of power generated from the ocean and tidal currents, using tidal stream designs.

Prospects of Tidal Energy in India

India has a coastline of about 3530 miles, a continental shelf of more than 10,000 sq. miles and a large number of gulfs and bays along the coast. Currently, the electric energy consumption in India is about 45 kWh per head of population. In 1950 it was 14 kWh. The potential of water power has been generally estimated to be about 41 million kW.

Since India is surrounded by sea on three sides, its potential to harness tidal energy has been recognised by the government of India. Potential sites for tidal power development have already been located. The most attractive locations are the Gulf of Cambay and the Gulf of Kachh on the west coast, where the maximum tidal range is 11m and 8m with average tidal range of 6.77m and 5.23m respectively. The Ganges Delta in the Sunderbans in West Bengal also has good locations for small scale tidal power development. The maximum tidal range in Sunderbans is approximately 5m, with an average tidal range of 2.97m. The identified economic tidal power potential in India is

of the order of 8000-9000 MW, with about 7000 MW in the Gulf of Cambay, about 1200 MW in the Gulf of Kachh and less than 100 MW in Sunderbans. The Kachh Tidal Power Project with an installed capacity of about 900 MW is estimated to cost about Rs.1460/- crore, generating electricity at about 90 paise per unit.

The energy potential from tides worldwide is difficult to calculate. It might be between 500 and 1000 billion kWh per year (The world's hydroelectric production was 2700 billion kWh in 2002. The largest tidal power station in the world, and the only one in Europe, is in the Rance Estuary in northern France. It was built in 1966). The average annual production of the Rance power plant is 0.5 billion kWh, less than 1% of the total electrical energy produced from water.

Operating Tidal Power Schemes

- The first tidal power station was the Rance tidal power plant built over a period of 6 years from 1960 to 1966 at La Rance, France.It has a 240 MW installed capacity.
- The first (and only) tidal power site in North America is the Annapolis Royal Generating Station, Annapolis Royal, Nova Scotia, which opened in 1984 on an inlet of the Bay of Fundy. It has an 18 MW installed capacity.
- A small project was built by the Soviet Union at Kislaya Guba on the Barents Sea. It has a 0.5 MW installed capacity.
- China has apparently developed several small tidal power projects and one large facility in Jiangxia.
- China is also developing a tidal lagoon near the mouth of the Yalu.
- Scotland has committed to having 18% of its power from green sources by 2010, including 10% from a tidal generator. The British government says this will replace one huge fossil fuelled power station.
- South African energy parastatal Eskom is investigating using the Mozambique Current to generate power off the coast of KwaZulu Natal. Because the continental shelf is near land, it may be possible to generate electricity, by tapping into the fast flowing Mozambique current.

Conclusion

A tidal power scheme is a long-term source of electricity. This decreases the output of greenhouse gases into the atmosphere. If fossil fuel resources decline during the 21st century, tidal power is one of the alternative sources of energy that needs to be developed, to satisfy the human demand for energy. Tidal energy has the potential to become a viable option for large scale, base load generation.

Tidal Streams constitute the most attractive method, having reduced environmental and ecological impacts and being cheaper and quicker in installation. Tidal energy is a clean, renewable energy resource, but its environmental impacts and accessibility limit its potential, for becoming a major provider of electricity. Where tidal energy is a viable resource, it may prove to be expensive at first, but economical in the long run, if the technology used to generate it improves.

The above paper was selected for a poster presentation at the 61st Annual CHEMCON 2008 at the University of Punjab.

Training: An Effective Retention Tool

Drawing upon the analysis of a detailed survey conducted for a company, the article analyses the need for training as well as the manner in which it can prove to be effective, not merely as a tool to recruit but also to retain employees.
- D. M. Marathe - Deputy Director, MET Institute of Management

Many companies claim to have a commitment to developing their employees. Phrases such as 'our people are our most valuable asset' are often spotted on motivational posters in companies of sizes, from all industries. And many Directors, including yours truly, genuinely believe that this bold statement is true.

Sadly, in many years experience, one can find very few companies that actually embrace a structured and relevant approach, to helping employees at the junior and middle management level want to stay with their employer, in the long term. Of course, there are many factors unrelated to training and development that cause people, to decide to leave the organisation, and explore new opportunities. New career goals, better financial rewards and many more factors need to be considered. But certainly one can claim that training and development is an effective retention tool for employees.

This paper covers the feedback collected from the employees of Tata Capital Limited, during a training programme, undertaken for them.

Tata Capital

Executive summary
Tata Capital marks the entry of the Tata Group, into a host of new financial services. The Company caters to multiple needs of the retail and institutional customer – truly a one-stop shop, be it in investment or finance.

Tata Capital brings the trust and expertise of the Tata Group into the world of financial services. It aims to be recognised for its customer-centricity and high service standards. The Company is driven by a strong focus on value creation, for stakeholders as well as the society at large.

Tata Capital is a wholly-owned subsidiary of Tata Sons Limited, the apex holding company of the Tata Group. It is registered with the Reserve Bank of India, as a Systemically Important Non Deposit Taking, Non Banking Financial Company undertaking fund with fee based activities in the financial sector.

The company works as a pseudo bank and provides services, ranging from capital market services, housing finance, assets and vehicle financing, retail finance, merchant banking, over and above managing private equity investment, among other related activities.

Corporate Purpose
They aspire to be a preferred financier, by choice, for Tata Motors' customers and dealers, across all their products. They desire that Tata Motorfinance should be the top-of-the-mind choice, for all stakeholders, when it comes to Tata Motors' products. They wish to set a benchmark, in captive finance, nationally and internationally.

Training and Development
Continuous education is necessary for each of the employee, to excel in his/her job and grow in his/her career. Developing new skills not only increases competency and efficiency, but also makes jobs more interesting. The training schemes offered by an organisation helps keep its employees abreast of the rapid developments in their field.

Training in the Banking and Financial Sectors
In the Financial Sector, rapid expansion has created about 5 lakh job opportunities, in the past five years. These openings are mainly in the field of loan sellers/agents or marketing agents. The eligibility criteria for these jobs is graduation, with some experience in marketing or they could serve as marketing agents for such loans, after completing MBA in marketing; but this needs some relevant training. Earlier there were no training programmes as such for marketing managers, only on-the-job training was provided, once the new agent was appointed. But now the scenario has changed, with the coming up of big players like ICICI, HDFC, Tata Motor Finance et al. in this sector, people who've had some formal training are preferred during recruitment, because this can prove to be helpful in the financial field. However, only an MMS degree in this field does not guarantee success. To be successful, an agent must have strong interpersonal, networking, and communication skills.

The number of opportunities in the Banking and Insurance sectors has increased more than ever before. With this rapid expansion and the coming up of major players like ICICI, HDFC, Tata et al in the sector, the need of human resource development has increased.

Training Structure in Tata Capital Ltd

How It Works:

- Training requirements are identified over a period of 12 months, with July to June being observed as the training calendar year. This is done in the last quarter of the preceding year, through the appraisal form / individual or divisional training needs surveys, undertaken by the HR/Training Division.
- Training needs are identified on the basis of individual development needs, job improvement plans, future requirements and management priorities, by taking into consideration the achievement of group or company objectives. They are further segmented into core needs, functional needs and individual needs.
- After the identification of training needs, the HR/Training Division prepares a consolidated list of the programmes requested for, and forwards the same to the Divisional Heads.
- On the basis of the training programmes on offer, and the specific requirements of the employees and the division, the Divisional Heads intimate the HR/Training Division, about the people they are recommending for training.

The Cadre Based Scheme

For Post Graduate Trainees, a month long training is provided, wherein, all aspects of business, post their joining the company, are covered. This is aimed at giving them a thorough knowledge of the business and the industry, irrespective of their streams. Apart from that advanced management training is offered, as and when it is relevant, with an approval from the superior.

For Officer Trainees, management training is imparted in their relevant fields, so as to give them an in-depth knowledge of their function.

External training

External training programmes are usually utilised, if the organisation is unable to provide the required training, through an in-house programme.

Nominations for External Training are made by the Department Head and sent to the HR Division for further processing.

The HR Division recommends a training programme and obtains the approval of the appropriate Sanctioning Authority, prior to processing the nomination.

Foreign Training

Employees are deputed abroad for the following:

- Assignments
- Attending Executive Development Programmes
- Getting trained by TMLFSL collaborators/ foreign business associates
- Attending trade fairs, exhibitions, motor shows, conferences etc.

Training Need Analysis

An analysis of the training need is an essential requirement, for designing effective training. The purpose of training need analysis is to determine, whether there is a gap between what is required for effective performance and the present level of performance.

The Organisational Level

Training Needs Analysis at the organisational level focuses on strategic planning, business need and goals. It starts with the assessment of the internal environment of the organisation such as, procedures, structures, policies, strengths, and weaknesses and the external environment, such as opportunities and threats.

For this approach to be successful, the HR department of the company is partly involved in the strategic planning. In this planning, the HR develops strategies to ensure that the employees of the organisation have the required Knowledge, Skills, and Attributes (KSAs), based on the future KSA requirements, at each level. According to the Learning and Development Manager, Tata Capital Ltd., "Every member of the HR department of our company has a monthly meeting with the Managing Director and the CEO, to discuss about the current procedures and processes, followed by the company. We follow an open door policy, with our superiors, as well as the subordinates."

The Individual Level

Training Needs Analysis at the individual level focuses on each and every individual, in the organisation. At this level, the organisation checks whether an employee is performing at the desired level or the performance is below expectation. If the difference between the expected performance and the actual performance comes out to be positive, then certainly there is a need for training.

However, individual competence can also be linked to individual need. The methods used to analyse the individual's need, by the company, are:

- Appraisal and performance review
- Competency assessments

- Subordinate appraisal
- Client feedback
- Customer feedback
- Self-assessment or self-appraisal

The Operational Level:
Training Needs Analysis, at the operational level, focuses on the work that is being assigned to the employees. A job analyst gathers the information on whether the job is clearly understood by an employee or not. S/he gathers this information through technical interviews, observation, psychological tests, questionnaires asking closed ended as well as open ended questions, etc. Today, jobs are dynamic and keep changing over time. Employees need to prepare for these changes. A job analyst also gathers information on the tasks that need to be done, plus the tasks that will be required to be done in the future. Based on the information collected, the Training Need Analysis (TNA) is done.

Analysis of the Survey

Number of employees taken: 150-175

The participant's readiness i.e. the background knowledge/skills and/or experience needed, to participate in this training programme:

Most of the employees do have prior knowledge and experience needed to participate, in the training programme. But still there is a marginal difference between employees possessing knowledge and those who don't have any (approx 10%). Thus we can conclude that
- There is an efficient training allocation in the company.
- The training programmes normally target employees, who have a little knowledge about the topic of the training programme.

Clearly understanding the programme objectives:
According to the survey, most of the people have not been given a clear opinion, regarding the understanding of the objectives. The conclusions can be any of the following:
- The Learning and Development Manager is not able to convey the objective of the programme, to the employee
- The employees are afraid of or are reluctant to give any opinion regarding the same.

Effectiveness of the training programme:
As per the survey, people have some mixed opinions, regarding the effectiveness of the Training Need Analysis. No fair conclusions can be drawn from the reactions of the employees. But one can assume the following things:
- The employees are giving feedback under a central tendency
- The other assumption can be that the employees are not exactly aware of the training objectives
- This can be considered as a feedback, where no inferences can be drawn, as there are mixed reactions

Translation of the TNA into a Training Programme:

As far as the translation of the TNA into the training programmes are concerned, most of the employees (26.67%) are very satisfied by the same. But looking at the balance sample size, the following conclusion can be drawn
- The Training Need Analysis is conducted on an efficient scale

Course Content

a. Relevance to the work
Most of the employees are satisfied with the course content and its relevance to the work. Most of the people fall in the strongly agree (26.67%) and agree (40%) category. Thus the following inferences can be drawn
- As 26.67% people fall in the no opinion category, it can be concluded that people have doubts or fears regarding drawing any conclusions.
- The relevance to the work of the training programme is efficient

b. Development of skills
Most of the employees are satisfied with the course content and think that the training programmes, normally polish or develop their skills further. Many employees strongly agree (40%) or strongly agree (26.67%)

Trainers

a. Thorough knowledge of the subject
Almost 50 % people agree to the fact that the trainers have thorough knowledge about the training content and subject. So too, the people falling in the category of strongly agree are high (20%)

b. **Trainers communicate subject matter in an effective way, using practical examples**
Looking at the survey results, one can infer that a majority of the public has either not given any strong opinion (40%) or agree that trainers communicate subject matter in an effective way, using practical examples.

c. **Trainers make good use of Audio-Visual Aids**
In this case too majority of the employees have not given any strong opinion. But it is observed that many employees have also given a mixed reaction like agree (23.33%) and disagree (23.33%)

d. **Trainers help one see the application of the programme i.e. concepts/skills for the job**
According to the survey, many people have agreed to the fact that trainers help them see the application of the programme i.e. the concepts/skills required for their job (40%).

e. **Rate the training programmes conducted in the company in terms of usefulness**
People here have given a mixed reaction of fair (23.33%), good (46.67%), very good (16.67%) and excellent (13.33%).

Recommendations

On the basis of the survey conducted and some of the training programmes attended, as an external auditor, this researcher gave the following recommendations:

1. Training should be considered not only as a recruitment tool, but also as a strong retention tool.
2. The appropriate training should be of high quality, flexible, timely, and meet set standards.
3. Several course participants commented that 1-hour sessions were too long. Thus time control would be easier, if there were more exercises, and less speaker presentations. Some course participants would have preferred longer breaks. Thus it could be recommended that there should be a standardisation of 45 minutes sessions, including questions.
4. Course assessment questionnaire: It is hard to get course participants to fill in more than 2 pages, unfortunately, no change is proposed, other than fine-tuning.
5. Presenter preparation: Presenters must be confident with
   - Target audience: Can I handle this type of an audience?
   - Quality of material
   - Type of subject matter: e.g. product-related, theory, etc.
   - Belief in the story
6. It is proposed that the aims and objectives of each course and module be specified, to the employees, prior to the training programme.
7. People should be given more autonomy, to express their views, to get a better picture for evaluation of the training process, as most of the people have given no opinions regarding the same.
8. The company should carry on regular Train The Trainers (TTT) programmes, to further polish the internal trainers used.
9. The company should involve some experienced trainers/training consultancies, which can communicate and deliver the content well, using all the effective training methodologies.
10. The Learning and Development Manager should effectively allocate the training programmes, among the employees, according to the training needs evaluated during the Performance Appraisal System or any other methods used.
11. Several course participants felt that the course handouts were inadequate, and that it would not be possible to understand the slides, when rereading them at a later date. Thus the trainer or the company should build handouts, which would be helpful to the employees at a later date.

Conclusion

It has been found that training should be considered not only as a recruitment tool, but also as a strong retention tool. Training and related activities were by far the most frequently stated activities, enjoyed by respondents. Poor provision for training also formed a strong theme among the focus group data and the final open-ended comments section of the survey. Appropriate training should be of high quality, flexible, timely, and meet set standards. The company must begin to grasp the value of training, in this volatile job market. Successful companies that retain their staff will be those, who are seen to be offering the best working experience – security, development and personal growth. There are many training options - everything from basic English language skills, through Time Management to tailored Leadership Development Programmes, for the most promising staff members. Whatever level the employees are at, training will make them feel valued and empowered and see themselves as a part of a company that cares about its staff. If executives are to not only attract but also retain and develop a high performing workforce, that adds genuine value to the organisation on a consistent basis, there needs to be a more structured approach, when undertaking training and development activities. And this requires a change in the mindset at the very top of the organisation.

Waste Management in Mumbai

Considering the growing problem of waste and the health hazards it is currently raising, due to improper disposal systems, the article proposes an alternative method that would not merely constitute a more effective way of disposal but would also reduce costs in the long run by putting into place a local disposal system.

Shashank Shah - PGDM

Mumbai has a coastal stretch of 603 sq. km. Geographically, the city of Mumbai can be divided into three sections, namely, the island city (or main city), the western suburbs and the eastern suburbs. These are also known for administrative purposes as Division I, Division II and Division III respectively. The total population of the city amounts to nearly 13 million and it is increasing on a daily basis. Such a huge habitat obviously generates a huge amount of waste of many kinds, the management of which is a massive task for the local administration.

Mumbai generates waste to the tune of approximately 9,000 tonnes per day. The waste consists of:

- 6,500 tonnes of mixed waste (bio-degradable and recyclable)
- 2,500 tonnes of debris and silt.

The bio-degradable waste (wet waste) is made up of vegetable and fruit remains, leaves, spoilt food, eggshells, cotton etc. Recyclable (dry waste) consists of newspapers, thermocol, plastic, battery cells, wires, iron sheets, glass etc. Debris includes construction waste, renovation waste, demolition waste etc. Silt comprises earth and clay from drains and road corners. It is estimated that by 2008, such waste will aggregate 9,000 tonnes per day, due to an increase in the city's population.

Nearly 95% of the waste generated in the city is disposed, by dumping it in the dumping ground. This largely manual operation involves 35,000 personnel employed by the MCGM and is collected by a fleet of 800 vehicles, including vehicles hired from private contractors, that work in shifts each day. MCGM spends about Rs15 - 20 lakh per day, collecting and transporting garbage and debris, with municipal and private vehicles making about 2,000 trips every day.

When the waste is dumped, it does not decompose very quickly, thereby making way for other waste. The nature of waste being dumped and the time it takes to decompose, poses a serious threat to the environment as well as human health. Given below are some examples, to understand how much time it takes for various materials to decompose. The problem in Mumbai is that everything is mixed, while being sent for disposal.
Hence it is important that Mumbai adopts the method of Single Stream Recycling, which would be very effective, considering its utility.

Vegetables, Fruit Skins, Waste Food	3-4 Weeks
Paper Bags	1 Month
Cloth Bags	5 Months
Wood Pieces	10-15 Years
Leather Shoes and Sandals	40-50 Years
Iron Sheets	50-100 Years
Aluminium Sheets	200-250 Years
Plastic Bags	1 Million Years

Single Stream Recycling

Single Stream Recycling allows the residents to mix recyclable paper, plastic and glass in one bin. Single Stream Recycling is made possible, through the use of various mechanised screens and optical sorting technologies. The convenience of Single Stream Recycling will greatly increase participation and household recovery.

How It Works

The Single Stream Recycling plant uses a variety of sorting devices, including screens, magnets and ultraviolet optical scanners that trigger blasts of air to separate plastic bottles from the rest of the items, as well as spinning star-shaped plastic devices that separate newspaper from cans and bottles, by pushing the paper higher up an inclined screen so the heavier, smaller cans and bottles tumble down to a lower level. Glass is sorted by colour and crushed, while plastic is shredded into small chips.

Glossary

Zone: The city has been divided into 6 Zones, with a Deputy Municipal Commissioner responsible for the functioning of the wards that fall under each zone.

Ward: There are 23 wards within the city. To facilitate administrative decentralisation, each ward has its own ward office, with a Ward Officer, who is responsible for the municipal services provided to the geographical area falling within its purview. Each ward also has

various departments that perform municipal services, and each department within the ward has their respective Heads of Departments, who are responsible for these services.

Constituency

For the purpose of elections, these wards are further divided into elective constituencies.

As we observe, all the dumping grounds are nearly 30-40km from South Mumbai, which explains the huge costs on transportation.

The increase in the population of the city has forced people to settle near the dumping grounds. This has led to the twin problems of people living in unhealthy conditions and protesting for the closure of the dumping grounds; as dumping causes health hazards for the people in the vicinity.

Hence the wards can form a group of about 3 to 4 wards, in each group, depending upon the area. And each such group can segregate the waste into biodegradable waste and recyclable waste. The biodegradable waste can be either dumped in the sea, as it won't pollute the water or can be sent to the dumping grounds. Whereas, the recyclable waste can be sent for recycling to their respective factories. Though the initial cost of installation of the machinery will be high, it would be compensated over a period of time, as the transportation costs would reduce.

Looking at the current scenario, Efficient Waste Management is very crucial for this city to sustain, and this is one of the ways, that would serve as a step forward in the right direction.

A fairly heavy week of junk mail.

Water Harvesting and Biotechnology

The article takes up the case for using water harvesting and greater developments in biotechnology, citing examples of how both these have been and can be put to use, to make better use of available technology and thereby ensure sustainability, harnessing the power that is already available a plenty, as a gift from nature.

Prem Sawant - PGDM

In the face of the current economic crisis, India has done much better than most of the developed countries, in terms of growth rate and is believed to be the next super power. However, we need to sustain this growth, by optimum use of resources and use of new technology. Our alarming population growth means that we have more people to feed with each passing year. So, agriculture is also very important besides the current wave of global mergers and acquisitions. It is sad that we still depend largely on the rainy season, for our agricultural produce. We need to think of water harvesting, to boost agricultural growth and even in cities, where water supply is a major issue in summer, this idea should be implemented on a large scale. Apart from water harvesting, biotechnology will also play an important role, in improving the quality and quantity of the produce.

Since ancient days, people, especially Indians, knew the methods for the conservation of rainwater. There are evidences that, even during the Harappan period, there was a very good system of water management, as could be seen, from the latest excavation, at Dholavira in Kachch. During the independence period, the people used to manage water resources, considering it as a part of nature, which was essential for their survival. This could be seen from the rain water harvesting structures, in the low rainfall areas of Rajasthan, harvesting springs in the hilly areas, the mountainous regions, percolation ponds and tanks in southern India.

In Tamil Nadu, in ancient times, people stored rainwater, in separate tanks, one for drinking purposes and another for bathing and other domestic purposes and called them as Ooranies. They also formed percolation tanks or ponds, for the purpose of recharging irrigation or domestic wells. They periodically cleaned the water ways, so as to get clean water throughout the year. So too, there are instances in history, which show that people constructed crude rubble bunds, across river courses, either for diversion of water or for augmenting the ground water. The various methods of rainwater harvesting are classified below under two categories - Traditional and Modern methods.

Rainwater harvesting is the gathering, or accumulating and storing, of rainwater. Traditionally, rainwater harvesting has been practiced, in arid and semi-arid areas, and has provided drinking water, domestic water, water for livestock, water for small irrigation and a way to replenish ground water levels.

Modern Methods

The Modern methods of rainwater harvesting are categorised under two heads - Artificial Recharging and Rain Water Harvesting. The former is classified into Absorption Pit Method, Absorption Well Method, Well cum Bore Method and Recharge Trench cum Injection Well.

The latter is further divided into Individual Houses and Grouped Houses, which are further classified into Percolation Pit Method, Bore Well with Settlement Tank, Open Well Method with Filter Bed Sump and Percolation Pit with Bore Method. In all these methods water is preserved by using any of the mechanisms like a pit, a bore well, or a settlement tank

- If one lives in a single dwelling house or a multi-tenant apartment complex, one already has 80% of the RWH system. One just needs to re-orient the plumbing design.
- The normal design of a house will take all the rainwater from the roof and all the ground level areas surrounding the house and flow the water towards the street (where it floods the street, clogs the storm drains and sewer lines for a few days, before flowing away as sewage water).
- From the roof tops, one can bring the rainwater down using closed PVC pipes and direct it to a Sump. In the Sump one can include a simple 3-part filtration unit, consisting of sand, brick jelly and broken mud bricks.
- If one does not have a Sump, one can use a well. In many parts of the country, old wells when they go dry are used as garbage dumps. The well can be cleaned and the rain water put into it.
- If one does not have a well, one can construct a baby well (about 2ft in diameter and about 16 feet deep, based on the soil structure)
- Other types of RWH - collect the ground water and stop their flow at the gate. A concrete slab with holes in it can be put at such a point and a 2 feet deep pit can be built, across the full width of the gate. A pipe can then collect and connect the flow of the water, to a well or a baby well.

What types of RWH make sense in the rural areas?

a. Community wells can be built in a few places in the village. Within 10-20 feet from the well, a bore-well can be constructed, using a hand-operated pump. The villagers need to be educated to keep the area around the well and the bore well clean – to prevent

washing (human, cattle, motor cycles, clothing) and defecation.

b. If there are existing water tanks in the village, they need to be de-silted and dredged every 3 years.

c. If there are any small rivers or streams, check-dams need to be built across them, to hold the rain water for usage, after the rains have stopped.

Some of the methods used in rural areas are as follows:

Bandharas

These are check dams or diversion weirs built across rivers. A traditional system found in Maharashtra, their presence raises the water level of the rivers, so that it begins to flow into channels. They are also used to impound water and form a large reservoir.

They are built either by villagers or by private persons, who receive rent-free land in return for their public act. Where a bandhara has been built across a small stream, the water supply would usually last for a few months after the rains. However, most Bandharas are defunct today, while a very few are still in use.

Kul

Kuls are water channels found in precipitous mountain areas. These channels carry water from glaciers to villages, in the Spiti valley of Himachal Pradesh. Where the terrain is muddy, the kul is lined with rocks, to keep it from becoming clogged. In the Jammu region too, similar irrigation systems called kuhls are found.

Bamboo Drip Irrigation

Meghalaya has an ingenious system of tapping stream and spring water, by using bamboo pipes, to irrigate plantations. About 18-20 litres of water, entering the bamboo pipe system per minute, gets transported over several hundred metres and finally gets reduced to 20-80 drops per minute at the site of the plant. This 200-year-old system is used by the tribal farmers of the Khasi and Jaintia hills, to drip-irrigate their black pepper cultivation. Bamboo pipes are used to divert perennial springs on the hilltops to the lower reaches by gravity. The channel sections, made of bamboo, divert and convey water to the plot site, where it is distributed, without leakage, into branches, again made and laid out with different forms of bamboo pipes. Manipulating the intake pipe positions also controls the flow of water into the lateral pipes. Reduced channel sections and diversion units are used at the last stage of water application. The last channel section enables the water to be dropped near the roots of the plant.

Kund

A kund or kundi looks like an upturned cup nestling in a saucer. These structures harvest rainwater for drinking, and dot the sandier tracts of the Thar Desert in western Rajasthan and some areas in Gujarat. Essentially circular underground wells, kunds have a saucer-shaped catchment area that gently slopes towards the centre, where the well is situated. A wire mesh across water-inlets prevents debris, from falling into the well-pit. The sides of the well-pit are covered with (disinfectant) lime and ash. Most pits have a dome-shaped cover, or at least a lid, to protect the water. If need be, water can be drawn out with a bucket. The depth and diameter of kunds depends on their use (drinking, or domestic water requirements). They can be owned by only those with money to invest and land to construct it. Thus for the poor, large public kunds have to be built.

A Success Story

A water starved school in the Nilgiris District, was provided with water after 27 years, due to the adoption of the Rain Water Harvesting method.

A small village in the Nilgiris called Thuthurmattam, which is situated 30 kms away from Ooty, did not have a drinking water system, for the past 27 years. It was quite surprising because even though the village is surrounded by tea estates and a forest, the school could not get any water supply at all. In order to provide drinking water supply to the school, the PWD has taken up a water harvesting mechanism, in the school, by completing the water harvesting structure, in two stages:

a. Collection of surface water during the rainy season and supply of water after purification. It was estimated that since there wasno perennial source nearby, a well was dug in a valley approximately 2 kilometres away from the school, and then the water was pumped by means of an electrical motor to the school premises.

b. In the second stage, rain water flowing over the two places was collected in a 15,000 litres capacity low level water tank, was purified in the litter arrangements provided at the bottom and then supplied for use. The scheme was implemented with financial assistance from the Hill Area Development Programme.

With the result of the Rain Water Harvesting method adopted, there was a combined storage of 80,000 litres of water, which was more than adequate for the requirement of the school, till the onset of the next monsoon in May 2002.

Biotechnology

The contribution of India to the field of Biotechnology is manifold. In addition to generating trained manpower and a knowledge base, India is proving to be an ideal setting for manufacturing activities and high-level biotechnology research programmes. With the initiatives taken by the Government, Indian Biotechnology is poised on the brink of tremendous growth. In 1997, the total biotech market in India

was valued at $ 500 million. This grew to $ 1 billion in 1999. It further grew to $ 2 billion in 2001 and is expected to grow to $ 4.5 billion, by 2010. Some expect that India will have 8 percent of the world's biotech companies by 2010.

Mahyco : A Case in Point

Established in 1964 by Dr. Badrinarayan R. Barwale, Mahyco is a pioneer and leader in the Indian Seed Industry. The company strives to provide quality hybrid seeds. Since its inception, it has been engaged in plant genetic research and production of quality hybrid seeds, for the farming community of India. Currently, it is engaged in the research, production, processing and marketing of approximately 115 products in 30 crop species, including cereals, oilseeds, fibre and vegetables. Mahyco is also developing genetically enhanced crops, with the use of gene transfer technology and has a national presence, with its network spread across the country.

Mahyco is the first private enterprise in India, to produce and market hybrids of Cotton, Sorghum, Pearl Millet, Sunflower and Wheat, and the first Indian company to commercially grow and market transgenic Bollgard Cotton - India's first transgenic crop in 2002.

In 1998, Mahyco established a new research facility, the Mahyco Research Centre, near Jalna-Aurangabad, Maharashtra, to conduct cutting-edge biotechnology research, in a number of areas relevant to crop improvement and productivity; while still remaining close to its roots in rural agriculture and seeds research. The major research areas it looks into include crop transformation, molecular virology, molecular microbiology, gene discovery and molecular markers, entomology and diagnostics.

BIPP

The present scheme, Biotechnology Industry Partnership Programme (BIPP), is a government partnership with Industries, for public support on a cost sharing basis for:

(i) Path-breaking research in frontier futuristic technology areas, with major economic potential, which makes the Indian industry globally competitive and focused on IP creation, with ownerships by the Indian industry and relevant, collaborating scientists.

(ii) The development of appropriate technologies in the context of recognised national priorities, in the area of agriculture, health, bioenergy, green manufacturing etc., when the scale of the problem has serious consequences for social and economic development.

Setting up NBRA

As directed by the Government of India, the Department of Biotechnology (DBT) has been entrusted with the responsibility of setting up the National Biotechnology Regulatory Authority (NBRA). The NBRA would be set up as an independent, autonomous and professionally led body, to provide a single window mechanism for the bio-safety clearance of genetically modified products and processes.

The UNESCO Regional Centre for Biotechnology Training and Education, Faridabad, India.

The emphasis here is to support disciplinary and interdisciplinary education, training and research in biotechnology, in order to produce skilled human resource, to drive innovative research and development, in the important gap areas.

The Indian Advantage

No other country in the world today has the unique set of advantages that India offers for large-scale practice of biotechnology. We have one of the largest bio resources in the world. We also have one of the largest coastlines anywhere. We have at least seven distinct climatic zones and one of the largest and most varied sets of marine organisms anywhere. The ambient temperature in most parts of the country is just what living organisms need for their activities that result in a biotechnological product. This curtails immensely the cost of cooling or heating, which becomes obligatory for the practice of biotechnology in most parts of the Western world. There are places on the Indian coast, where there is uninterrupted sunshine for some 340 days in the year, so that one can grow marine organisms in open raceways.

We have an enviable infrastructure and a large pool of trained manpower, with experience in most of the areas of biotechnology. Our labour and infrastructure costs are, perhaps, lower than anywhere else, where biotechnology can be followed and is being followed, with the possible exception of China. We have large tracts of land available, for growing the desired plants, required for agriculture-based biotechnology. We have experience of building world-class institutions, in virtually every sector of human endeavour – from outstanding basic research to efficient industrial production. We have, of course, many problems but we also know how to overcome them. In a nutshell the advantages far outweigh the disadvantages. It is a pity that we started much later in biotechnology than we could have but, even now, the prospects for the future are bright.

"Nature provides a free lunch, but only if we control our appetites".

- William Ruckelshaus

MET Schools of Management Initiatives

Co-curricular

Aarohan: The Launch Pad involves interaction with stalwarts from the industry, analysis of management films and speed reading modules, assessment of their skills through tests and games and interaction between the trustees and the parents of the students, while Foundation is a programme that attempts to bring students from diverse backgrounds on an equitable level in core competence areas.

CPM 9000: A competency acquisition evaluation programme that assesses the competencies acquired by the students and provides them with guidelines for addressing their weak areas.

Stormet: Operating through nine verticals, the STORMET groups, through discussions and in house interaction/guest lectures, work towards knowledge enhancement

Workshops: An annual feature involving presentations by students and/or interaction with industry stalwarts on their areas of specialisation and entrepreneurship

MET Hope: A news, analysis and views programme that attempts to keep students abreast of the unfolding socio, economic and political scenario

Metaphor: A journal of the Management Institute, it offers the students a platform for reflection on a chose subject and the scope to get their views published.

Creative

MET Combat: A debating forum with topics drawn from current events, MET Combat enhances communication skills while keeping students abreast with the latest issues in varied areas.

MET Vault: A wall journal which affords students and faculty the space to express themselves creatively and exchange ideas, giving them the scope to relax, enjoy and hone their communication skills.

Social Sensitivity

Vidya Setu: A CSR initiative of the Management Schools, Vidya Setu is an attempt to involve the underprivileged in the development of the country by sensitising Management students to their needs.

Project TRUTH: Involving Total Rural Upliftment Through Holistic Care, Project TRUTH had been operational through the adoption of Waliv, a tribal village.

UN ECOSOC: The UN ECOSOC project provides students the scope to work with the UN on a Paperless Committee and also involves hosting and contributing to the Annual Ministerial Review of this UN wing.

Field Exposure

China Mission: Involves visits to China to learn about their progress and study their industry as well as conducting workshops and seminars by people who have had dealings with China

MET on Wheels: An initiative to take Management students on visits to the industry and to rural areas (Grameen Expedition) to expose them to the ground realities of the working ambience.

MET Connect: An interaction with the industry to serve as a forum for exchanging ideas in order to meet the requirements of the industry.

विद्याधनं सर्वधन प्रधानम् ।

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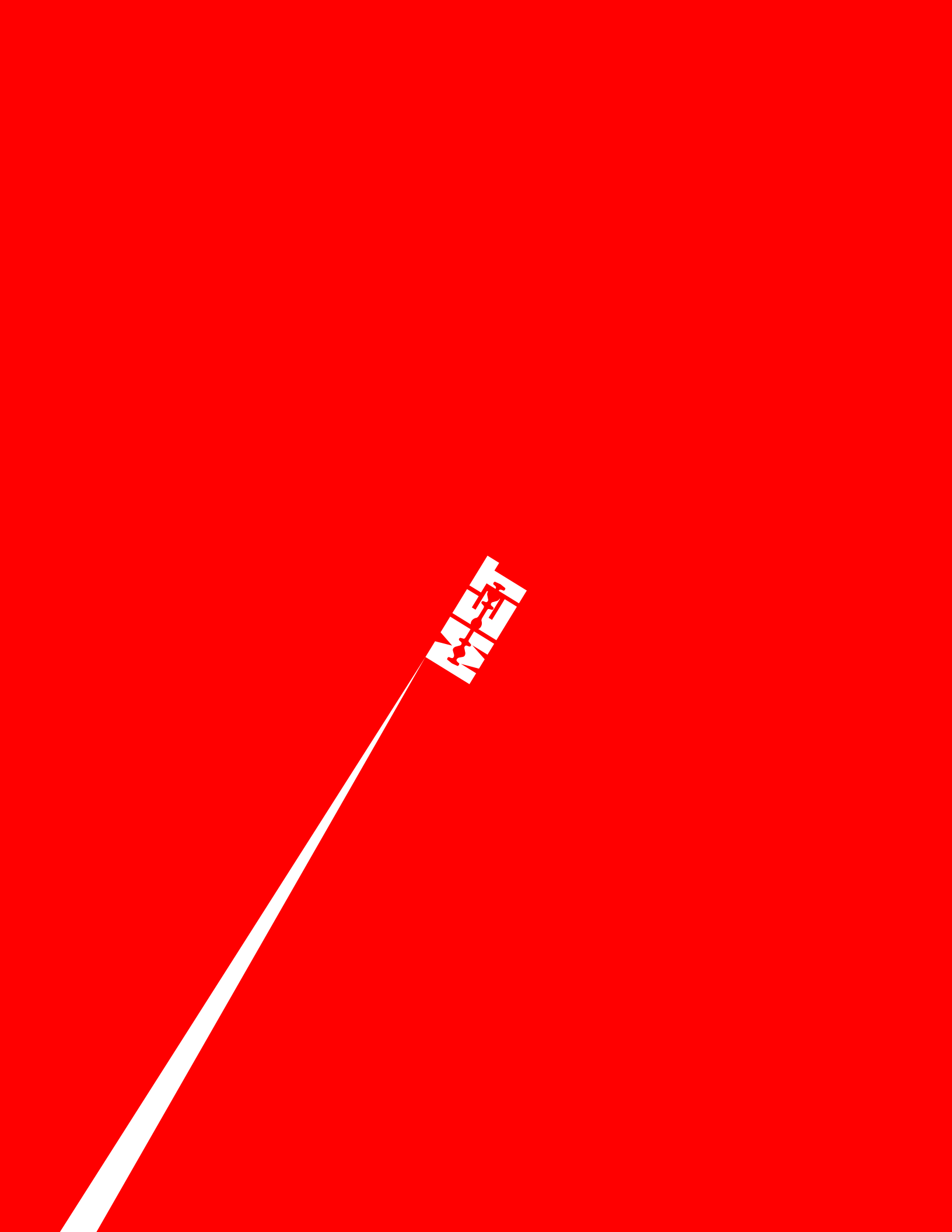
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