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Green Energy from drought resistant plants grown on waste/saline lands

Objective:-

To set up rural energy grid by growing drought resistant and salinity tolerant plants in the waste lands and then to use the biomass grown for gasification for power generation and utilise 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 of providing fuel both by dried biomass as well as utilisation of leaves and pods as animal feed. There are also some varieties of sugarbeet, 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, etc.

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 upto 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 contains as much as 12% sugar, it is a promising candidate for bio-ethanol purposes. More interestingly, accordingly 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 sugarbeet. As Prosopis Juliflora can be grown in saline conditions, the waste lands as well as dried out riverbed can be used for the above cultivation to support food and energy production on a sustainable basis. This can be converted into ethanol or for sugar production as desired.