Scope of CSTs & Cost/Fuel savings

Dish solar cookers & Indoor direct cooking systems

(Most suitable for N- West, South & Central parts of country where good DNI is available)

Scope

- Individuals, Mid day meal schools, Tribal areas, Aganwadis, Army Border Posts, Road side dhabas etc. for saving mainly LPG/firewood

Cost & Fuel savings

- A dish solar cooker of smaller size can cook food for about 10-12 people and may cost around Rs. 6,000. It may be able to save around 8-10 LPG cylinders in a year on full use. Bigger size cookers may cost Rs. 30,000 appx. And may be able to cook food for about 40 people. It should be able to save around 30 LPG cylinder in a year on full use

- An indoor cooking system may use dish of 7 to 16 sq. m. area and could cook food for 50 to 100 people depending on size. It may cost Rs. 75,000 to 1.6 lakh depending on size and may be able to save 30 to 65 of LPG cylinders in a year.

Solar steam systems

Scope

- Community kitchens in Institutions, Hostels, Hospitals, Hotels, Ashrams, Para-Military/Defence establishments, Prisons for cooking
- Industries, hotels, hospitals etc for solar cooling, laundry & other applications for saving LPG/Electricity/Diesel etc.

Cost & Sizing

- Approximate cost of these systems should not be more than Rs. 12,000 to 14,000 per sq. m. of dish area for single axis tracked systems and Rs. 14,000 to 16,000 for two axis tracked systems depending on site and data acquisition & control system installed with cost decreasing for increased size of systems. This cost is for retrofitted systems and excludes cost towards boiler, utensils for cooking/VAM & its accessories for cooling as applicable, civil works, AMC etc. For newer systems, the cost towards boiler, utensils for cooking and VAM and its accessories for air-conditioning etc may be extra by 20 to 30% respectively. In high altitude areas and

difficult terrain, the cost may further increase by 20 to 25%. Another 3 to 5% could be towards operation, maintenance & AMC for 5 years.

- Scheffler dishes are now being manufactured with 16sq. m. of aperture area. A solar steam generating system using these dishes may not be suitable for cooking food for less than 250 people. As a thumb rule 3 to 4 dishes of 16 sq. m. each should be sufficient for cooking food for around 250-300 people depending on site. For bigger system, dishes will be added accordingly but will reduce proportionately due to lower heat losses. For example, a 10 dishes system (160 sq. m.) may be sufficient to cook food for around 1000 people.

Fuel Savings

- A typical solar steam system (excluding cooking vessels & conventional boiler) comprising of 96 sq.m of Scheffler dish area (6 dishes each of 16 sq. m) can save around 4,500 liters of diesel in a year. It may generate about 150 to 200 kg of steam in a day could pay back the cost in 4 years with support available from the Ministry.

- Each dish of Arun technology with 169 sq m. aperture area and costing Rs. 35 to 40 lakhs could generate 500 to 600 kg of steam per day depending on solar insolation and steam pressure. More dishes could be installed for meeting the required steam in an establishment at desired temperature and pressure. The payback period may come to around 5-6 years for establishments availing MNRE subsidy and depreciation benefit.

*****