TECHNOLOGY FACTSHEET

COOK STOVES IN BIOMASS GASIFICATION [1]

1. **Sector/ Sub Sector:** Industry and household

2. **Introduction:** Biomass gasification household stoves work by a high temperature conversion of biomass in a restricted oxygen environment to a mixture of nitrogen, carbon monoxide, hydrogen, and methane. The hydrogen and methane are then burned without emitting pollutants. For larger applications pure oxygen may be used which gives a higher calorific value gas without the nitrogen. The technology can be used at household, community and industry level.

3. **Technology Name: Cook stoves in biomass gasification**

4. **Technology Characteristics:** Gasification is the process of converting a solid fuel to a combustible gas. To this process usually a restricted amount of oxygen is added, either pure or from air. A carbonaceous solid material can also be gasified to produce a hydrogen-rich gas by bringing it in contact with steam at a high temperature. Air gasification of biomass produces a low calorific value gas, the producer gas containing about 50% nitrogen, and can fuel engines and furnaces. Gasification of biomass with pure oxygen results in a medium calorific value gas free of nitrogen. Gasification is the process of converting a solid fuel to a combustible gas. To this process usually a restricted amount of oxygen is added, either pure or from air. A carbonaceous solid material can also be gasified to produce a hydrogen-rich gas by bringing it in contact with steam at a high temperature. Air gasification of biomass produces a low calorific value gas, the producer gas containing about 50% nitrogen, and can fuel engines and furnaces. Gasification of biomass with pure oxygen results in a medium calorific value gas free of nitrogen.

5. **Country Specific Applicability:** Technology is applicable in Sri Lanka

6. **Status of the technology in the country and its future market potential**: Biomass gasification is currently commercially available technology in Sri Lanka. Its future market potential is high due to fossil fuel prices.

7. **Barriers:** Continues supply and availability of biomass and quality of biomass.

8. **Benefits:** It is a renewable energy source

[1] **This fact sheet has been extracted from TNA Report – Mitigation for Sri Lanka. You can access the complete report from the TNA project website** http://tech-action.org/

9. **Operations:** -

10. **Costs:** The cost of biomass gasification systems for thermal applications excluding fuels and ash handling facilities has been reported to amount to about USD 55,000 for a unit that substitutes 100 litres/hour of furnace oil; the cost per liter of oil substituted per hour tends to be higher for lower capacities. The economic and financial aspects of using a gasifier to replace liquid fuels are extremely favourable across different unit capacities; the payback period for a small and medium gasifier is around 6 months.