Converting Waste Agricultural Biomass into Resource

Technology Options and Pilot Project for Waste Agriculture Biomass

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SAT Methodology

**Source:** Mr. Chandak’s Presentation
Situational Analysis

- Availability of WAB in the project area
- Stakeholders Identification
- Issues of Concern on Technology
- Literature Study
- Field Visit and Studies
Main Waste Agricultural Biomass

- Rice Straw: 862 MT
- Wheat Straw: 148 MT
- Maize Stalks: 4.3 MT
- Farm Vegetable Waste: 2,021 MT
- Rice Husk: 744 MT
- Vegetable Market Waste: 153 MT
Stakeholders Identification

- Municipality
- All Political Parties Committee
- Women’s Group
- Community Development Group
- Youth Farmer Group
- District Development Committee
- District Agriculture Office
- CCI, Bhaktapur
- CSI Association
- Nepal Ceramic Cooperatives
- Organic Farmer Group
- Social Workers
Issues of Concern on Technology

- Must not be polluting
- Financially viable
- Should also use agro-waste from domestic source
- Use waste from forest
- Compost fertilizer must be available
- Minimum space requirement
- Community based
- Simple to operate and maintain
From Literature and Visits

- **Straws** – boiler, furnace, cooking stoves, bio-refinery, charcoal
- **Maize Stalks** – boiler, furnace, gasification, bio-refinery
- **Rice Husk** – Boiler, gasifier, cook stoves, furnace, cement hollow blocks, briquetting, cement extender, woody fibers
- **Waste Vegetable** – Biogas and Compost
Briquetting

Screw Press Briquetting

Compression Briquetting

Screw Press Briquetting

Stove for beehive Briquette
Gasifier

Major components of IGS

- Water seal
- Fuel chamber
- Stand for cooking pots
- Combustion chamber
- Secondary air supply
- Reaction chamber
- Primary air supply
- Ash chamber system
Outer view of the Plants

Internal view of the plant

Biogas purification and Gas Filling

Compressor
Define Target

Use some of the available Waste Agricultural Biomass to convert to material and or energy resource as a demonstration pilot project such that such technology will be replicated.
Strategic Level Assessment

- Pollution free – no odour, insects, aesthetic
- Efficient use with economic value
- Use of totally wasted materials
- Only proven technology
- Useful for Agro-based waste biomass from households
- Safe to use
## Screening

<table>
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<th>S. No.</th>
<th>Criteria</th>
<th>Briquette</th>
<th>Gasifier</th>
<th>Biogas &amp; Fertilizer</th>
<th>Use in Boiler</th>
<th>Use in Furnace</th>
<th>Ethanol</th>
<th>Lumber material</th>
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### Scoping

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Technology Considered

- Briquetting of WAB – rice husk, maize stalks, Straws, dried waste vegetables
- Gasifier – rice husk, maize stalks, Straws, dried waste vegetables
- Biogas and Bio-fertilizer – Vegetable wastes from farm, vegetable markets and households