

Biomass briquettes

Replacing coal and LPG



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a waste with no economic value. It is often burnt inefficiently in open fields, causing air pollution. However, this 'waste' can be turned into a completely environment-friendly source of energy through briquetting.

Briquettes are simply compressed biomass material, which can be used for heat and electricity generation. Unused, loose, and low-density biomass can be briquetted to a bulk density of more than 650 kg/cu m. Biomass briquettes can be used for small and big thermal installations, replacing coal and LPG. This, in turn, results in significant emission reduction.

Biomass briquettes can also be used in small- and big-scale smokeless *chullhas* that are based on the gasification technology for commercial cooking, as well as at home, replacing LPG and firewood. In addition, they can

India is extremely dependent on the use of fossil fuels, mainly coal and petroleum. The dependency is even more evident in the semi-urban areas. On the one hand, several small-scale industries such as brick kiln manufacturers, industrial boilers, and food processing and pharmaceutical industries use coal for thermal/heating purposes, which results in high greenhouse gas emissions, which are responsible for climate change. On the other hand, institutional kitchens use expensive and polluting LPG (liquefied petroleum gas).

However, the rural population in India does not have access to reliable energy. The main source of energy for this section of the society is the

use of firewood. The people living in rural areas burn firewood inefficiently (mainly for cooking), which causes indoor air pollution and releases harmful black smoke. Thus, only unreliable and dirty energy is available to the rural population and industries in semi-urban areas.

Solution

India has millions of tonnes of unused and available biomass waste. This loose biomass is currently treated as





be utilized in bio-digesters and gasifiers for decentralized power generation.

Sustainable development

The use of briquettes based on biomass, a renewable source, will reduce the amount of CO₂ (carbon dioxide) emitted due to the burning of fossil fuels like coal and LPG. In addition, the collection and densification of biomass will generate income for the rural people, as well as provide a clean energy for the local industry in an environmentally sustainable manner.

Current project

Currently, one project is underway at Kotdwara, Uttarakhand. It has a capacity of producing 15 000 tonnes of briquetted biomass per year. And it would lead to a carbon offset of around 20 000 tCO₂/year (total CO₂ per year). Not only this, more than 400 people – mostly women in rural areas – will also be employed.

Areas of biomass availability have been identified and biomass collection centres, with small grinder facility, are being set up.

The aim of this project is to save 20 000 of tCO₂ emissions annually from the Kotdwara Unit—12000 tCO₂ against

Biomass in Uttarakhand

Unused pine needles from the forests in the state of Uttarakhand amount to 1.8 million tonnes, says the state forest department. If this quantity can be properly briquetted, it can produce approximately 5 940 000 megawatts of energy every year. And it will result in enormous CO₂ savings. For instance,

- 1.3 tonnes of biomass briquettes replaces 1 tonne of coal used by brick kiln, saving of 1.81 tonnes of CO₂ emissions.
- 2.5t of biomass briquettes replaces 1 tonne of LPG, saving 2.98 tonnes of CO₂ emissions.

coal replacement in brick kilns and 8000 tCO₂ against LPG replacement.

Social and economic benefits

Biomass will be collected in isolated rural areas where unemployment, poverty, and other economic backwardness prevailing.

- The project would lead to the development of the region through the generation of employment in these regions.
- It will provide economic value to biomass, agricultural biomass, and so on.
- It would provide renewable and sustainable energy to the industry and aid in hassle-free manufacturing of products.
- It will help rural population to have access to low-cost new *chullha* technology to burn biomass efficiently, while reducing the pollution drastically.

Win-win for all

- Complete mobilization that can generate an employment of around 500 people during the peak season of biomass availability.
- Preservation of forest from fire.

- Additional income generation for transporters.
- Employment generation opportunity at the production and *chullha* manufacturing facilities.
- Saving for coal and LPG users, as briquettes are less expensive than coal/LPG.
- Help in overcoming the availability crisis for LPG/coal.
- Saving environment by controlling carbon emission.

The way ahead

The franchise model will be used replicating the same project in different regions. About five sites have been identified in Uttarakhand and Himachal Pradesh that have the required biomass and the industry that needs a clean energy alternative. The model will be eventually extended to different states of India.

