



Biomass pellet application in brick kilns

The excessive use of coal for brick firing is one of the main causes of black carbon, sulphur dioxide, carbon dioxide, and particulate matter pollution in the atmosphere. Around 1,349 brick kilns in Nepal consume 504,750 tons of coal annually¹. This coal is mainly imported from India, Indonesia, and the United States. Owing to a sharp increase in coals prices and associated environmental concerns, many brick entrepreneurs have shown great interest in alternative fuels.

Pellets as alternative fuel

Pellets are biomass fuels that are a more environmentally friendly alternative to fossil fuels like coal. Pellets made from biomass waste do not compete with people for food or land and are therefore more sustainable. Upcycling crop waste into a commercially viable commodity also directly addresses the issue of open agricultural burning, which contributes significantly to regional air pollution.

Pellets and briquettes are produced by compacting loose biomass such as sawdust, crop waste, tree branches, rice husk, straw, and bagasse. They are considered the most suitable alternatives to coal for brick firing. Biomass pellets (<10 mm), pellet briquettes (10 mm-40 mm) and biomass briquettes (> 40mm) can replace coal in various kinds of energy use as presented in Figure 1.

Why transition from coal?

- In the last 10 years, coal prices have increased on average by more than 200% according to conversations with brick kiln owners. In 2018 alone, coal prices are reported to have risen by almost 40%.
- Annually, Nepal spends USD 153.7 million on coal imports for brick firing. This adds to the country's increasing trade deficit, which was NPR 1.1 trillion in the fiscal year 2019-2020².
- In addition to the costs, there are issues of irregular supply and inconsistent quality with imported coal.

Benefits of pellets

- Environment friendly
- Calorific value of biomass waste increases when pelletized
- Reduces pollution and emission of greenhouse gases
- Biomass waste upcycled into a commercially viable fuel

¹ICIMOD (2019). Brick sector in Nepal [Fact sheet]. International Centre for Integrated Mountain Development.

²Republica. (2020, July 27). Nepal's trade deficit decreased by 16.71% in last fiscal year. Retrieved from <https://myrepublica.nagariknetwork.com/news/nepal-s-trade-deficit-decreased-by-16-71-in-last-fiscal-year/>

FIGURE 1

BIOMASS SOURCES FOR MAKING PELLETS AND BRIQUETTES, AND THEIR USES



Biomass raw materials



Pellets (<10 mm); pellet briquettes (10–40 mm); briquettes (>40 mm)



Uses of pellets and briquettes

Supported by



ICIMOD gratefully acknowledges the support of its core donors: the Governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Sweden, and Switzerland; and programmatic support from the Government of the United Kingdom.