

Biomass Stove Pollution

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- Biomass energy accounts for about 15% of the world’s primary energy consumption and about 38% of the primary energy consumption in developing countries. Furthermore, biomass often accounts for more than 90% of the total rural energy supplies in developing countries.
- The traditional stoves in developing countries waste a lot of biomass, mainly because of an inefficient heat transfer and incomplete combustion of biomass.
- A lot of people suffer from respiratory problems all their life because since they are babies, they inhale smoke from inefficient cook stoves in their dwelling.
- The phenomenon of Indoor Air Pollution causes the death of about 1.5 million people every year according to the World Health Organization.
- Chemicals produced from incomplete combustion of biomass include carbon monoxide (CO), nitrous oxide (N₂O), methane (CH₄), polycyclic aromatic hydrocarbons (PAHs), and particles composed of elemental carbon or black carbon.
- There is urgent need to speed up the dissemination of cleaner, more efficient and better ventilated stove technology.
- An improved stove should save about 50% of the biomass in field test (different from laboratory ones) and/or reduce considerably the phenomenon of Indoor Air Pollution due to bad combustion (production of smoke).
- The improved use of biomass in households, institutions and industries leads to reduced fuel consumption, faster processing, improved product quality and products with better shelf life.

Table 2. Global importance of PICs from biomass-fired cookstoves

<p>Energy Biomass composes about 14% of all direct human energy use. It is about 33% of energy use in developing countries. It is about 75% of energy use in rural areas of developing countries. It is the most important fuel for the majority of humanity.</p> <p>Sources: Smith [1987]; Meyers and Leach [1989]; Hall and Rosillo-Calle [1991]</p>
<p>Health Cause of up to 50% of total human exposure to RSP Affects second-largest occupational group (cooks), after farm workers Known risk factor for most important killer of developing-country children (pneumonia)</p> <p>Source: Smith [1993]</p>
<p>Global warming Human biofuel consumption: 20–40% of all biomass combustion 1–5% of all CH₄ emissions 6–14% of all CO emissions 8–24% of all TNMOC emissions 1–3% of all human-generated global warming</p> <p>Sources: Smith, Khalil et al. [1993]; Ahuja [1990]</p>



Three-Stone Fire



Rocket Stove with Skirt



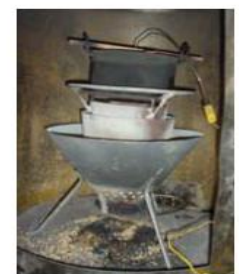
Karve Gasifier



Philips Prototype Fan Stove



Jiko Type Charcoal Stove



Mayon Turbo Rice-Hull Stove