

Fuel wood use and climate challenges

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The use of fuel wood has been a consistent driver of forest degradation and respiratory health problems in all parts of India. India has been consistently trying to reduce the dependence of fuel wood since 1980s by introducing variety of better cooking technologies such as improved cooking *chullhas* or stoves. *Chullhas* of various models of fixed and portable types using natural draft and forced draft technologies have been installed all over India. So far, through various programmes, India has provided access to improved cooking *chullhas* to over two crore households with varying degrees of success.

We have more than 10 crore households in India today that use fuel wood as the primary cooking energy; a substantial portion of these households are also dependent on selling fuel wood for a livelihood. India accounts for 30% of global total reliance on solid biomass for cooking. Thus, fuel wood becomes an important driver of many issues, from local to global levels that impact forest degradation, livelihood, community health, and also contribute to carbon emission.

In Assam, about 72% households are dependent on fuel wood – in tea estates, forest fringe villages and forest villages where more than 85% of households depend on fuel wood for various activities like cooking of food on daily basis, seasonal heating of water and drying

of clothes. Forested areas remain the major supplier – more than 85% – for fuel wood in the State. The tea estates contribute to about 50% of the demand from the estate itself. But the rest needs to be sourced from the market and other types of fuel. There is 25-30% penetration of LPG in tea estates, which is higher in comparison to the forest fringe villages and forest villages that has about 15% penetration in the State.

There are, though, major barriers that prevent adoption of clean cooking fuel. Availability/refill of alternative technologies like LPG and cost considerations towards use of alternative technology pose hurdles for 90% of the households for not shifting to cleaner alternative fuels.

The traditional potter cook stove with one burner is the most widely used stove – by 95% of households in tea estates, forest fringe villages and forest villages. About 85% of households have expressed their interest to shift over to new and improved technology to address issues like smoke exposure, excess consumption of wood leading to drudgery of fuel wood collection, and the facility to cook two items simultaneous-

ly on double burners. Towards this, improved traditional cook stove is a dominant choice of around 80% households followed by LPG, which is preferred by 25-30% households.

The occurrence of respiratory problems due to smoke exposure while cooking are widely prevalent among 30-35% households in tea

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estates and 50-55% households in forest and forest fringe villages. The financial burden of treatment of respiratory diseases is also very high and leads to an income leakage of Rs 5000-7000 annually per

household. On an average, the households in these areas earn in the range of Rs 24,000 to Rs 50,000 per annum.

While the Ujjwala Yojana is penetrating very fast to reach rural households in Assam, a large number of households continue to use traditional cook stoves for their daily cooking and LPG is used sparingly for emergency cooking owing

to financial, cultural and other barriers even though majority of the households aspire for LPG as the alternative to the traditional stoves. This suggests a strong trajectory of transitional and aspirational cooking technology demand. In such a situation, even though the elder generation would take some time to adopt LPG, the younger generation would most likely shift over to LPG due to convenience and opportunities of investing time in other activities.

Considering these field realities, to reduce fuel wood dependence, there is a need for a stop-gap arrangement of fuel wood saving technology along with Ujjwala Yojana that needs to be cost effective with a high degree of adoption by the local households. The models of improved smokeless *chullhas* such as 'Sukhad' has shown better acceptance

than the portable models in many villages and tea estates in Assam. Portable models are relatively costlier, need processed fuel wood, consume more time and, most importantly, do not come with two burners. Hence, even though the technology is perfect, the adoption levels are not impressive. The improved traditional cook stoves with two burners and a chimney have very high adoption rate and incurs 25% reduction in the fuel wood usage at affordable costs.

In Assam's Cachar, Dibrugarh, Nagaon and Sonitpur districts, India's first pilot project of Forestry NAMA (Nationally Appropriate Mitigation Actions) on sustainable fuel wood management is being implemented by GIZ and TERI in collaboration with the Assam State Forest Department. This is being done in convergence with Ujjwala Yojana combining locally acceptable fuel wood saving technology. The project aims to reduce forest degradation through sustainable fuel wood management by addressing both supply and demand of fuel wood by supporting increase of fuel wood plantations and reducing demand by deployment of fuel wood saving technologies. The project is thus aimed at reducing CO₂ by August 2020, and becoming a part of the transitional and aspirational change of the local communities to mitigate the impacts of the climate change and derive other co-benefits in the form of improved health and conservation of forests.