



# POSITION PAPER ON 'CLEAN-FUELS'

## INTRODUCTION

We welcome the increasing advocacy on making clean cooking accessible for all. Since the current annual costs of not addressing this challenge is estimated in the trillions of dollars by the [World Bank](#) it justifies urgent public intervention. However, the policy discourse that focuses only on solutions such as electricity and liquid petroleum gas (LPG)<sup>1</sup> as 'clean-fuels', is dangerously inadequate.

## PEOPLE CONTINUE TO USE BIOMASS

The science and demographics are clear. Even with urbanisation trends, for at least another decade, more than 2 billion people<sup>2</sup> will rely on solid fuels to meet their everyday cooking needs, and electricity alone will not come close to filling the energy gap.

It's not surprising that even when electricity and LPG are accessible, many households don't simply convert from one fuel to another but make parallel use of various fuels for cooking, a concept known as 'stacking', therefore it is important to clean all parts of the 'stack'.

An estimated 1.8 billion people worldwide,<sup>3</sup> with access to electricity, still predominantly rely on solid fuels (mainly biomass) for cooking.

---

<sup>1</sup> Recent articles advocating LPG subsidies in Africa include [Africa: Clean Cooking - Lifting the Lid on Dirty Cooking Fuels](#) and [Donors make it harder for Africans to avoid deadly wood smoke](#)

<sup>2</sup> The absolute number of solid fuel users in sub-Saharan Africa, South and Southeast Asia is [predicted](#) to increase until 2050 and the International Energy Agency predicted in its [World Energy Outlook](#) in 2018 that by 2030, 2.2 billion will still lack access to clean fuels and technologies.

<sup>3</sup> It was estimated by IEA that in 2020 more than 2.6 billion people lack access to clean [cooking](#) facilities, relying instead on solid biomass, kerosene or coal as their primary cooking fuel while 770 million people lacked access to [electricity](#) in 2019.

It is therefore very important that the biomass-fuelled part(s) of the 'stack' is/are cleaned to generate a variety of benefits, like saving fuel and time, and being beneficial to the environment, climate and health.

Evidence from India, through the *Pradhan Mantri Ujjawal Yojana* (PMUY) program, reaffirms that even massive state LPG subsidies do not lead to exclusive usage. Many subsidised households continue to predominantly use solid fuels for their daily cooking needs, for a variety of reasons. Even though 97.5% of Indian households have the ability to access LPG (Indian Ministry of Petroleum & Natural Gas, 2020), it is estimated that around 650 million people, just under half of India's population, continue to rely primarily on traditional biomass fuels for household cooking and water heating.<sup>4</sup>

Vulnerable households, in particular, will continue to source their vital cooking fuel locally rather than depending on infrastructures that are not reliable and beyond their control.

## BIOMASS CAN BE CLEAN

Wood and other biomass, are not 'harmful fuels'<sup>5</sup> *per se*. When it is managed and treated properly and burned in efficient devices, biomass can provide a low-emission, affordable, readily available, sustainable source of thermal energy for cooking and other household applications. Advances in biomass-burning devices, fuel processing, and distribution have demonstrated that biomass can be one of the cleanest energy options.<sup>6</sup>

---

<sup>4</sup> [Indian Energy Outlook](#), 2021, IEA page 175

<sup>5</sup> UN Secretary General António Guterres alluded to 'harmful fuels' for cooking in his [speech to inaugurate](#) the High Level Dialogue for Energy 2021 process.

<sup>6</sup> By forcing gases and smoke from incomplete combustion back into the stove's flame, some

Indeed, a growing body of research shows that LPG<sup>7</sup> stoves may exceed recommended exposure levels for some pollutants. This research, coupled with life-cycle assessments that consider leakages in extraction, processing, distribution and use, suggests that advanced biomass fuels could be as clean or cleaner than LPG from both health and climate perspective.

To date, however, public investment in making biomass-fuelled cooking cleaner has been minimal. Studies in countries as diverse as [Mexico](#), [Honduras](#), [Ethiopia](#), [Rwanda](#), [Senegal](#), [Burkina Faso](#) and [Malawi](#), show that even humble improvements in making cooking with biomass (firewood and charcoal) cleaner, by using 'stepping stone' interventions, can make a significant difference in reducing emissions and exposure to household air pollution.

Climate finance has been difficult to access, particularly for grass-root local enterprises, that are best situated to deliver locally adapted, cost-effective solutions to make the most of local resources. To demonstrate such cost-effectiveness and potential, abating a tonne of CO<sub>2</sub> equivalent from cleaner cookstoves in Africa, for example, is estimated to be as low at \$2 to \$10 compared to an estimated price of \$40 to \$80 per tonne of CO<sub>2</sub> equivalent required to deliver on commitments put forward in the Paris Agreement.<sup>8</sup>

Up-front transaction costs of climate finance mechanisms have also been a barrier to entry and need to be simple and 'user-friendly' for 'on the ground' cleaner cooking 'implementers' (e.g., grass-root local enterprises). Progress is being made in reducing the expense of

---

biomass cookstoves cut emissions by 95 percent, but they are more expensive and can require more advanced pellet or briquette fuels  
<https://drawdown.org/solutions/improved-clean-cookstoves>

<sup>7</sup> <https://rmi.org/insight/gas-stoves-pollution-health>

<sup>8</sup> Bensch, G; Jeuland, M; Peters, J Efficient biomass cooking in Africa for climate change mitigation and development, One Earth, Volume 4, Issue 6, 2021, Pages 879-890,

results-based audits (sometimes virtual, and more cost-effective, post-pandemic). Monitoring and evaluation hurdles can be overcome with peer-to-peer, south-south training and mentoring.

To really advance the potential of biomass as a clean fuel, initiatives that process agro and forestry residues need to get beyond 'trial' scale. If these initiatives are subsidised and incentivised in the billions, like LPG and electricity, the outcome and impact are likely to be very different. The development of biofuel supply chains, with rural employment and poverty alleviation knock-ons, can lead to reliable and affordable availability of solid biofuels of standardised shape, size and moisture content to fuel advanced biomass-based cooking systems with diverse fuel-stove combinations.

## PATHWAYS TO CLEAN COOKING

Due to the fact that billions of people rely on firewood and charcoal, climate funding needs to prioritise universal 'transition away' from open fires and rudimentary stoves to a diversity of cleaner, locally appropriate and proven cooking options, and 'transition toward' renewable well-managed sources of bio-energy. This approach can actually reach everybody (i.e. providing universal access) in a much cheaper and faster way, as: 1) focusing on making only LPG or a reliable supply of electricity accessible, will result in partial access; and 2) most of these people, particularly those living in rural areas, are likely to continue to rely on biomass for some, if not most, of their cooking energy needs.

As nations with low access to clean cooking consider development path options that decide the future of billions of people for decades, choosing cleaner biomass cooking will make access to climate finance easier and can avoid getting 'locked' into fossil fuel dependency.

By 2050, CLEAN (meaning clean for both health and climate) 'stacks' will be required worldwide. Therefore, the long-term goal of 'net-zero' cannot include LPG or fossil-based

electricity. It should be made up of renewable fuels from local sources and appropriate technologies such as advanced biomass stoves (using briquettes, pellets and renewable charcoal made from biomass residues to ‘waste no waste’), biogas stoves (using locally available feedstock such as waste from food supply chains, animals, sewage, etc.), solar thermal, and off-grid solar photovoltaic-based electric stoves.

As a blueprint to clean the stack in the short term (before 2030) we advocate for:

- Scale-up ‘roll-out’ of a diversity of context-based cleaner biomass cooking options in Africa, Asia and Latin America. These options should be proven to meet local preferences over time, through localised field-based tests.
- Climate finance to subsidise or incentivise socially inclusive ‘roll-out’ at zero or very low costs to the end-user, as (i) woodfuel users tend to be poor with limited access to information, education and finance, and (ii) simple cleaner cookstoves can be cheap and are unlikely to be used by the rich.<sup>9</sup>
- Local structures and social enterprises that reward creativity and innovation with payments based on demonstrable, verifiable usage over time.

## ACKNOWLEDGEMENTS

Authors Omar Masera, Priyadarshini Karve, Christa Roth and Conor Fox would like to acknowledge and thank those who have provided valuable input, although they do not necessarily endorse this position paper in its entirety: Veena Joshi, Svati Bhogle, Andrew Revkin, Marc Jeuland, Jörg Peters, Yamungu Botha and Stella Gama.

Published 2021.

For more information, please visit:

[cleanercooking.org](https://cleanercooking.org)

take action and sign up today  
**Cleaner Cooking Pledge**  
[cleanercooking.org](https://cleanercooking.org)

## Our Pledge

We pledge, and ask all supporters to work with us, to:

1. Provide access to cleaner cooking with proven solutions that meet local needs, to all families by 2030 and make them count towards the SDG 7
2. Diversify and upgrade a portfolio of clean options, from local renewable sources, for cooking and other needs, for all by 2050, thus reaching nett zero emissions

We do this to preserve our natural resources and forests, to combat climate change, to improve the health and livelihoods of our people, and to play our part in the global shifting of mindsets.

---

<sup>9</sup> Bensch et al