

Status of eCooking in India: A Snapshot

July 2025

Authors: Dr Nick Rousseau, Prof Matt Leach, Mr Vimal Kumar and Dr Neh Satsangi



This document has been produced to stimulate discussion and debate. We welcome suggestions of other evidence.

Why consider eCooking for India?

The use of unclean fuel for cooking has a huge cost to the climate, local economies, and public health. In India, a recent study found that 34% of households still rely on firewood, chips, and crop residue for cooking¹. The latest data found that Household Air Pollution (HAP) from the use of solid fuels resulted in more than 1 million deaths in India² in 2021. Thus, there is a clear need in India to shift households from polluting cooking fuels to cleaner, healthier fuel for cooking.

LPG is not the only option for achieving clean cooking in the country. While millions of Indian families have benefitted from access to LPG, LPG imports and subsidies represent a large cost to the exchequer and it would be highly desirable to switch to a means of cooking that delivers benefits to the economy, rather than costs.

Further, India's Net Zero ambition will require substantial investment in renewable energy generation on or off grid and eCooking can provide a reliable additional load and source of revenue that, when built into access expansion plans, can significantly increase the prospects for a solid return on investment.

The Modern Energy Cooking Services (MECS) Programme and a growing community of partners across the country see growing evidence that cooking with electricity represents a cost-effective, scalable, and sustainable option to support the clean transformation of Indian kitchens.

This short report provides a summary of our observations and published research setting out the situation as it stands in 2025, to the best of our knowledge.

About MECS

Modern Energy Cooking Services (MECS) is an eight-year research programme funded by UK Aid (FCDO). We are a geographically diverse, multicultural and transdisciplinary team working in close partnership with NGOs, governments, private sector, academia and research institutes, policy representatives and communities in 16 countries of interest to accelerate a transition from biomass to genuinely 'clean' cooking.

This material has been funded by UKAid from the UK government, however the views expressed do not necessarily reflect the UK government's official policies.

What has the Government of India done to support eCooking?

Pradhan Mantri Ujjwala Yojana (PMUY) helped in expanding the coverage of LPG, a cleaner and more efficient cooking fuel than biomass, to over 100 million families. A programme on a similar scale, combined with the support for improved electrification could speed up adoption of eCooking and create revenue for Indian entrepreneurs.

To support Net Zero by 2070 the Government of India has initiated programmes and schemes for decarbonisation of the economy and set ambitious targets for renewable energy generation, enhancing energy efficiency, launching the GoElectric campaign (cooking with electricity (“eCooking”) and eMobility), and setting up a national carbon market, amongst many others. It has also launched a National Efficient Cooking Programme, run by EESL. Further, the Government is supporting solar-based cooking and has embraced Article 6 of the Paris Agreement by adding large-scale clean cooking with renewable energy to the list of eligible projects (Government or PPP mode).

A growing number of Indian States are actively exploring the options for scaling up eCooking, where key players are taking forward initiatives.

What ambitions or targets have been stated?

The *Energy Transition Task Force* prepared a detailed report entitled “The Green Shift”³ focusing on the low carbon transition of India’s energy sector. The report suggested that it would be possible to achieve 25% cooking with electricity by 2030 in India.

What is the extent of availability of electricity for cooking and how much is renewably generated?

India is a power (electricity) surplus nation, and the entire country is connected to the grid. It has a substantial distribution system that is receiving increased investment which official figures indicate provide power 20.6 hours/day in rural areas and 23.6 hours/day in urban areas in 2023⁴. Households in rural areas can still face challenges in getting a robust connection and having sufficient sockets in their kitchen for eCooking.

The price of electricity is relatively stable, compared with LPG, and many states offer low tariffs for the first units used.

The Indian Government is committed to achieving 500 GW of non-fossil fuel-based energy capacity by 2030⁵, and in January 2025, India’s total non-fossil fuel based energy generation capacity stood at 218 GW. Solar energy accounts for 47% of the total installed renewable energy capacity.

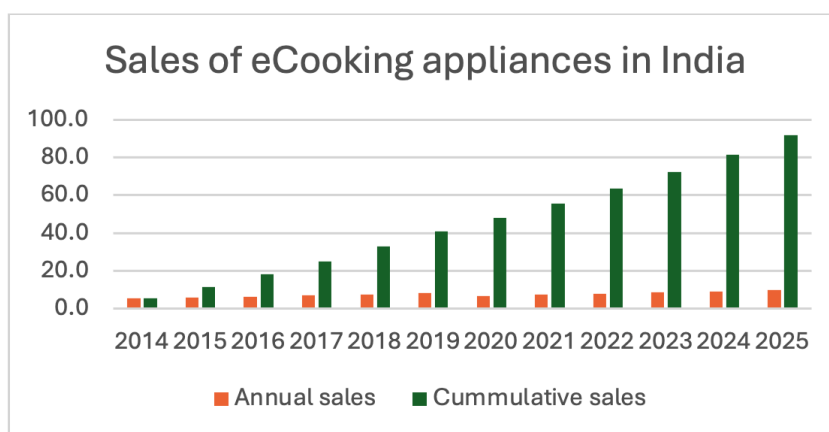
The Government is providing heavily subsidised rooftop solar connections to one crore grid-connected households with the intention that they provide HH with 300 free units per month⁶. As the households will be grid connected there is the potential for eCooking, using partly own-generated electricity, topped up by import from the grid, but financially attractive arrangements remain to be determined.

How many Indian households already own an eCooking appliance?

There seems to be very little data about this. However, we have identified two sources of evidence.

An unpublished study by GIZ/KPMG of the market for eCooking appliances found 8.2 million small electric cooking appliances units were sold in 2019 and demand grew at a compound annual growth rate of 8% between 2014-19 (see Figure on next page).

If this level of growth was continued this would add up to a total sale of 92 million units in people's homes by 2025. Given the growth in number of Indian households¹, this suggests that in 2014 2% of households procured appliances, while 3% did in 2025, further demonstrating the trend of accelerating adoption.



A study⁷ funded by MECS and carried out in 2023 by the National Institute for Advanced Studies found 9% of over 900 households in Bengaluru own one or more electric appliance.

This suggests that between 6% and 9% of Indian households already own an electric cooking appliance – equating to between 18m and 27m households.

What cooking fuel choices do households make – how many choose electricity?

Data from 2021, found that around 5% of Indian households (10% of urban households and 3% of rural households) use electric cooking appliances⁸. A fourth of the eCooking users use eCooking devices as a backup when other alternatives are not available, while another fourth use these occasionally. Only around half use it daily for some of their cooking needs.

This points to a large potential to achieve increased adoption of eCooking by identifying and addressing the reasons those already owning appliances are not using them.

The main cooking fuels widely used in India are LPG, PNG, Dung Cakes, Firewood, Crop residue. With rising fuel prices and increasing supply pressures the reduction in the number of cylinders consumed annually points to reduction in LPG use and households reverting to biomass-based cooking.

What options exist for reducing the affordability barrier of eCooking appliances?

Access to finance for those wishing to obtain an eCooking appliance in India is gradually improving through a mix of government initiatives, microfinance institutions, and innovative business models. Several clean energy enterprises and startups are partnering with microfinance institutions (MFIs) and self-help groups (SHGs) to offer low-interest loans or pay-as-you-go (PAYGO) models that reduce the upfront cost barrier. The Pradhan Mantri Ujjwala Yojana (PMUY) scheme has shown the potential for targeted subsidies to increase access to clean cooking options. Additionally, energy access programs funded by multilateral agencies are increasingly exploring mechanisms to support financing for electric cooking appliances, especially in rural and low-income urban areas.

The potential of carbon finance to support eCooking is increasingly of interest but yet to prove its applicability at scale within the Indian context, given the continued large proportion of grid electricity that is generated from fossil fuel and the current international moves to lower default values for fraction of Non-Renewable Biomass⁹, reducing the levels of carbon credits achieved per tonne of woodfuel use avoided.

What are the pros of eCooking for Indian consumers?

We are in the process of carrying out a literature review of the research into the factors affecting people's choice of cooking fuel in India which will be included in the Stocktake report. The following benefits have been identified as influential in people's decisions to adopt and use a range of clean cooking fuels:

- Much easier than getting a fire going or using a chulha
- Clean cooking improves social status.
- Quicker to cook - Time savings can be used for other purposes, including revenue generation. Women, who are generally the primary cooks, can increase their status in the family unit if they start to bring in income.
- Clean cooking reduces indoor air pollution from biomass burning, reducing the risk of respiratory and cardiovascular diseases.

Cooking with electricity offers further additional benefits:

- With the right appliances, eCooking can use very little electricity and save households money if they currently pay for their fuel. For example, one study found the cost of cooking with an EPC can be only 20% of the cost of cooking with coal¹⁰.
- It also enhances kitchen safety by minimizing open flames and reducing the risk of gas leaks. The cooking/kitchen environment can be much less hot as there is less heat loss into the air. Without a flame that might blow out, it is possible to use a fan or open windows.
- It also provides convenience and speed, with appliances like induction cooktops and electric pressure cookers enabling faster, more controlled cooking.
- The ability of many devices to be left cooking without supervision can further release the cook to attend to other tasks.
- Ease of cleaning the appliances.

What concerns do consumers have regarding eCooking?

Several studies indicate that there are a range of negative beliefs about clean cooking solutions in India, affecting adoption. While some are justified, many are myths or beliefs that are the result of a lack of direct experience. Hence providing practical demonstrations can be crucial to persuading cooks.

The following beliefs/concerns have been identified through research:

- How will they afford the cost of the device combined with the need to completely replace all cooking vessels if using induction
- Concerns included higher electricity bills
- How will they know the device they buy is of good quality and will last?
- How would technical issues that arise get sorted? Eg breaking, getting spare parts, error messages – will there be support for users with using it, recipes, etc
- Safety concerns, especially around children.
- Is the resulting food healthy
- The food will not taste the same, or as good
- They cannot cook all dishes on them – or cannot cook dishes simultaneously on a single burner stove.
- Steep learning curve and technical details to understand
- What happens if the voltage fluctuates or there is a power outage
- Their kitchen may not have sufficient/suitable power sockets

What kinds of devices are most suitable for Indian cooking?

We are building evidence of the compatibility of Indian cooking culture and eCooking appliances, and the energy efficiency benefits of this and savings to households.

Indian cooking, known for its diversity, high-heat techniques, and multi-step recipes, requires eCooking devices that can handle a variety of tasks efficiently. Induction cooktops are highly suitable, as they offer precise temperature control, quick heating, and compatibility with common Indian cookware like pressure cookers and flat-bottomed pans. Electric pressure cookers are ideal for staples such as rice, dal, and curries, offering automation and particularly high energy efficiency. Electric tandoors and air fryers are gaining popularity for baking, roasting, and grilling, catering to traditional dishes like tandoori roti or samosas with less oil. Rice cookers are useful for steaming and one-pot meals, while new, highly energy efficient, hot plates and infrared cookers provide flexibility for households with limited kitchen space or power supply.

Induction cookstoves and rice cookers are the most popular devices, each used by nearly 40 % of the eCooking users, followed by microwave ovens¹¹.

The research carried out to enable us to write the Indian eCookbook¹² suggested that 85% of the weekly Indian menu can be cooked using an Electric Pressure Cooker (EPC) while 100% cooking can be done using induction cooktops. Whereas, in terms of cooking superior texture and flavour blending could be achieved in EPC's satisfying Indian consumer's palette. Another study¹³ found that the most suitable devices are those that combine **durability, affordability, and adaptability** to regional cooking styles—ranging from slow-cooked dals to fast stir-frying —while being easy to use and maintain in both urban and rural settings. This study also found that cooking with electricity was cheaper than cooking with LPG.

What is the strength of the supply chain for eCooking appliances?

Finovista maintains a wide-ranging mapping of new and emerging eCooking technologies available in the Indian market. More than 1,000 clean cooking appliances have been identified across 400 manufacturers. A summary of which is shown in the table on the next page.

Urban areas are well served with retailers offering eCooking appliances and there is a growing network of small retailers in rural areas providing electronic appliances, with a growing number including eCooking. Many online retail platforms offer eCooking appliances.



Parameter / Devices	Electric Pressure Cooker (EPC)/ Multicooker	Induction Cookstove	Rice cooker	Roti Maker	Air Fryer	Radiant/Infrared cookstoves
Brands	Over 20 brands viz, Ascent, Aufla, Borosil, Butterfly, Crockpot, Croma, Hitech, Kent, Preethi, Prestige, Usha, Wonderchef, American Micronics Instrument, Geek, Elica, Instantpot, Mealthy, Nutribullet, Panasonic, Wellspire etc	Over 25 brands viz, Phillips, Borosil, Butterfly, Bajaj, Croma, Kent, Panasonic, Prestige, Usha, Wonderchef, Easy, Oster, Cuckoo, Maharaja Whiteline, Kanchan, Koollin, Maestro, V-Guard, Brayden, Havells, Usha, Pigeon, Agaro, clearline, etc.	Over 40 brands viz, Phillips, Butterfly, Bajaj, Croma, Kent, Panasonic, Prestige, Usha, Wonderchef, iBell, Maharaja Whiteline, Kanchan, Lifelong inferno, Orbon, Usha, Pigeon, clearline, etc.	Over 20 brands viz, OTC, Gi-Shop, Prestige, Libra, Aarmish, Is Laurels, Surya crystal, Enamic UK, etc.	Over 20 brands viz, Phillips, Inalsa, Nutricook, Kent, Havells, Instapot, Ibell, Hilton, Pringle etc.	Over 20 brands viz, Cooka - (Single Burner - Green) Infracooka) Prestige, Bajaj, Surya, McCoy, Summercool, Vandana Trade Links Pvt Ltd Glen Appliances Pvt. Ltd etc
Pot Material	Aluminum and Steel	-	Aluminum and Steel	N/A	Stainless steel	-
Wattage	700 – 1000w	1200-3000W	700-1200 W	900-1500 W	1000-1700W	2000- 2200W
Capacity	3 – 6 liters	-	1-3 Litres	N/A	2-5 Litres	-
Retail Price	INR 4,000 – 10,000	INR 1,500 – 7500	INR 2,000 – 5,000	INR 1500-2000	INR 4,000-12,000	INR 2,000-4,000
Availability	Devices are easily available on online and offline					

While it is generally possible to obtain an eCooking appliance anywhere in India, local promotion, support and after sales repair/maintenance and access to spare parts is much less developed. There is very little data about this.

We are in touch with and aware of a growing network of businesses are mapped and engaged as potential suppliers along with supply chain organisations and models.

Could eCooking be adopted in non-residential settings?

There is also an opportunity to further reduce air pollution if organisations that cook can also transition away from polluting fuels – commercial (restaurants, street food vendors etc), institutional (schools, hospitals, prisons, temples etc) and industrial (food product manufacturers). There is a growing interest in these sectors as part of the transition that is needed and could be valuable allies in driving change in domestic cooking – not least because those operating in the educational and health domain can provide valuable role models and awareness raising.

The MECS programme has undertaken targeted interventions to introduce electric cooking technologies in Anganwadi settings, particularly in Kerala, and the findings to date show they are highly beneficial.

Significantly, there is a movement to connect the investment into solar energy generation for institutions with a transition to eCooking. One such example is the programme in Kerala, that is transforming school kitchens into ‘smart electric kitchens’. This initiative aims to provide clean, safe, and efficient meal preparation using renewable solar energy for 500 students.

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