MECS
Modern Energy Cooking Services

CLEAN COOKING POLICY COMPENDIUM

Loughborough University
UK Government
ESMAP
Energy Sector Management Assistance Program

(In-country Partner-MECS)
Finovista

THIS MATERIAL HAS BEEN FUNDED BY UK AID FROM THE UK GOVERNMENT; HOWEVER, THE VIEWS EXPRESSED DO NOT NECESSARILY REFLECT THE UK GOVERNMENT'S OFFICIAL POLICIES

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By

MECS programme
through its In-country partner India,

Finovista

2024

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FOREWARD

Dr Simon Batchelor OBE
Director MECS

This is an interesting compendium of the relevant Indian policy landscape which stimulates us to be forward looking. The world continues to change and the pressures of climate change and inequity demand innovative responses to every day actions. As the opening paragraphs state, cooking is essential to daily life, and its ongoing contribution to global emissions is something we must consider just transition to modern cooking with sustainable, reliable, resilient energy is a transition that policies need to support.

Timely policy interventions on clean cooking can accelerate India's transition into a major green economy. It is good to see strong policy action for clean cooking taking place over the last decade or more, and India has changed the energy landscape for its citizens. While clean cooking has had a multi fuel strategy with a significant focus on LPG, wider energy access has resulted in greater connectivity to a growing stronger electricity grid. The report shows how the last two decades of electricity access gains now position Indian households for a modern and cleaner future.

And that transition to a better future could contain two key elements. The first one, renewable generating technology taking over as the core supplier of electricity into the grid. There are strong policy commitments to cleaner electricity while the commercial price aspect of generating electricity by renewables continues to be more and more competitive with older technologies. The second one, an informed switch to energy efficient appliances for cooking can leverage the gains on electricity, and the forthcoming gains on renewably generated electricity, to give people an affordable clean modern cooking experience.

As the compendium shows, these are the beginnings of policy instruments that will help guide this transition, and seek to ensure it is a just transition. The policy compendium demonstrates that while measures undertaken by the Central government has the potential to help India achieve its target of eCooking and thereby its emissions intensity, a replication of such policy measures and schemes by the States could result in a quicker and wider impact in the sector, and facilitate smooth transition to a sustainable low-carbon pathway. Additionally, there is also the possibility and potential that domestic response leads to a growing industry where India becomes a global hub for exporting eCooking technologies.

As the report notes...."The need for a policy push for promotion of eCooking was also indicated in NITI Aayog's publication the "India Energy Security Scenario Building Tool", which states that even under the "ambitious scenario", only 14% of rural households will use electricity for cooking by 2047". India has often led the way, as in its usage of LPG, surely now is a moment when a more ambitious target could be discussed?

The content of this compendium are initial steps by the government in laying down an overarching policy framework for promotion of clean cooking. In the necessary ongoing dialogue and discussion around eCooking, this compendium contributes a map of what currently exists, and points to gaps in policy and schemes that could be addressed.

INTRODUCTION

This Policy Compendium on clean cooking is an attempt to fill the information gap between the public policy environment and efforts being made by different stakeholders to promote clean cooking practices in India. The compendium seeks to provide an easily accessible and understandable policy framework for those engaged in advocating clean cooking practices, developing practical clean cooking technology solutions, implementing projects in clean cooking, monitoring efforts in the clean cooking domain, and evaluating them under different parameters for the common good. The compendium aims to act as a reliable resource of information about public policies in the many domains relevant to clean cooking and enlighten readers on the initiatives undertaken by the government in formulating public policy to take forward clean cooking transition in India. The policy initiatives compiled in the compendium includes those initiatives which specifically aim at the development, manufacture, and efficient operation of clean cooking devices, and also those schemes/programmes which are aimed at creating the ecosystem or infrastructure to promote clean cooking in India.

A large section of people in India is still using unsafe and unsustainable fuels in their kitchens despite decades of peer-reviewed research demonstrating it releases toxic gases and particulate matter that are dangerous for our health, drive climate change, and consumes precious time of women and children depriving them of its more productive use. Especially those living in NCR Delhi region are witness to a pale haze engulfing Delhi sky every winter which is the accumulation of pollutants, a substantial share of which comes from use of unclean fuels for cooking. The toxic smog over Delhi compelled the Ministry of Environment, Forests & Climate Change to notify the Graded Response Action Plan (GRAP) which is an emergency response plan consisting of guidelines and measures to combat air pollution based on the air quality index (AQI).

The resulting compendium demonstrates the journey India has undertaken in pursuit of enabling its vast population to transition to cleaner ways of cooking over the years and these policies have achieved remarkable success. India's journey in the realm of clean cooking public policy is an ongoing one marked by experimentation, learning and adaptation. Like any initiative targeted to uplift a large section of our society, it is going to be a collective effort supported by well designed regulatory and promotional frameworks by different agencies under the Central government like Ministry of Power (MoP), Ministry of New and Renewable Energy (MNRE), Bureau of Energy Efficiency (BEE), Energy Efficiency Services Ltd. (EESL) and the like. Hopefully, the process will help us towards a deeper understanding of the challenges in our efforts towards cleaner and healthier cooking practices in our country and help us in preparing a robust roadmap to achieve the same.

Since 2020, the widely recognised global Modern Energy Cooking Services (MECS) programme has also become a strong and active player in India. MECS is a UK Government funded global research programme led by Loughborough University. By integrating modern energy cooking services into the planning for electricity access, quality, reliability, and sustainability, MECS through its India partner Finovista hopes to leverage investment in renewable energies (both grid and off-grid) to address the clean cooking challenge. The programme is also supporting India to emerge as a Global Hub for manufacturing clean cooking devices for domestic and international markets, aligned to the Atmanirbhar Bharat and Make in India missions and also through policy advocacy based on international best practices.

BACKGROUND

Since early civilisation, humans have relied upon firewood, dung cakes, coal and agricultural waste as cooking fuel to prepare food for their survival. Their efforts for a more stable form of cooking fuel led to the finding of coal in the eighteenth century, the combustion of which releases heat energy that can be used for cooking. Fossil fuels like coal and petroleum were rapidly adopted after the Industrial Revolution, because they were more concentrated and flexible than traditional energy sources. However, coal and petroleum come from sources that will run out or will not be replenished in the foreseeable future. Despite being a valuable source of energy, burning fossil fuels is harmful to the environment. When coal and oil are burned, they release particles and toxic gases that pollute the air, water, and land. Further, fossil fuels combustion releases carbon dioxide into the atmosphere contributing to global warming. The latest available data [https://www.cseindia.org/content/downloadreports/12009] suggests that, out of 32 million households in India, close to 13 million continue to burn biomass as fuels for their daily cooking needs. This traditional practice has contributed to worsening ambient air pollution- indoor and outdoor, leading to health hazards for the vulnerable sections of society including women and children. In India, indoor air pollution was found to be the cause of nearly 600,000 deaths in 2019 (Global Burden of Disease Study 2019).

Clean cooking has been on the development agenda of successive governments for decades. But only recently the topic has become a major priority aligning it with the Sustainable Development Goal (SDG) 7 to provide affordable and clean energy for all. The commencement of LPG distribution as a cooking fuel in India in 1955 in Mumbai (then Bombay) could be cited as the beginning of the government endeavour to provide clean cooking fuel for the people to get rid from exposure to household air pollution caused by biomass/coal burning for cooking purpose. Since its introduction, the number of LPG connections grew gradually over a period of almost six decades, eventually reaching 145 million consumers across the country by April 2014. On 1st May 2016, the government launched the Ujjwala scheme with the goal to distribute free LPG connections to women of below poverty line (BPL) families and its successful implementation has led to almost 100% penetration of LPG in Indian households. However, the sustainability of LPG as a primary cooking fuel is being questioned due to our reliance on imported LPG and huge amount of subsidy load on the exchequer. Between 2013 and 2023, the consumption of LPG in India has gone up from 15.6 million tons to 28.5 million tons and the share of imported LPG is currently more than 60% and has shown an increasing trend. The import bill for LPG was INR 9,14,680 million in 2022. Since May, 2022, Government has been providing a budgetary support for targeted subsidy of INR 200 per 14.2 Kg LPG cylinder for Pradhan Mantri Ujjwala Yojana (PMUY) beneficiaries for up to 12 refills a year for years 2022-23 and 2023-24. Moreover, from October, 2023, the targeted subsidy was increased to INR 300 per 14.2 Kg LPG cylinder for all Pradhan Mantri Ujjwala Yojana (PMUY) beneficiaries.

In comparison to LPG and biomass based cook stoves, the latest electric cooking appliances -- especially induction cook stoves and electric pressure cookers - are safer, more energy efficient, and less polluting than those previously available. The global clean cooking sector has evolved to meet many different needs in households and institutional/commercial settings and energy prices and time pressures put a premium on providing users with energy efficient and convenient options. Furthermore, the greater availability, quality and reliability of electricity across the Global South make electric cooking increasingly viable for all. In order to enable the widest possible adoption of eCooking, the sector is developing new innovative business models.

Despite this, the penetration of eCooking in India is still modest. According to a September 2021 report by the Council on Energy, Environment and Water (CEEW), only 5% of Indian homes use e-cooking gadgets, 10.3% in urban areas and 2.7% in rural areas. These data are based on India Residential Energy Survey (IRES) 2020 which covered 14,850 households in 152 districts. A growing body of research is supporting our belief that eCooking powered with renewable energy sources could be a quicker way to transition people to clean cooking in India. Challenges remain, however, including the upfront costs of eCooking devices and mind-set barriers/ apprehensions which need to be addressed.

EXECUTIVE SUMMARY

The structural economic reforms by the successive governments in the last few decades around three pillars of liberalisation, globalisation, and privatisation have led to substantial growth in the overall economy. In particular, increased investment in power sector supported by the Electricity Act of 2003 resulted in India emerging as the third largest producer of electricity in the world. Moreover, 100% FDI in the power sector in India is allowed for generation from all sources (except atomic energy), transmission and distribution of electric energy, and power trading under the automatic route. With India becoming an electricity surplus nation and massive growth in distribution infrastructure, electric cooking is an emerging phenomenon in India.

The launching of the Go Electric Campaign to promote electric cooking along with electric vehicles in February 2021 by the Ministry of Power, Government of India was a landmark event which triggered activities among several stakeholders of electric cooking for raising awareness and promotion of electric cooking and an important step towards a cleaner and greener future. A number of initiatives have been undertaken by the government and its different agencies in recent years which have contributed to development of an ecosystem for faster adoption of electric cooking in India. The extant industrial and FDI policy is quite open and permits any foreign or domestic company to set up manufacturing units in India without any prior approval. A number of existing manufacturers are already engaged in manufacturing/assembly of such modern cooking devices. The government has also prescribed nominal GST rates on renewable energy generating plants and appliances based on renewable energy. A GST rate of 5% rate has been prescribed on renewable energy devices & parts for their manufacture (bio gas plant/solar power based devices, solar power generating system (SGPS) etc). Innovative schemes such as PM-Surya Ghar: Muft Bijli Yojana, National Efficient Cooking Programme, Star Labelling for Induction Stove, National Green Hydrogen Mission and like are expected to help in transforming towards greener and healthier kitchens in India. Recently, a GST rate of 12% on “all solar cookers whether single or dual energy source” has been recommended.

Availability of electric cooking devices like induction stove, electric pressure cooker, rice cooker and microwave oven at an affordable price is another necessity for a smooth transition to eCooking. To address the high upfront cost and need for a compatible design suitable for local cuisines, it is important to encourage more indigenous development of eCooking devices with higher share of locally manufactured contents. A kind of financial support on the lines of Production-Linked-Incentives (PLI) scheme for the domestic manufacturers of electric cooking devices, if formulated, would assist in making India not only self-sufficient, but also a global hub for eCooking device manufacturing for meeting the huge export potential as well. This compendium provides a brief glimpse into the extant regulatory policy framework which has developed in recent years for the promotion of eCooking

“GoElectric” campaign

Ministry of Power launched a nationwide “Go Electric” Campaign on 19.02.2021 to educate the general public on the benefits of electric cooking and e-mobility, inform the public about the Government initiatives for eCooking, generate curiosity and transform the same into demand, and bring together multiple stakeholders under a single platform. Bureau of Energy Efficiency (BEE) has been designated as the Central Nodal Agency (CNA) and will facilitate the campaign across the country. It plans to undertake a series of activities under “GO ELECTRIC” campaign to create mass awareness on the benefits of electric cooking by working closely with State Designated Agencies (SDA) and State Nodal Agencies (SNA) at state level in collaboration with the Industry stakeholders, think –tanks and relevant line ministries & departments.

Generated by AI

Funding Ministry/Agency

Bureau of Energy Efficiency (BEE) as the Central Nodal Agency (CNA) under Ministry of Power

Period of Programme

2021 onwards

Implementation Ministry/ Agency

Ministry of Power

Eligibility

State Designated Agencies (SDA) and State Nodal Agencies (SNA) at state level in collaboration with the Industry stakeholders, think –tanks and relevant line ministries & departments

Official Notification/Press Release available at

https://bit.ly/3V7WyG9

Application Process

Bureau of Energy Efficiency as the Central Nodal Agency (CNA) will provide financial support to the SDAs for undertaking consumer awareness campaigns in states and identify expert resources (from Industry, Government and Academia) for developing and maturing program at central level for further dissemination to states. The State Designated Agencies (SDAs) will manage funds received from CNA/State Governments for undertaking consumer awareness under “Go Electric” campaigns at the state level. It will organize and manage workshops/Roadshows/events on “GO ELECTRIC” campaign to promote electric cooking . It will also support the state-level campaigns for creating consumer awareness on the transition to electric cooking in consultation with SDA.

Nodal Officer

Shri Milind Bhikanrao Deore
Secretary, Bureau of Energy Efficiency (BEE)
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National Efficient Cooking Programme

The Clean Cooking Energy Roadmap—developed in collaboration with NITI Aayog and GIZ— envisions eliminating the use of all cooking arrangements that cause household air pollution (HAP) in India by 2025. To support the same now, Energy Efficient Services Limited (EESL) under Ministry of Power has launched National Efficient Cooking Program (NECP) to revolutionize clean cooking practices in India. Under NECP, Induction cook stove along with the induction based pressure cooker would be provided to institutions like aganwadis, schools, colleges, religious & administrative establishments etc. EESL in partnership with Modern Energy Cooking Services (MECS) plans to distribute 2 million energy-efficient induction cookstoves nationwide, offering cost advantage of 25-30% over traditional cooking methods. It seeks to reduce the environmental impact of traditional cooking methods and ensure cleaner air and improved health for citizens. NECP, a subset of the Clean Cooking Scheme, focuses on non-solar/ electricity-based induction cookstoves, aligning with the Go-electric initiative by the Ministry of Power.

Under the NECP, EESL has aggregated the demand for Induction Cookstoves and floated a tender to procure 20,000 nos. of 1000–1200-watt Induction Cooktops. EESL has recently announced the bids for the Phase II procurement of 1 lakh induction cookstoves under the NECP. With the help of bulk procurement, manufacturers participating in the bid can leverage economies of scale to bring down the prices of energy efficient induction cookstoves, thereby making them affordable for the masses. The open tender encompasses the design, manufacture, testing, and supply of 100,000 nos. of induction cookstoves/cooktops (IC) with a two-year comprehensive on-site warranty on PAN India basis.

Image Source : ETEnergyworld

Funding Availability

NECP introduces induction-based cook-stoves, offering a cost advantage of 25-30% over traditional cooking methods, promising both energy savings and cost-effective cooking solutions.

Funding Ministry/Agency

EESL under Ministry of Power

Period of Programme

From 2023 ..... contd.

Implementation Ministry/ Agency

EESL and Ministry of New and Renewable Energy

Eligibility

Only women above 18 years of age having no LPG connection from any OMC in the household.

Official Notification/Press Release available at

(i) https://bit.ly/3CJEVpC

(ii) https://eeslindia.org/en/tenders/

Application Process

Please refer to documents at https://eesl.eproc.in/

Nodal Officer

Shri Vishal Kapoor

CEO

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Image Source :- Freepick

National Solar Mission

The National Solar Mission, launched in India in 2010, is a pivotal initiative aimed at promoting solar energy adoption across various sectors. While its primary objective is to boost solar power generation capacity, its impact extends to other areas, notably the realm of cooking. By integrating solar energy into electric cooking solutions, the National Solar Mission has the potential to play a crucial role in revolutionizing culinary practices. This integration not only reduces carbon emissions and indoor air pollution but also enhances energy access, particularly in rural areas. Moreover, a solar powered electric cooking solution contribute to building a resilient, decentralized, and sustainable energy infrastructure nationwide, aligning with broader energy transition and sustainable development objectives. Thus, the National Solar Mission serves as a catalyst for transforming cooking practices, ushering in a cleaner, more efficient, and environmentally friendly approach to food preparation in India.

Prime Minister of India had called for connecting the global solar resources through the vision of 'One Sun One World One Grid' (OSOWOG) with the concept that 'The Sun Never Sets' and is always shining at some geographical location, globally, at any point of time. Ministry of New and Renewable Energy (MNRE) is conducting a study for developing the long-term vision, implementation plan, road map and institutional framework for implementing the initiative of OSOWOG. The International Solar Alliance is the implementing agency of the study.

Targets under the National Solar Mission:

i. To create an enabling policy framework for the deployment of 1, 00,000 MW of grid-connected solar power projects by 2022.
ii. To promote programmes for off-grid applications, reaching 2000 MW by 2022.
iii. To deploy 20 million solar lights by 2022.
iv. To achieve 20 million sq. meters solar thermal collector area by 2022.
v. To create favourable conditions for developing solar manufacturing capability in the country.

Schemes to promote solar Energy:

I. Scheme for Development of Solar Parks and Ultra-mega Solar Power Projects with a target of setting up 40,000 MW capacities.
II. Central Public Sector Undertaking (CPSU) Scheme Phase-II (Government Producer Scheme)
III. Production Linked Incentive scheme 'National Programme on High Efficiency Solar PV Modules'
IV. PM-KUSUM Scheme to promote small Grid Connected Solar Energy Power Plants, stand-alone solar powered agricultural pumps and solarisation of existing grid connected agricultural pumps.
V. Rooftop Solar Programme Phase II for grid connected solar rooftop power plants.

Funding Availability

The total expected investment for upgrading to 100 GW solar power capacity was around $94 billion.

Funding Ministry/Agency

MNRE

Period of Programme

2014 to present

Implementation Ministry/ Agency

Solar Energy Corporation of India (SECI) & Indian Renewable Energy Development Agency (IREDA) implement the scheme and also handle the funds being made available under the scheme on behalf of Government of India.

Eligibility

I. The government of India is providing INR 150,500 crore as a capital subsidy to promote solar capacity addition.
2. This capital subsidy is for rooftop solar projects in various cities and towns, for viability gap funding based projects to be developed through the Solar Energy Corporation of India (SECI) and for decentralized generation through smaller projects.

Official Notification/Press Release available at

https://bit.ly/4g3941G

Application Process

As per details provided at the website of MNRE (https://mnre.gov.in/) for a specific scheme.

Nodal Officer

Shri Dinesh Dayanand Jagdale

Joint Secretary, (Solar Energy, National Solar Mission, Solar Parks and Defence Scheme, Solar Pilot Projects(J&K and Leh),Solar City Programme, Rooftop PV and Small Solar Power Generation Programme, PM-KUSUM)- Ministry of New and Renewable Energy

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Image Source :- Energy Portal

Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) is a flagship scheme of the Ministry of Power (MoP), Government of India aimed at electrifying rural areas and to provide continuous power supply to the entire rural India. The scheme was launched in November 2014 announcing that "the government had decided to electrify 18,452 un-electrified villages within 1000 days, by May 1, 2018. The scheme focuses on strengthening the power infrastructure in rural regions, including the installation of new power lines, substations, and transformers. Rural energy needs include energy for Cooking, Basic lighting, Irrigation etc.

The major components of the scheme are:

- Separation of agriculture and non-agriculture feeders facilitating judicious restoring of supply to agricultural & non-agriculture consumers in the rural areas.
- Strengthening and augmentation of sub-transmission & distribution infrastructure in rural areas, including metering of distribution transformers/feeders/consumers.
- Completion of micro grid and off grid distribution network & rural electrification already sanctioned projects under RGGVY.

A total of 1, 27, 68,620 households have been covered under DDUGJY.

Funding Availability

The full scheme entails an investment of INR 4,30,330 million which includes the requirement of budgetary support of INR 3,34,530 million from Government of India over the entire implementation period. Under the scheme, 60% of the project cost (85% for Special States) is provided as grant by the Government of India and additional grant up to 15% (5% for Special Category States) is provided on achievement of prescribed milestones.

Funding Ministry/Agency

Ministry of Power, Government of India

Period of Programme

2015 to present

Implementation Ministry/ Agency

Rural Electrification Corporation Limited (REC) is the Nodal Agency for operationalization and implementation of the scheme under the overall guidance of MoP.

Eligibility

All DISCOMs including private DISCOMs and State Power Departments.

Official Notification/Press Release available at

https://bit.ly/41308Ds

Application Process

DISCOMs will prioritize strengthening of rural infrastructure work considering specific network requirement and will formulate Detailed Project Reports (DPRs) of the projects for coverage under the Scheme.

Nodal Officer

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Image Source :- Energy Portal

Pradhan Mantri Sahaj Bijli Har Ghar Yojana – SAUBHAGYA

Govt. of India launched a scheme Pradhan Mantri Sahaj Bijli Har Ghar Yojana – Saubhagya, in October 2017 focusing on last mile connectivity and electricity connections to all the un-electrified households in the country. Saubhagya scheme is one of the world's biggest Universal electrification initiatives with collaborative and concerted efforts of Centre and States. It is a concurrent program to Deen Dayal Upadhyaya Gram Jyoti Yojana' (DDUGJY).

The SAUBHAGYA scheme aims at providing:

a) Last mile connectivity and electricity connection to all un-electrified households in rural areas;

b) Last mile connectivity and electricity connection to all remaining economically poor un electrified households in urban areas. Non-poor urban households are excluded from this scheme;

c) Solar Photovoltaic (SPV) based standalone system for un-electrified households located in remote and inaccessible villages/habitations, where grid extension is not feasible or cost effective.

Funding Availability

The scheme outlay isINR 1,63,200 million, including Gross Budgetary Support of INR 1,23,200 million. Under the scheme,INR 1,41,090 million (including grant of INR 90,930 million) has been sanctioned by the Ministry of Power to 26 States/Union Territories, against which INR 88,400.9 million (incl. grant of INR 54,080.44 million has been released till June 30, 2021.

Funding Ministry/Agency

Ministry of Power,
Government of India.

Period of Programme

It is a concurrent program to Deen Dayal Upadhyaya Gram Jyoti Yojana' (DDUGJY).

Implementation Ministry/ Agency

Rural Electrification Corporation Ltd (REC) is the nodal organisation for implementation of the scheme.

Eligibility

This scheme is for all the un-electrified households in all the villages and for all the poor households in all the towns in any of the State/UTs of the country.

Official Notification/Press Release available at

https://bit.ly/3V72FdK

Application Process

DISCOM of the area would organize camps in villages / cluster of villages and prior information about such camps would be widely publicised. One needs to approach DISCOM officials in the camp and the application for the connection shall be registered on spot. Electricity connection shall be released by the DISCOM after due verification.

Nodal Officer

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Joint Secretary (Distribution, Reform Utility), Ministry of Power
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Image Source :- Energy Portal

Revamped Distribution Sector Scheme (RDSS)

The Scheme aims to reduce the Aggregate Technical & Commercial (AT&C) losses and Average Cost of Supply (ACS)-Average Revenue Realised (ARR) gap by 2024-25. The objectives of the scheme are to:

- Improve the quality, reliability and affordability of power supply to consumers through a financially sustainable and operationally efficient Distribution Sector.
- Reduce the AT&C losses to pan-India levels of 12-15% by 2024-25.
- Reduce ACS-ARR3 gap to zero by 2024-25.

The Scheme has two major components:
Part 'A' – Financial support for Prepaid Smart Metering & System Metering and upgradation of the Distribution Infrastructure, and
Part 'B' – Training & Capacity Building and other Enabling & Supporting Activities.

Financial assistance to DISCOMs is provided for up gradation of the Distribution Infrastructure and for Prepaid Smart Consumer Metering & System Metering based on meeting pre-qualifying criteria and achieving basic minimum benchmark in reforms.

Funding Availability

The Revamped Reforms based and Results Linked Distribution Sector Scheme will have an outlay of INR 30,37,580 million with an estimated GBS from Central Government of INR 9,76,310 million. It is envisaged that about INR 2000 million will be spent by the State Governments towards reforms support in the form of consultancy.

Funding Ministry/Agency

Ministry of Power, Government of India. (REC and PFC have been designated as Nodal Agencies for the scheme.)

Period of Programme

The sunset date for the scheme will be 31.03.2026.

Implementation Ministry/ Agency

DISCOMs shall be responsible for implementing the scheme as per the Guidelines, under the overall guidance of the Distribution Reforms Committee (DRC), Nodal Agencies and the Monitoring Committee.

Official Notification/Press Release available at

https://bit.ly/3CMDOpm

Eligibility

All State-owned Distribution companies and State /UT Power Departments (referred to as DISCOMs collectively) excluding private Sector power companies will be eligible for financial assistance under the revamped scheme. The scheme would be optional to DISCOMs and will be implemented in urban and rural areas of all States/UTs except private DISCOMs.

Application Process

Applicant DISCOM will prepare an Action plan for strengthening its Distribution system and improving its performance by way of various reform measures, which would result in improvement in their operational efficiency and financial viability as well as improve the quality and reliability of power supply to the consumers. The Action plan will be formulated by the DISCOM in consultation with the Nodal Agency/Ministry of Power. The action plan will be submitted by the DISCOM to the Nodal Agency on the recommendation of the Distribution Reforms Committee (DRC) and with the approval of the State Cabinet.

Nodal Officer

Shri Shashank Misra
Joint Secretary (Distribution, Reform Utility), Ministry of Power
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Image Source : Nai Duniya

PM-Surya Ghar: Muft Bijli Yojana

PM Surya Ghar Muft Bijlee Yojana is a Central Scheme that aims to provide free electricity to ten million households in India, who opt to install roof top solar electricity unit. The households will be able to get 300 units of electricity free every month. The scheme was launched on 13th February, 2024. The scheme is another step by government to promote use of solar energy for household purpose including cooking.

Highlights of the scheme:

- The scheme provides a CFA of 60% of system cost for 2 kW systems and 40% of additional system cost for systems between 2 to 3 kW capacity. The CFA will be capped at 3 kW. At current benchmark prices, this will mean INR 30,000 subsidy for 1 kW system, INR 60,000 for 2 kW systems and INR 78,000 for 3 kW systems or higher.
- The households will apply for subsidy through the National Portal and will be able to select a suitable vendor for installing rooftop solar. The National Portal will assist the households in their decision-making process by providing relevant information such as appropriate system sizes, benefits calculator, vendor rating etc.
- Households will be able to access collateral-free low-interest loan products of around 7% at present for installation of residential RTS systems up to 3 kW.
- A Model Solar Village will be developed in each district of the country to act as a role model for adoption of rooftop solar in rural areas.

Through this scheme, the households will be able to save electricity bills as well as earn additional income through sale of surplus power to DISCOMs. A 3 kW system will be able to generate more than 300 units a month on an average for a household. Households will be able to access collateral-free low-interest loan products of around 7% at present for installation of residential RTS systems up to 3 kW.

Funding Availability

INR 7,50,210 million

Funding Ministry/Agency

Ministry of New and Renewable Energy

Period of Programme

2019 to 31.03.2026

Implementation Ministry/ Agency

Ministry of New and Renewable Energy

Eligibility

(i) The applicant must be an Indian citizen.
(ii) Must own a house with a roof that is suitable for installing solar panels.
(iii) The household must have a valid electricity connection.
(iv) The household must not have availed of any other subsidy for solar panels.

Official Notification/Press Release available at

https://www.pmsuryaghar.gov.in/

Application Process

The interested consumer has to register on the national portal www.pmsuryaghar.gov.in. The National Portal will assist the households by providing relevant information such as appropriate system sizes, benefits calculator, vendor rating etc. The consumers can choose the vendor and the make of the Roof Top Solar unit they wish to get installed.

Nodal Officer

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Joint Secretary (Mission Director, PM Surya Ghar Muft Bijli Yojana),
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Image Source :- Indiamart

Grid Connected Solar rooftop Programme

To achieve a cumulative installed capacity of 40,000 MW from Grid Connected Rooftop Solar (RTS) projects.
Under the scheme, Central Financial Assistance (CFA)/Subsidy are provided to the residential electricity consumers under Component-A and incentives are provided to DISCOMs under Component-B of this programme.

Component-A- Central Financial Assistance (CFA)/Subsidy is provided to the residential electricity consumers. Applicable CFA will be transferred directly to the consumers account after successful installation (by empanelled vendors) and verification by State DISCOMs.

Plant Capacity	Applicable Subsidy
Up to 3 kW	INR 14588/per kW
Above 3 kW and up to 10 kW	INR 14588/- per kW for first 3 kW and thereafter INR 7294/per kW
Above 10 kW	INR 94822/ fixed

CFA at higher rate is applicable for residential consumers in North Eastern States including Sikkim, Uttarakhand, and Himachal Pradesh, UT of Jammu & Kashmir, Ladakh, Lakshadweep, and Andaman & Nicobar Islands.

Component-B- Incentives are provided to DISCOMs under this programme for the first 18000 mw of the capacity added to the grid by DISCOM.

Funding Availability

The Financial outlay of the Phase-II Rooftop Solar (RTS) programme is INR 1,18,140 million which includes INR 66,000 million of CFA and INR 49,850 million of incentives to the Distribution Companies.
Note: The CFA for residential sector as stated above shall be permissible only if domestic manufactured Solar Panels (using domestic manufactured Solar cells) are used by the beneficiary.

Funding Ministry/Agency

MNRE

Period of Programme

Till 31.03.2026

Implementation Ministry/ Agency

MNRE

Nodal Officer

Shri Hiren Chandra Borah
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Eligibility

The rooftop solar (RTS) plant installed on the roof of a building, will also include installations on open contiguous land within the area of premises wherein valid and live electricity connection has been provided by the concern Distribution utilities/companies (DISCOMS). The Solar power so generated can then be used either for captive consumption of the premises or can be fed into the grid and be adjusted in the electricity bill.

Official Notification/Press Release available at

https://bit.ly/3CBY8JJ

Application Process

National Portal for Rooftop Solar was launched on 30.7.2022. On the National Portal any residential consumer from any part of country can apply for installation of RTS and get CFA directly in his/her bank account.
Details available at: https://bit.ly/3CBY8JJ

Image Source :- Business-Standard

Implementation of Time of Day Electricity Tariff System

The Ministry of Power vide notification dated 14.06.2023 has issued the Electricity (Rights of Consumers) Amendment Rules, 2023 wherein the rule for Time of Day (ToD) Tariff has also been specified.

The main features of these Rules are as under:

i. ToD tariff for Commercial and Industrial consumers having maximum demand more than 10 kW shall be made effective from a date not later than 1st April, 2024.

ii. For other consumers except agricultural consumers, the ToD tariff shall be made effective not later than 1st April, 2025.

iii. ToD tariff shall be made effective immediately after installation of smart meters for the consumers.

iv. ToD tariff, during the peak period of the day, for Commercial and Industrial consumers shall not be less than 1.20 times the normal tariff and for other consumers it shall not be less than 1.10 times the normal tariff.

v. Tariff for solar hours, of the day, to be specified by the State Commission shall be at least twenty percent (20%) less than the normal tariff for that category of consumers.

vi. ToD tariff shall be applicable on energy charge component of the normal tariff.

vii. The duration of peak hours shall not be more than solar hours as notified by the concerned State Electricity Regulatory Commission or State Load Despatch Centre and the duration of solar hours shall be eight hours in a day as specified by the State Commission.

The advantages for use of ToD tariff system to consumers are:

1. The ToD tariff comprising separate tariffs for peak hours, solar hours and normal hours sends price signals to consumers to manage their load in accordance with the Tariff. Since, the tariff during the solar hours will be at least 20% less than the normal tariff, the consumer can shift consumption during solar hours when power cost is less and can be benefitted.
2. With awareness and effective utilisation of ToD tariff mechanism, consumers can reduce their expenditure on electricity consumption.
3. It optimizes generation capacity, helps utilities in maintaining load– generation balance and in reducing financial burden for arranging costly power to meet peak load, which ultimately would be beneficial to the end consumers.
4. It also improves the management of renewable generation fluctuations and incentivises more consumption during the periods of Renewable Energy generation, thereby providing benefits to consumers with availability of reliable and cleaner power at reasonable rates.

Aims: Time of Day (TOD) tariff, is recognized globally as an important Demand Side Management (DSM) measure which is used as a means of incentivizing consumers to shift a portion of their loads from peak times to off-peak times, thereby improving the system load factor by reducing the demand on the system during peak period.

Period of Programme

Since 1st April, 2024

Implementation Ministry/ Agency

State Electricity Regulatory Commission

Eligibility

Commercial and Industrial consumers.

Official Notification/Press Release available at

https://bit.ly/4168I5Z

Application Process

As per rules provided at
(i) https://bit.ly/3OpBl6I, and
(ii) https://bit.ly/4i6IlTo

Image Source :- Renergy.am

Production Linked Incentive (PLI) Scheme: National Programme on High Efficiency Solar PV Modules

Ministry of New and Renewable Energy, Government of India is implementing the Production Linked Incentive (PLI) Scheme for National Programme on High Efficiency Solar PV Modules, for achieving manufacturing capacity of Giga Watt (GW) scale in High Efficiency Solar PV modules. The scheme aims to build an ecosystem for manufacturing of high efficiency solar PV modules in India and thus reduce import dependence in the area of Renewable Energy.

Objectives of the scheme:

1. To build up solar PV manufacturing capacity of high efficiency modules.
2. To bring cutting-edge technology to India for manufacturing high efficiency modules. The scheme will be technology agnostic in that it will allow all technologies. However, technologies which yield better module performance will be incentivized.
3. To develop an ecosystem for sourcing of local material in solar manufacturing.

Funding Availability

Under the Tranche-II of the Scheme, the Government has allocated a total capacity of 39,600 MW of domestic Solar PV module manufacturing capacity to 11 companies with a total outlay of INR 1,40,070 million. Earlier, a total integrated capacity of 8737 MW was allocated under Tranche-I of the Scheme, in November-December, 2022. Considering the two tranches together, the total domestic solar PV module manufacturing capacity allocated under the PLI Scheme is 48,337 MW, with a cumulative support of more than INR 1,85,000 million by the Government.

Funding Ministry/Agency

Ministry of New and Renewable Energy (MNRE)

Period of Programme

From 7th April, 2021 ... contd.

Implementation Ministry/ Agency

Indian Renewable Energy Development Agency Limited (IREDA) for Tranche I and Solar Energy Corporation of India (SECI) for Tranche II.

Eligibility

As per the Bid Documents.

Official Notification/Press Release available at

https://bit.ly/4934Epb

Application Process

As per guidelines available at https://bit.ly/4934Epb

Nodal Officer

Shri Ajay Yadav
Joint Secretary (Mission Director,
PM Surya Ghar Muft Bijli Yojana)
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BIS standards for the safety of electric cooking ranges, hobs, ovens and similar appliances for household use

The standard was first published in 1993. The revision of standard has been undertaken primarily to align the existing standard with corresponding latest International Standard and also to align with the revised version of Part 1 of this standard. This standard deals with the safety of electric cooking ranges, hobs, ovens and similar appliances for household use, their rated voltage being not more than 250 V for single-phase appliances connected between one phase and neutral, and 480 V for other appliances. Examples of appliances that are within the scope of this standard are: a) griddles, b) grills, c) induction hobs, d) pyrolytic self-cleaning ovens, and e) steam ovens. This standard does not cover the performance requirements. However, performance requirements of domestic electric cooking ovens are covered under a separate standard Indian Standard IS 5790: 1985.

This standard is based on International Electrotechnical Commission (IEC) 60335-2-6 (2004) 'Safety of household and similar electrical appliances — Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances' issued by the International Electro technical Commission.

Image Source :- Freepick

Period of Programme

As per BIS order

Implementation Ministry/ Agency

Bureau of Energy Efficiency (BEE)

Nodal Officer

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Deputy Director General (Certification & CSM,)
Bureau of Indian Standards
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Application Process

BIS certification scheme is basically voluntary in nature. However, for a number of products compliance to Indian Standards is made compulsory by the Central Government under various considerations viz. public interest, protection of human, animal or plant health, safety of environment, prevention of unfair trade practices and national security. For such products, the Central Government directs mandatory use of Standard Mark under a Licence or Certificate of Conformity (CoC) from BIS through issuance of QCOs.
Details may be seen at:
https://www.bis.gov.in/product-certification/products-under-compulsory-certification/

Eligibility

From 01 April 2021, the Bureau of Indian Standards (BIS) has required the induction stove to be registered as per IS 302-2-6: 2009 under the Compulsory Registration Scheme from BIS, and it should conform as per IS 302-2-6: 2009. Under the BIS framework, there exists a scheme called CRS (Compulsory Registration Scheme), which mandates that certain categories of products must undergo mandatory registration and comply with specified quality and safety standards before they can be sold in the Indian market. This scheme was established in 2012 and has since played a crucial role in enhancing product quality and safety in India by ensuring that items such as electronics, appliances and automotive components meet the necessary standards before they reach consumers. BIS/CRS Registration is vital for market access, as it is a legal requirement for selling the product in India. Failure to obtain this registration can result in confiscation of goods and legal consequences. Therefore, manufacturers and importers need to be diligent in ensuring their products meet the necessary criteria.

Official Notification/Press Release available at

https://bit.ly/3ZoDbLf

Star Labelling for Induction Stove

The S&L program aims to help consumers make an informed choice about various energy-consuming appliances, in terms of energy savings, that would result based on each appliance's energy efficiency performance. This scheme also helps the consumer determine the cost-saving potential of the marketed household and other equipment.

The broad objective of the scheme is:

- To reduce the end-use energy consumption of appliances without diminishing the service levels.
- To create awareness amongst the consumers, to make an informed decision considering the cost-effectiveness & energy performance while purchasing appliances.
- To monitor and verify energy savings that incur annually through the sale of energy-efficient appliances

The scheme was launched by the Hon'ble Minister of Power in May 2006 and is currently invoked for 34 appliances/equipment. The scheme intends to reduce appliance energy consumption without diminishing the services it provides to consumers. The first 11 appliances have been notified under mandatory labelling while the others are presently under the voluntary labelling phase.
Schedule 34 specifies the requirements which are necessary to participate in the star labelling program for countertop induction hobs, also commercially known as induction cooktops or stoves, used for household and similar purposes having cooking zones, at rated voltage not exceeding 250 V, ac single phase 50 Hz.

Image Source :- Freepick

Funding Availability

NECP introduces induction-based cook-stoves, offering a cost advantage of 25-30% over traditional cooking methods, promising both energy savings and cost-effective cooking solutions.

Funding Ministry/Agency

EESL under Ministry of Power

Period of Programme

March 2023....contd.

Implementation Ministry/ Agency

Bureau of Energy Efficiency (BEE)

Eligibility

All manufacturers of induction stoves/tops.

Official Notification/Press Release available at

https://bit.ly/4i1Hp2N

Application Process

As given at the following link :
https://bit.ly/4i1Hp2N

Nodal Officer

Shri Milind Bhikanrao Deore
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Pradhan Mantri Ujjwala Yojana (PMUY)

The Pradhan Mantri Ujjwala Yojana (PMUY) is a flagship social welfare scheme launched by the Government of India with the aim of providing free LPG (liquefied petroleum gas) connections to below-poverty-line households. Launched in May 2016, PMUY targets the empowerment of women and improvement of their health and environment by replacing traditional cooking fuels such as firewood or cow dung with clean and efficient LPG. The scheme addresses issues of indoor air pollution, health hazards, and the socio-economic empowerment of women in rural households. The target under the scheme was to release 8 Crore LPG Connections to the deprived households by March 2020 which was achieved in September 2019. Under Ujjwala 2.0, additional allocation of 1.6 Crore LPG Connections under the scheme with special facility to migrant households was achieved during Dec'22, thus taking overall connections under the scheme to 9.6 Crore. Subsequently, the Government of India has approved release of additional 75 lakh connections under PMUY Scheme, taking overall target under the scheme to 10.35 Crore, against which connections are getting released now. In March 2024, the Union Government approved the continuation of targeted subsidy of INR 300 per 14.2 kg cylinder (and proportionately pro-rated for 5 kg cylinder) for up to 12 refills per year to be provided to the beneficiaries of Pradhan Mantri Ujjwala Yojana (PMUY) during FY 2024-25.

Funding Availability

INR 12, 000 crore for 2024-25

Funding Ministry/Agency

Ministry of Petroleum and Natural Gas (MOPNG)

Period of Programme

2016 – continued

Implementation Ministry/ Agency

Ministry of Petroleum and Natural Gas through Oil Marketing companies (OMCs)

Eligibility

I. Applicant (woman only) must have attained 18 years of age.

II. There should not be any other LPG connection from any OMC in the same household.

III. Adult woman belonging to any of the following categories – SC, ST, Pradhan Mantri Awas Yojana (Gramin), Most Backward Classes (MBC), Antyodaya Anna Yojana (AAY), Tea and Ex- Tea Garden tribes, Forest Dwellers, People residing in Islands and River Islands, enlisted under SECC Households (AHL TIN) or any Poor Household as per 14-point declaration.

Official Notification/Press Release available at

(i) https://www.pmuy.gov.in/ujjwala2.html

(ii) https://bit.ly/3Zio06l

Application Process

Applicants may apply to any distributor of her choice either by submitting application at the distributor or by submitting a request through Online Portal https://www.pmuy.gov.in/ujjwala2.html)

Nodal Officer

Shri Milind Bhikanrao Deore

Secretary, Bureau of Energy Efficiency (BEE)

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Image Source :- Freepick

Energy Storage Systems (ESS) Policies and Guidelines

The challenge with renewable energy sources arises due to their varying nature with time, climate, season or geographic location. The variability associated with the RE sources lead to issues as grid balancing creating a need for flexibility. A government think-tank has predicted around 180GWh of demand for batteries for stationary energy storage systems (ESS) by 2030.

Aims: To achieve twin objectives of ensuring energy transition and energy security, a National Framework on ESS has been put in place to encourage the adoption of Energy Storage for ensuring an environmentally sustainable and financially viable power sector. Accordingly, following policy and regulatory measures are either finalized or may be considered in due course of time:

1. Viability Gap Funding for Battery Energy Storage Systems- The “Scheme for Viability Gap Funding (VGF) for development of Battery Energy Storage Systems (BESS)” for development of 4,000 MWh of BESS capacity
2. Guidelines for Procurement and Utilization of Battery Energy Storage Systems as part of Generation, Transmission and Distribution assets, along with Ancillary Services
3. Additional Budgetary support for enabling infrastructure for Pumped Storage Projects- Guidelines to promote development of Pump Storage Projects (PSP) has been finalized by M/o Power vide OM dated 08.03.2019.
4. The Battery Waste Management Rules, 2022 has been notified by M/o Environment, Forest, and Climate Change.

Funding Availability

(i) The budgetary support to promote development of Pump Storage Projects (PSP) for roads and bridges would be INR 15 million per MW for projects upto 200 MW and Rs. 10 million per MW for projects above 200 MW.

(ii) A total outlay of INR 94,000 million, including a budgetary support of INR 37,600 million has already been notified by M/o Power for the "Scheme for Viability Gap Funding (VGF) for development of Battery Energy Storage Systems (BESS)".

(iii) Separate allocation for the PLI scheme for National Programme on Advanced Chemistry Cell (ACC) Battery storage.

The total incentive pay out over the period of 5 years of the Scheme will be INR 1,81,000 million.

Funding Ministry/Agency

Ministry of Heavy Industries

Period of Programme

From 12.05.2021 – contd.

Implementation Ministry/ Agency

Ministry of Heavy Industries

Eligibility

As per documents available at https://pliacc.in/guide/guidelines.

Official Notification/Press Release available at

https://bit.ly/411NKVK

Application Process

As per bid documents available at https://bit.ly/3V755sM

Nodal Officer

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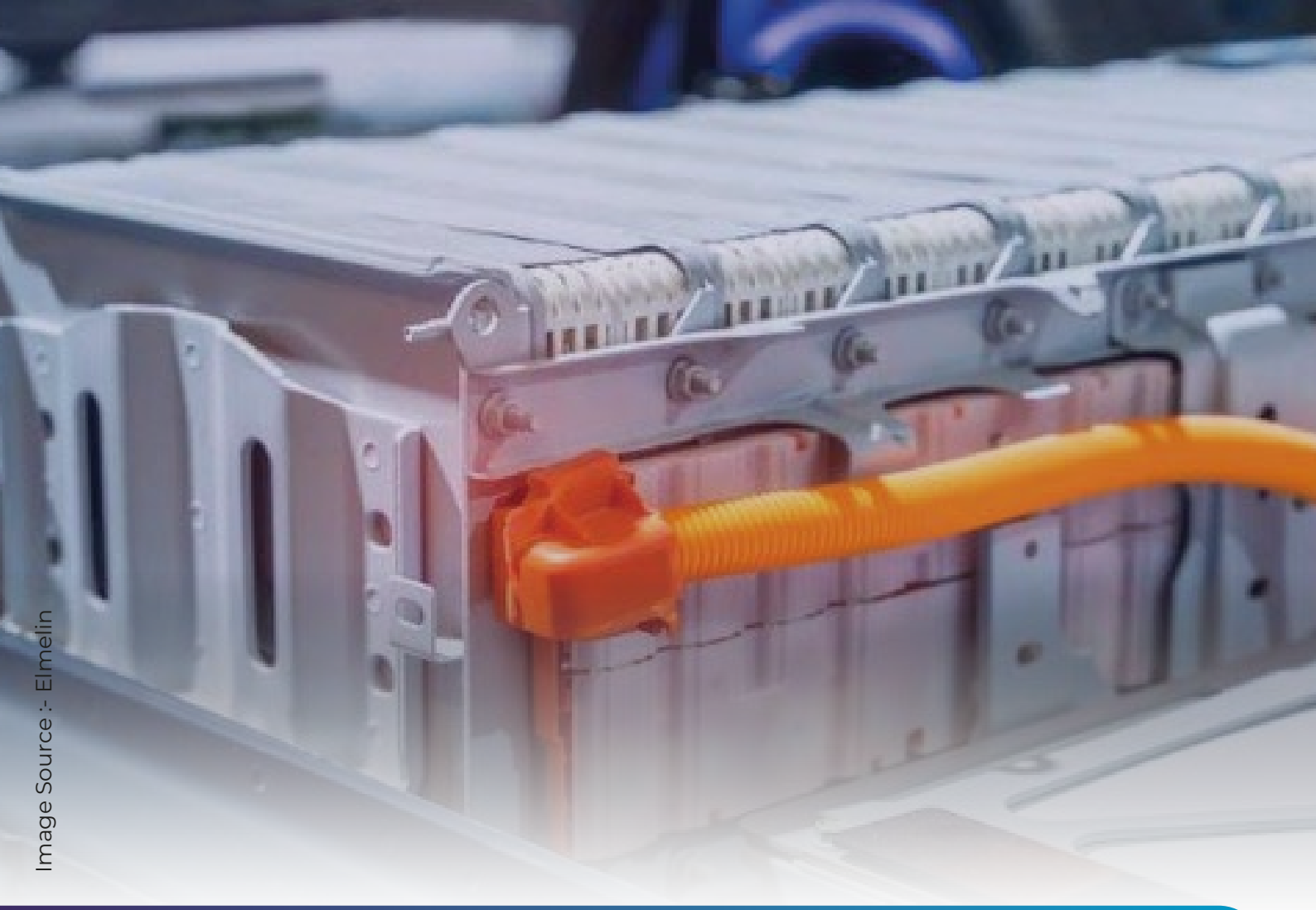

Image Source :- Elmelin

Production Linked Incentive (PLI) Scheme on National Programme on Advanced Chemistry Cell (ACC) Battery storage

The PLI scheme on Advanced Chemistry Cell (ACC) Battery storage was approved by the Government of India on 12.05.2021 with budgetary outlay of INR 1,81,000 million. The scheme envisages setting up of a cumulative ACC manufacturing capacity of fifty (50) GWh for ACCs and an additional cumulative capacity of (Five) GWh for Niche ACC Technologies. The manufacturing facility as proposed by the beneficiary firm would have to be commissioned within a period of 2 years. The subsidy will be disbursed thereafter over a period of 5 years. The beneficiary has to ensure achieving a domestic value addition of at-least 25% and incur the mandatory investment (INR 2250 million /GWh) within 2 Years (at the Mother Unit Level) and raise it to 60% domestic value addition within 5 Years, either at Mother Unit, in-case of an Integrated Unit, or at the Project Level, in-case of “Hub & Spoke” structure.

Aims: This scheme will strengthen the ecosystem for Electric Mobility and Battery Storage in the country. The scheme envisages to enhance India’s manufacturing capabilities of Advanced Chemistry Cell (ACC) by setting up of Giga scale ACC and battery manufacturing facilities in India with emphasis on maximum domestic value addition. This scheme will promote Make in India initiative.

Funding Availability

(i) Total outlay of INR 94,000 million, including a budgetary support of INR 37,600 million for VGF scheme for Battery Energy Storage Systems.
(ii) The government approved the PLI Scheme on 'National Programme on Advanced Chemistry Cell (ACC) Battery Storage' for achieving manufacturing capacity of Fifty (50) Giga Watt hours (GWh) of ACC with an outlay of INR 1,81,000 million.

Funding Ministry/Agency

(i) Ministry of Power
(ii) Ministry of Power
(iii) Ministry of Heavy Industries

Period of Programme

(i) From 2023-24 to 2025-26
(ii) For projects starting construction after march 8, 2019
(iii) For five years up to 2028-29.

Implementation Ministry/ Agency

(i) Ministry of Power
(ii) CEA under Ministry of Power
(iii) Ministry of Heavy Industries

Eligibility

(i) Through a competitive bidding process
(ii) As specified in the RFP

Official Notification/Press Release available at

https://bit.ly/40YV0lv

Application Process

Refer to the guidelines of the scheme available at: https://bit.ly/3V9TngT

Nodal Officer

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The National Green Hydrogen Mission (NGHM)

It was launched on 4th January 2023, with an outlay ofINR 1,97,440 million up to FY 2029-30. The Mission will result in the development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum by 2030 with an associated renewable energy capacity addition of about 125 GW in the country. Under the Strategic Interventions for Green Hydrogen Transition (SIGHT), two distinct financial incentive mechanisms – targeting domestic manufacturing of electrolysers and production of Green Hydrogen – will be provided under the Mission. The Mission is also supporting pilot projects in emerging end-use sectors and production pathways. The Mission is leading to significant decarbonisation of the economy, reduced dependence on fossil fuel imports, and enable India to assume technology and market leadership in Green Hydrogen. Hydrogen can be utilized for long-duration storage of renewable energy, replacement of fossil fuels in industry, clean transportation, and potentially also for decentralized power generation, aviation, and marine transport.

Regarding application of hydrogen gas for household/cooking purposes, GAIL Limited has started India's maiden project of blending Hydrogen in City Gas Distribution grid. Two percent by volume of hydrogen is being blended in CNG network and 5 vol% of hydrogen is being blended into PNG network at City Gas Station of Avantika Gas Limited (AGL), Indore, Madhya Pradesh. Further, NTPC Limited has initiated blending of Green Hydrogen up to 8% (vol/vol) in PNG Network at NTPC Kawas Township, Surat, Gujarat from January 2023.

Image Source :- Freepik

Funding Availability

Out of the total layout of INR 1,97,440 million, the breakup is as under:

- INR 1,74,900 million for the SIGHT,
- INR 14,660 million for pilot projects,
- INR 4000 million for R&D, and
- INR 3,880 million towards other Mission components.

Funding Ministry/Agency

Ministry of New and Renewable Energy (MNRE)

Period of Programme

Up to 2029-2030

Implementation Ministry/ Agency

As nominated by MNRE

Eligibility

As per scheme guidelines issued by MNRE for different components of NGHM available at: https://mnre.gov.in/hydrogen-schemes-guidelines

Official Notification/Press Release available at

https://nghm.mnre.gov.in/

Application Process

As per scheme guidelines issued by MNRE for different components of NGHM available at: https://mnre.gov.in/hydrogen-schemes-guidelines/

Nodal Officer

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WAY FORWARD

The launch and successful implementation of the Pradhan Mantri Ujjwala Yojana (PMUY) scheme ushered a new dawn in the field of clean cooking, by expanding the coverage of Liquefied Petroleum Gas (LPG), a cleaner and more efficient cooking fuel, to BPL families. However, despite its successful implementation, it is acknowledged that, keeping in view India's updated net-zero ambition and the high prices of oil and gas in recent times, LPG cannot be the only cooking option for the country. What India needs is a clean, sustainable and affordable clean cooking solution that also reduces its dependence on LPG imports and increases energy security. Electric cooking, with benefits like improved indoor air quality, reduced Green House Gas (GHG) emissions and enhanced per capita energy access for India, is an attractive direction for the country's clean cooking journey. The government has also expressed its desire to meet the requirement for energy to cook through renewable energy, thus making it absolutely clean. "The Green Shift" report by the Ministry of Petroleum and Natural Gas has indicated a target of 25% of households will adopt electric cooking by 2030. Recent policy announcements with provisions for subsidies on the procurement of induction cookstoves offers positive signals from the government that it wishes to take eCooking forward.

However, barriers to universal adoption of eCooking such as inadequate electric supply, the prevailing tariff structure, the higher upfront cost of eCooking devices, and a preference for traditional cooking habits have slowed down its adoption. There is also limited domestic manufacturing capacity. There is a need for policy support to promote eCooking in such a way that over 56% of the households in rural India and around 15% of those in urban India , who still use some form of kerosene or biomass to cook food start moving away from fossil fuels to non-fossil fuels. The overall strategy may be devised with a focus on solar cooking, eCooking and solar thermal cooking. While growth is clearly visible and attitudes are shifting in favour of eCooking, progress in the transition remains slow. On a business as usual basis the opportunity to substantially reduce the burden on the economy from LPG and biomass cooking will take many years to achieve. With the right stimulation from the government, however, we believe that this can be accelerated and welcome the on-going debate about what form this should take.

In the electric cooking sector, the priority should be to develop a model that is affordable to even rural areas because, in urban areas people can afford to pay their electricity bills regularly. Accordingly, a model where carbon credits also get aggregated will offset some part of the cost of the eCooking devices and the electricity consumed. If required at the initial stage, the government may consider offering some form of subsidy to rural consumers who opt to switch to eCooking. The need for a policy push for promotion of eCooking was also indicated in NITI Aayog's publication the "India Energy Security Scenario Building Tool", which states that even under the "ambitious scenario", only 14% of rural households will use electricity for cooking by 2047 . Therefore, broader policy and market transformation initiatives will be necessary to transition households from fossil fuels and traditional cooking habits to electric cooking. The issue calls for the necessity of convergence and concerted efforts by all stakeholders to contribute towards cleaner cooking for a large section of India's population.

The following are some of the suggested areas requiring policy and financial support to achieve the goal:

- Advocating the use of electric cooking with its well-established benefits for raising awareness in urban as well as rural areas among government and civil society to spread learning of good practices in electric cooking through improved communication and behaviour change campaigns. A separate fund allocation by MoP/MNRE for this purpose under the GoElectric campaign could be useful.
- Establishing centre of excellence by MoP/BEE with some technical and Research institutes for research and development of electric cooking devices suitable for the local cooking habits.
- The Production Linked Initiative(PLI) Schemes which were devised and implemented by the government to make domestic manufacturing globally competitive in sunrise and strategic sectors could be extended to cover electric cooking devices like induction cook stove, EPC, microwave oven, electric kettle, electric rice cooker. This will help in improving the cost competitiveness of domestically manufactured eCooking devices and in making them more affordable for common people.
- The Pradhan Mantri Surya Ghar Free Electricity Scheme with a total outlay of INR 75,021 crore could be modified to provide financial support for procurement of induction cook stoves which would go a long way towards quicker mass adoption of electric cooking with renewable energy with zero harmful emissions. The scheme envisages providing up to 300 units of free electricity every month to their beneficiaries in addition to subsidies for procurement of solar panels.
- Carbon finance measures, including Article 6 mechanisms and voluntary carbon markets, can be deployed to expand the usage of electric cooking solutions. Electric cooking is a high-potential activity for consideration under the carbon market mechanisms and measures like accreditation of carbon verification agencies and detailed procedures for compliance under the Indian Carbon Market needs to be expedited.
- Inclusion of Skill development curriculum on manufacturing, repair and service for Induction Cook stoves and Electric Pressure Cookers (EPCs) under Pradhan Mantri Kaushal Vikas Yojana (PMKVY), the flagship scheme of the Ministry of Skill Development & Entrepreneurship (MSDE).
- Standardisation of electric cooking devices aligned to the internationally accepted standards on the basis of quality, reliability, efficiency, safety, and affordability.

With sustained efforts made by the government, almost 100% Indian households have electricity access, thus making e-cooking a feasible solution for a cleaner kitchen. The technology for eCooking is available, it only needs to be scaled up. A model needs to be developed so that the energy comes from renewable sources, and with aggregation of carbon credits, an affordable solution emerges with policy, regulatory, and financial support from the government for the initial period of its adoption. A cleaner kitchen for all households would be a true indicator of Viksit Bharat (Developed India) in 2047.