

Executive Summary



Making the Paris Agreement a success for the planet and the people of India

Unlocking the co-benefits of decarbonising India's power sector

India is in the midst of an energy transition, with important social and economic implications depending on the pathways that are chosen. India's energy pathway will define the basis for its future development, including economic prosperity, business and employment opportunities, as well as health impacts. At the same time, current investment decisions in India's energy sector will have substantial implications for combatting global warming and securing the livelihoods of people in India and elsewhere.

This COBENEFITS Policy Report for India compiles key findings from the COBENEFITS India Assessment series, quantifying the co-benefits of decarbonising India's power sector in view of future-oriented employment and skills development, economic prosperity in rural areas, and health benefits related to a less carbon-intensive power sector, which can be instrumental in reviving the national health system. The COBENEFITS India Assessment series can be accessed at: www.cobenefits.info. Building on the

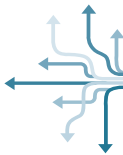
opportunities presented, the report formulates a set of policy actions to allow government institutions to create an enabling political environment to unlock the social and economic co-benefits of the new energy world of renewables for the people of India. The policy options were generated through a series of roundtable dialogues and government consultations involving government institutions, industry associations, and expert and civil society organisations in the years 2019 and 2020.

In light of the current crisis, the study findings indicate that recovering from the economic shocks of the COVID-19 pandemic and avoiding severe future shocks triggered through the climate crisis do not represent conflicting interests but instead a mutually reinforcing coping strategy. The Paris Agreement and the 2030 Agenda on Sustainable Development offer important internationally agreed frameworks to ensure economic recovery in the shorter term and for building resilient economies and health systems in the long run.

UNLOCKING THE CO-BENEFITS OF RENEWABLE ENERGY FOR THE PEOPLE OF INDIA - 10 OPPORTUNITIES FOR POLICY MAKERS

- 1 Enhance individual mini-grid capacities:** Solar-powered mini-grids of high installed power capacity can remain economically viable and cost-competitive with the centralised grid in rural areas of India. Solar mini-grid systems greater than 100 kW with interest rates as low as 8% and a 15% return on equity can achieve grid parity and provide a low cost electricity supply to rural consumers.
- 2 Mechanism for co-existence of mini-grid with central-grid:** To drive the growth of higher power-capacity mini-grids, which are essential for reliable 24/7 rural electrification, mechanisms must be developed (in collaboration with the private sector) that enable mini-grid developers to transfer the system's assets to the state-owned utility when the central grid arrives at the area served by the mini-grid.
- 3 Merit-based incentive scheme for mini-grids between 100 kW and 700 kW:** A special capital subsidy incentive scheme can be developed for viable mini-grid systems between 100 kW and 700 kW built in specific rural developmental zones defined by MNRE. The government would be advised to collaborate with rural developmental banks and national/international funding agencies in order to assist and achieve the overall process.

Fostering rural development: taking energy access to the next level



- 4 Foster distributed generation of renewable energy sources:** Distributed renewable energy technologies such as small hydro, rooftop solar, and biomass create up to 25 times more employment for every MW of installed capacity than fossil-fuel-based power generation. Policy makers can therefore consider these advantages of distributed renewable energy technologies in seeking to accelerate employment creation in the renewable energy sector.
- 5 Continuous increase in share of renewables:** India can significantly boost employment by increasing the share of renewables. These technologies tend to be more labour intensive than conventional technologies, and by 2050 more than 3.5 million people could be employed in the renewable energy sector (five times more than the entire Indian fossil-fuel sector [coal, gas, nuclear] employs in 2020).
- 6 Establish a new authority to re-skill coal sector workers:** Creating a central authority/agency/body to train or re-skill workers from the coal sector will support workers in benefiting from direct employment in the renewable energy sector. It is estimated that the solar sector could require a total of 256,000 skilled, 320,000 semi-skilled, and another 570,000 unskilled workers by 2050 (REMap scenario). Considering the size of the coal sector in India and the future workforce requirements of the solar sector, this high-impact action would be championed by the Ministry of Skill Development and Entrepreneurship in close collaboration with other ministries and government departments.

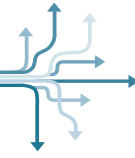
Developing future skills and boosting job creation

- 7 Adopting an accelerated decarbonisation pathway to avoid premature deaths:** India can markedly improve the livelihoods of its citizens by reducing ambient air pollution. In the business-as-usual scenario, during 2020 almost 500,000 people will die prematurely due to exposure to particulate matter (PM10); this number would rise to 830,000 premature deaths during 2050. By moving to the accelerated decarbonisation pathway (NDC PLUS), more than 200,000 premature deaths can be avoided.
- 8 Adding another level of ambition:** In view of ensuring economic and health system resilience, India is advised to formulate and pursue even more ambitious renewable energy pathways. Even the most far-reaching decarbonisation scenario presented in this report (NDC PLUS) is insufficiently ambitious to prevent a 4.3% reduction in Indian GDP and an increase in premature deaths in 2050 compared with 2020 levels.
- 9 Structured, indicator-driven decommissioning of coal-fired power plants:** The decommissioning of India's coal-fired power plants should be based on key structural indicators, i.e., plant emission levels, projected deaths due to air pollution, and the population densities of affected areas in close proximity to the plant. The government would expedite the process of decommissioning coal-fired power plants on the basis of these indicators. This process would be led by the Ministry of Power, and the indicators would be jointly developed with the Ministry of Environment, Forest and Climate Change, Ministry of Coal, and the Ministry of Health.

Improving people's health and creating a resilient health system

- 10 Making co-benefits part of India's pledge to the planet and its people:** In terms of mitigating climate change, Nationally Determined Contributions (NDCs) are more than technical documents: They are also showcases, for national audiences, of the contribution and global responsibility a country is willing to take in reducing its GHG emissions. In addition, India's NDC also aims to exploit the co-benefits of addressing climate change along with promoting economic prosperity for its people.

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In order to boost energy access through mini-grids: In addition to the above policy messages, the government along with industry stakeholders can take other crucial steps by starting to consider how to establish mini-grids as a complementary/supplementary extension to central grid services. The government can contribute by building a dialogue for short-, medium-, and long-term planning, and the development of suitable business models for mini-grids. Further issues for consideration include cross-subsidies for mini-grid consumers, along with skill development to maintain the growth of mini-grids in the country.

Understanding that more efforts will be required to maximise the employment benefits within the shift to a less carbon-intensive power sector, the government will be required to take additional steps. These start with improving data availability with respect to

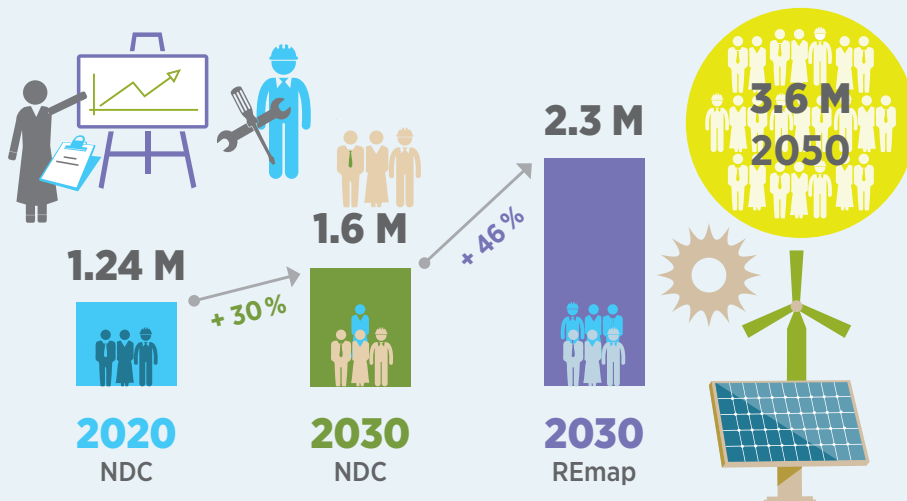
employment in the renewable energy sector; managing the energy transition in the coal and related sectors; including job opportunities for (community-owned) renewable energy projects. The government is also advised to make skilling and female employment a mandatory part of public renewable energy projects.

With many old coal power plants in India lacking emission control technology, the country is at a greater risk of health epidemics. More supportive steps are required, apart from the above policy messages. The government can give advance consideration to how it might include emission and air quality aspects within the retirement planning of power plants; improve independent emission monitoring and law enforcement through third-party assessments; and foster interdisciplinary exchange between researchers to ensure methodological standards and joint monitoring.

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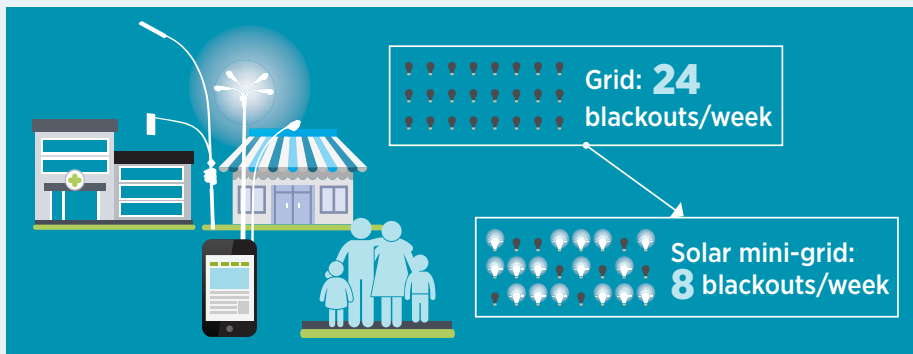
India can almost double the number of jobs through the power sector by 2030 by following an ambitious decarbonisation pathway.



NDC: Scenario that highlights the strategies necessary for achieving the targets laid out in India's international climate commitment (NDC)

REmap: High ambition renewable energy roadmap for India by the International Renewable Energy Agency (IRENA)

In rural India, mini-grids significantly improve the reliability of supply for municipal services and basic household energy needs.



India can significantly unburden health budgets by greening the economy and deploying renewable energy.

