



Program Information Document (PID)

Concept Stage | Date Prepared/Updated: 12-Apr-2023 | Report No: PIDC36019



BASIC INFORMATION

A. Basic Project Data

Country India	Project ID P181032	Project Name First Clean Energy Programmatic Development Policy Loan (P181032)	Parent Project ID (if any)
Region SOUTH ASIA	Estimated Board Date Jun 29, 2023	Practice Area (Lead) Energy & Extractives	Financing Instrument Development Policy Financing
Borrower(s) Ministry of Finance	Implementing Agency Ministry of New and Renewable Energy		

Proposed Development Objective(s)

To strengthen the enabling policy framework to promote clean energy investments.

Financing (in US\$, Millions)

SUMMARY

Total Financing	1,000.00
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DETAILS

Total World Bank Group Financing	1,000.00
World Bank Lending	1,000.00

Decision

The review did authorize the preparation to continue

B. Introduction and Context

Country Context

1. **The Government of India has signaled a strong commitment to low-carbon, long-term development and taken significant steps in this regard.** While India’s per capita emissions of greenhouse gas (GHG) emissions are relatively low, the country is nonetheless the world’s third largest emitter of GHGs. Energy-consuming sectors (power, industry, transport, and buildings) contribute to three-quarters of the annual total of 2.7 gigatons CO₂e of GHG emissions in India. Industry and transport—both hard-to-abate sectors—are estimated to account for two thirds of the future emissions by 2050. The government’s climate commitments announced at COP26, including the revision in August 2022, are: (a) net



zero emissions by 2070; (b) 50 percent of power capacity from non-fossil fuels by 2030; (c) a reduction in cumulative carbon emissions by 1 billion tons by 2030; (d) a reduction of carbon intensity by 45 percent from 2005 to 2030; and (e) the creation of an additional cumulative carbon sink of 2.5 to 3 billion tons of CO₂ equivalent through additional forest and tree cover by 2030.

2. **The Government of India has launched a series of policies to meet renewable energy targets.** India's power sector is experiencing a paradigm shift towards RE, where annual additions of renewable capacity have outpaced those from coal power since 2017. The government's green energy transition strategy is to accelerate RE development that will over time displace fossil fuels to meet the growing energy demand. RE promotion policies such as fiscal incentives, large-scale procurement mechanisms through Solar Parks, waiving of inter-state transmission charges and losses, must-run status for RE generating stations, production-linked incentives (PLI) for solar power and battery storage, reverse auctions, renewable purchase obligations, have helped accelerate RE take-off. Several phases of the National Solar Mission have been instituted since 2010 to promote solar power. The Government has envisaged 100 gigawatt-hours (GWh) of battery storage by 2030 to improve RE grid integration. Improvements in the network infrastructure and deepening of the power markets have also facilitated RE grid integration. Further, in December 2022, the passing of the Energy Conservation (Amendment) Bill has laid the foundation for India to develop a national carbon market that will contribute towards India's energy transitions journey.

3. **The government has adopted strong policies to mobilize significant private sector investments in RE, which has led to exponential growth of the RE market over the past decade.** Several phases of the National Solar Mission have been instituted since 2010 to promote solar power. The National Repowering Policy for Wind Power Projects and the National Offshore Wind Policy and a Strategy Paper for offshore wind set a target of 30 GW for offshore wind by 2030. The government has adopted a series of enabling policies to mobilize significant private sector investments in RE, including but not limited to: (a) fiscal incentives that have brought down the solar photovoltaics (PV) costs from 25 Indian rupees/kWh to 2 Indian rupees/kWh in a decade; (b) competitive reverse auctions that have also resulted in dramatic cost reduction of solar PV; (c) waiver of inter-state transmission charges for RE power generators; (d) large-scale grid-connected Solar Parks that have contributed to the bulk of solar PV installed capacity today¹; (e) renewable purchase obligations mandating that the distribution utilities purchase a minimum share of RE; (f) must-run status for RE power plants to ensure grid integration; (g) PLIs for solar power to reduce costs and ensure supply; (h) building by-laws for mandatory provision of roof top solar for new construction; and (i) the KUSUM scheme to promote solar pumps in rural areas.

4. **To bridge the viability cost gap of green hydrogen, the government announced the NGHM in January 2023, with a total budget of US\$2.4 billion.** The NGHM's objective is to provide a comprehensive action plan to establish a conducive green hydrogen ecosystem and catalyze large-scale green hydrogen investments, to eventually position India as a global hub for production, usage, and export of green hydrogen and its derivatives. Indeed, to achieve India's net-zero emission target, green hydrogen would need to meet 30 percent of the country's final energy demand by 2070. Green hydrogen will play a crucial role in reducing emissions in the hard-to-abate industrial sectors such as refineries, fertilizer and methanol production, iron and steel, and chemical industries, as well as long-haul transportation and shipping. In addition, displacement of imported fuels by green hydrogen represents a significant opportunity to reduce economic costs and improve energy security.

5. **Scaling up green energy will take time, and a two-phase Development Policy Loan (DPL) will allow the government to develop and implement ambitious policy measures to sustainably develop green energy.** Once the

¹ For instance, the World Bank's support of US\$100 million shared infrastructure under the 'Shared Infrastructure for Solar Parks' project has resulted in more than US\$4 billion private investments in solar parks.



NGHM is issued, the Government is required, within a year, to issue a series of concrete policies and regulations to implement NGHM and thereby reduce costs and increase market demand. Over this period, the World Bank will continue to support the Government with technical assistance to help the green energy transition agenda and meet the proposed triggers under the DPL-2. Beyond the DPL series, the Bank continues to remain engaged through analytical work, technical assistance and financing as needed.

Relationship to CPF

6. This operation is aligned with the Country Partnership Framework’s (CPF) focus areas on (a) promoting resource-efficient growth and (b) enhancing competitiveness and enabling job creation. Through the first focus area, the World Bank Group has committed to supporting sectors and areas that are critical for facilitating growth and poverty reduction while promoting greater resource efficiency. Through the second focus area, the World Bank Group is aspiring to strengthen key enablers for job creation and to improve competitiveness through better business and policy environments, strengthened workforce skills, and increased firm capabilities.

C. Proposed Development Objective

7. This US\$1 billion program will be the first phase of a two-phase DPL whose Program Development Objective is to strengthen the enabling policy framework to promote clean energy investments. The operation will consist of three pillars: (a) scaling up renewable energy; (b) promoting green hydrogen; and (c) enhancing climate finance for green energy investments. Pillar 1 aims to scale up renewable energy penetration in India, reduce RE costs, improve RE grid integration to decarbonize the power sector, and ensure RE power supply to green hydrogen production. Pillar 2 aims to strengthen the enabling policies and regulations for green hydrogen to reduce costs and increase market demand by supporting the government of India’s National Green Hydrogen Mission (NGHM) and the regulatory development it outlines, which will lead to decarbonizing the hard-to-abate industrial sector. Pillar 3 aims to support a national carbon market and increase green financing to enable private sector investments in green energy.

Key Results

Indicator Name	Baseline (2023)	Target (2026)
Pillar 1: Scaling up renewable energy		
Increase in the share of renewable energy in power consumption	24.61% (2022-23)	33.01% (2025-26)
Increase in the share of energy storage with solar/wind in power consumption	0% (2022-23)	2% (2025-26)
Increased electricity traded in the ancillary service market	0	To Be Determined
Improved Grid Code issued	Existing Grid Code not conducive for RE grid integration	Improved Grid Code issued
Private investments in high efficiency solar PV manufacturing increased	0	US\$1.13 billion
Offshore wind power capacity awarded (GW)	0	4
Pillar 2: Promoting green hydrogen		
Incentives for green hydrogen production and utilization approved	0	2.1



Indicator Name	Baseline (2023)	Target (2026)
(US\$ billion)		
Private sector investments for the approved green hydrogen projects committed (US\$ billion)	0	10
National green hydrogen regulation framework that establishes safety standards for green hydrogen issued and approved	Limited green hydrogen safety standards	National green hydrogen standards and regulation frameworks that set safety standards approved
Green hydrogen standards adopted	No green hydrogen standards	Green hydrogen standards issued and adopted
Pillar 3: Enhancing climate finance for green energy investments		
Launch of a national carbon market	No carbon market exists	A national carbon market launched
Share of budget allocated to the Ministry of New and Renewable Energy increased	0.17 % of total central government spending	0.23% of total central government spending

D. Concept Description

8. **This DPL focuses on three pillars of policy reforms to enable a policy framework to promote investments in clean energy .**

- **Pillar 1: Scaling up renewable energy.** Achieving the ambitious RE targets requires reducing costs, removing supply chain bottlenecks, mandating targets, and improving RE grid integration. The RPOs and the PLI scheme for solar PV are critical to scale up and reduce costs of RE to achieve the government’s RE targets. The ancillary service market is essential to remunerate energy storage (both battery storage and PSH) services, and Grid Codes are important measures to enable RE grid integration. In particular, the government plans to develop offshore wind technologies for which conducive policies are the key to leveraging private sector investments.
- **Pillar 2: Promoting green hydrogen.** The NGHMs are critical to accelerating development of a green hydrogen market in India, and the detailed implementation policies and regulations for the NGHMs are essential to increase market demand and reduce costs to mobilize significant private sector investments in green hydrogen and ensure successful implementation of the NGHMs.
- **Pillar 3: Enhancing climate finance for green energy investments.** Pricing carbon emissions under a carbon market will provide a level playing field for RE/green hydrogen against fossil fuel alternatives and reduce viability gaps. Green financing will catalyze the significant volumes of public and private financing required for green energy to meet the net zero target.

E. Poverty and Social Impacts, and Environmental, Forests, and Other Natural Resource Aspects

Poverty and Social Impacts

9. **Though social impacts of the proposed DPL are likely to be positive, the social risks associated with the land acquisition, loss of livelihood, relocation and labor issues is estimated to be substantial.** The proposed DPL is likely to have positive social impacts, such as:(a) clean affordable energy for all, including the poor and vulnerable, which will have



positive impact on health and human capital development; (b) micro, small and medium enterprises (MSME) to benefit from reduced cost of solar PVs; and (c) additional employment opportunities with new RE production units. The financing mechanisms may also include instruments that offer subsidized financing options to women entrepreneurs to help address the specific needs of the women-led businesses and promote gender inclusion. Communities are expected to benefit from the project thanks to the generation of additional livelihood sources and Corporate Social Responsibility investments.

10. **As required under a DPL, a Poverty and Social Impact Analysis (PSIA) study will be undertaken** to assess the positive and adverse impacts on the well-being of different social and livelihoods groups, with focus on the poor and vulnerable, including women. It will be conducted in line with the prior actions identified in the DPL. The PSIA process will support stakeholder consultations for seeking feedback from government officials, industry associations, development partners, those impacted by acquisition of land or loss of livelihood, beneficiaries, and other relevant stakeholders. Findings and recommendations from the stakeholder consultations will be integrated in the PSIA and documented in the program document by negotiations.

Environmental, Forests, and Other Natural Resource Aspects

11. **The prior actions supported through this DPL are likely to have a positive impact on India’s environment, forests, and other natural resources.** There is no short or long-term climate change or geo-hazard risks relevant to this operation. Future investments under four of the policy areas supported by the operation may result in downstream large-scale capacity augmentation and new construction of green hydrogen, electrolyzer, and lithium-ion battery production facilities, indirectly influence mining of raw materials such as nickel, cobalt, and zircon; and induce large-scale desalination, each of which has potential for negative environmental effects. The national legal and regulatory framework incorporates some of the necessary mitigation measures to adequately manage these potential effects and provides the basis for establishing the needed regulatory frameworks.

12. **India has a well-developed environmental legal and regulatory framework.** Current environment legislation in India, most of which dates to the 1970s and 1980s, includes statutory acts and laws on protection of the environment; ecological audit and monitoring; protection of flora and fauna; environment information and education; soil, water, and air quality; biological safety; human health and safety, including occupational health and safety; and waste and chemicals management. These laws, along with the regulations and standards approved by the Government and Line Ministries, create a favorable legal framework for environment protection and for the use and protection of the country’s natural resources. They also enforce the rights of citizens to environmental safety, access to information, recourse to compensation from any environmental/safety disaster under several laws including a Public Liability Insurance Act, 1991. In particular, the Environment (Protection) Act, 1985, defines environmental emergencies and ecological disasters and prescribes the order of actions in such situations, defines the obligations of officials and enterprises to prevent occurrences and eliminate consequences, and the liabilities of the persons or organizations that damage the environment.

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APPROVAL

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Approved By

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