CEEW
THE COUNCIL
Centre for Energy Finance

Identifying and leveraging finance

Insights from India: 2030 Agenda & Paris Agreement objectives

UNCTAD – Intergovernmental Group of Experts on Financing for Development (Seventh Session)

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3 November, 2023

Impacting sustainable development at scale with data, integrated analysis, and strategic outreach

TRANSFORMATIONS

- Low-carbon Economy
- Energy Transitions
- Power Markets
- Industrial Sustainability
- Sustainable Livelihoods

QUALITY OF LIFE

- Clean Air
- Sustainable Water
- Sustainable Food Systems
- Sustainable Cooling
- Sustainable Mobility

ENABLERS

- Sustainable Finance
- Technology Futures
- Circular Economy
- Climate Resilience
- International Cooperation

250+
Multidisciplinary team

380+
Peer-reviewed publications

190+
Instances of increased data transparency

540+
Roundtables & conferences

20+
Indian states engaged

130+
Bilateral & multilateral initiatives promoted

SPECIAL INITIATIVES

- CEEW Centre for Energy Finance
- Powering Livelihoods
- Emerging Economies
- UP State Office

Introduction

Between the 2030 Agenda & the Paris Agreement Objectives, this presentation particularly focusses on the latter – so among the 17 SDGs, Climate Action (SDG13), which lies at the heart of the Paris Agreement.

In the above context this presentation sets out high level views on three critical questions that follow.

1. What are India's Paris Agreement objectives?

2. What sectors are central to achieving those objectives?

3. How does finance fit into the picture?
   - How much?
   - How?

India’s commitments

Indicator	Previous NDC (COP21 Paris)	New Pledge (COP26 Glasgow)
Share of energy requirements from renewable energy by 2030	40%	50%
Reduction in carbon intensity of economy by 2030 (vs 2005 level)	33-35%	45%
Non-fossil energy capacity by 2030	-	500 GW
Reduction in total projected carbon emissions till 2030	-	1 billion tons
Net-zero year	-	2070

Action on emissions is central to India’s commitments

Where do India's emissions come from?

- **70% of India's emissions** can be traced to **three sectors** which are **central** to its **energy transition**
  - Electricity generation (40% of gross GHG)
  - Industry (20%)
  - Road transport (10%)

- Relevant **sectoral 2030 targets/vision**
  - Power sector transition: 500GW of non-fossil based generating capacity (COP 26)
  - Industrial transition: 5 MMT pa green hydrogen production capacity (Green Hydrogen Mission)
  - Mobility transition: category-wise penetration levels (NITI Aayog "vision" for e-mobility)

- **Finance** is **one of several key levers** to achieve **targets/vision**

Finance as one key lever: power sector

Diversity of routes

To maximise RE target achievement potential → pace of utility scale auctions ~20 GW pa vs ~40 GW pa requirement for 500 GW target

Note: Per new bidding trajectory of March 2023, 50GW to be auctioned each year for five years

Policy effectiveness

To ensure policies translate into results → poor RPO enforcement historically constrained the uptake of RE, will new 50GW/year bidding trajectory translate into actual auctions for capacity?

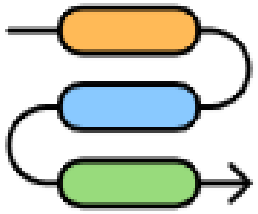
Grid adequacy

Per RPO trajectory, variable (non-hydro) RE share to grow 3x to 31.7% by FY 30 → BESS can become crucial for grid stability

Finance ✓

To ensure finance is available on appropriate terms to fund the generating capacity required for the GW target (and associated T&D & storage)

Finance as one key lever: green hydrogen



Phased approach

Blending green with grey/black for domestic fertilizer and refineries, replacing embedded grey/black in fertilizer imports, CNG blending → easier to achieve so should be immediate focus

Export markets

Export markets can be targeted even as green hydrogen penetrates the domestic ecosystem → opens up prospects of lower cost finance for dedicated export focussed projects

Focus on manufacturing & supply chain localisation

India launched "Solar Mission" in 2010, made much progress in GW capacity deployment, but focus on manufacturing came much later → ensure control over green hydrogen value chain from outset

Finance ✓

To ensure finance is available on appropriate terms across the value chain, from electrolyser manufacturing to green hydrogen production

Finance as one key lever: electric mobility

Encourage all states to embed consumer incentives in EV policies

Ensure momentum behind e-2W and e-3W does not flag post sunset of national level FAME II policy → states with incentives seeing 2x better volumes

Catalyse rollout of fast charging infrastructure

India's mobility transition so far led by e-2W & e-3W which don't necessarily require dedicated infrastructure → but e-4W and e-Buses will

Payment Security Mechanism (PSM)

To allay concerns around credit risk of State Transport Corporations as they tender for e-Buses → electrification of public transport as vital as private transport

Finance ✓

To ensure finance is available on appropriate terms across the value chain, from manufacturing to consumer

Quantifying the financing opportunity: 2030 targets/vision

	2030 Target/Vision	Investment Requirement	
Power sector	**500GW non fossil** (COP26)	**USD 200 bn**	• CEEW estimates[1] (450GW RE)
Green hydrogen	**5MMT production capacity** (National Green Hydrogen Mission)	**USD 100 bn**	• National Green Hydrogen Mission
Electric mobility	**Differentiated penetration levels per category** (NITI Aayog vision for e-mobility)	**USD 12.3 bn** (Battery) **USD 2.9 bn** (Charging) **USD 206 bn** (Consumer)	• CEEW estimates[2] (per NITI Aayog's vision of various penetration levels)

1. Source: CEEW-CEF "RE-Financing India's Energy Transition"
2. Source: CEEW-CEF "Financing India's Transition to Electric Vehicles"

Quantifying the financing opportunity: 2070 net zero

Sector	Select indicators	Status in 2070 [1] (unless stated otherwise)	Investment requirement [2] (USD bn)	Investment gap [2] (USD bn)	Investment support [2] (USD bn)
Power	Coal	Peak by 2040, ~0% by 2060	8,412	3,098	1,239
	Solar	5,630 GW			
	Wind	1,792 GW			
	Nuclear	225 GW			
Industry	Coal	Peak by 2040, ~0% by 2065	1,494	448	179
	Hydrogen	19% share in industrial energy use			
Mobility	EVs (% of car sales)	84%	198	-	-
	EVs (% of freight truck sales)	79%			
Total			USD 10,103 bn	USD 3,546 bn	USD 1,419 bn

1. Source: CEEW "Implications of a Net-Zero Target for India's Sectoral Energy Transitions and Climate Policy"
2. Source: CEEW-CEF "Investment Sizing India's 2070 Net-Zero Target"

What does finance look like?

- At the **end of the money trail** for each of the three sub-transitions are **"hard assets"**
  - Power sector sub-transition (eg. solar panels, wind turbines, transmission lines)
  - Industrial sub-transition (eg. electrolysers)
  - Mobility sub-transition (eg. electric vehicles, charging infrastructure)

- **Hard assets**, (which one can touch, feel and also repossess) are **typically majority debt financed** → equity often accounts for a smaller portion

Debt	
1. Project debt (banks & NBFCs)	
2. Bonds	*Domestic & overseas (INR/$)*
3. Consumer loans (banks/NBFCs)	*Domestic (INR)*
4. Infrastructure debt funds (IDF)	
5. Hybrid platforms (InvIT)	

Equity	
1. Sovereign wealth funds	
2. Pension funds	
3. Private equity	*Overseas ($)*
4. Public equity	*Domestic & overseas (INR/$)*
5. Venture capital	

Cross-cutting levers

BRSR	Shadow Carbon Markets	Emerging Carbon Markets
• Business Responsibility & Sustainability Reports (BRSR) • Mandatory for top 1000 firms by market cap - Top 150 (FY 24 onwards) - All 1000 (by FY 27) • Disclosure to be made under 9 "Principles" under two streams - Essential - Leadership • Emissions falls under Principle 6 (*Businesses should respect and make efforts to protect and restore the environment*) - Scope 1 & 2 (Essential) - Scope 3 (Leadership)	• Energy Saving Certificates (ESCerts) - Introduced 2011 - Exchange traded - Represents MTOE energy savings achieved - Facilitates trade among "Designated Consumers" • Renewable Energy Certificates (RECs) - Introduced 2010 - Represents green attribute of 1MWh - Exchange traded - Facilitates trade among "Obligated Entities" - $1.29 billion worth of RECs traded between 2011 & 2021	<u>Domestic Carbon Market</u> • Carbon credit trading scheme (CCTS) notified in 2023 • Will set emissions intensity targets for obligated entities • Sectors, targets and timelines for implementation yet to be determined <u>Article 6</u> • Article 6.2 – mutual agreement between countries, Article 6.4 – centralised market • Countries have already started signing bilateral agreements for cooperation under 6.2 • India's whitelist of eligible Article 6.2 activities published

Role of MDBs/DFIs

- **Role should not be so much to compete** with the various sources of capital (both equity and debt) outlined earlier **but rather to complement** them by solving for financing challenges

- **Why?**
  - Global pools of private capital are much deeper than public pools
  - The existing aggregate exposures of MDBs to India pale in comparison to India's climate finance needs (tens of $ billions vs hundreds of $ billions required)

- How can **MDBs/DFIs complement?** By addressing the **three fundamental financing challenges**
  - Capital is just not flowing → **get it to start flowing**
  - Capital is flowing but too expensive → **lower its cost**
  - Capital is flowing, at pace and at reasonable cost but conventional sources are just not enough fund ambitions → **open up new sources**

Re-imagining climate finance

(From a mitigation perspective) climate finance is not necessarily an entirely novel way of raising and deploying capital – it may be viewed as

1. *Capital raised from sources that exist today*
   - Banks
   - Debt capital markets
   - Equity capital markets
2. *In the form of instruments that exist today*
   - Loans
   - Bonds
   - Shares
3. *Directed towards investment in technologies that exist today*
   - Solar & wind
   - EVs
   - Electrolysers

- With sources of private capital forming the foundation of finance flows
- And MDBs/DFIs working collaboratively with those sources to address the three fundamental financing challenges

Thank you

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