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Issue brief India: A pathway to realize ambitious transition targets

By Amin Mohseni-Cheraghlou, Utsav Saksena, and Frank Willey

Transforming energy systems in emerging markets and developing economies (EMDEs) to address climate change requires a significant increase in investment. However, existing initiatives to fund this transformation are wholly insufficient for these economies to generate clean energy at the scale required to meet rising demand while minimizing emissions. Several institutions have proposed a variety of investment structures to bridge this financing gap. This case study of Chile's energy sector—and others complementing a primary report—illustrates the potential for a guarantee-based mechanism to leverage private investment in EMDEs at a far greater multiple than other approaches currently being proposed.[1]

Overview: India's energy targets

India's first Nationally Determined Contribution (NDC) under the Paris Agreement, in 2015, stipulated two quantitative targets to be met by 2030: reduction of emissions' intensity of gross domestic product (GDP) by 35 percent from 2005 levels; and 40 percent of electric power installed capacity from non-fossil fuel sources. India, which accounts for about 8 percent of global greenhouse gas (GHG) emissions, achieved these targets well in advance—in 2019 and 2021, respectively.[2]

India updated its NDC in August 2022, increasing its targeted share of non-fossil fuel installed capacity and its reduction in emission intensity to 50 percent and 45 percent, respectively.[3] Although not part of its NDC, India set an additional target of 500 gigawatts (GW) of renewable energy installed capacity by 2030.[4]

Overall, progress on these targets has been mixed. Installed capacity from non-fossil fuel sources stands at about 47 percent of the

1. Amin Mohseni-Cheraghlou and Frank Willey, "Scaling up Private Capital for Climate Investment in Emerging Markets," Atlantic Council, June 16, 2025, https://www.atlanticcouncil.org/wp-content/uploads/2025/06/Scaling-up-private-capital-for-climate-investment-in-emerging-markets.pdf; Ian Callaghan, et al., "Guarantees 2.0: Meeting Climate Finance Needs in the Global South," Atlantic Council, September 18, 2023, https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/guarantees-2-0-meeting-climate-finance-needs-in-the-global-south.
2. "Economic Survey 2023–24, Chapter 6: 'Investment and Infrastructure: Keeping It Going,'" Government of India Ministry of Finance, 2024), 183, https://www.indiabudget.gov.in/economicsurvey/doc/eschapter/echap06.pdf.
3. "India's Updated First Nationally Determined Contribution under Paris Agreement (2021–2030)," Government of India, August 2022, https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf.
4. "The Solar Surge: India's Bold Leap Toward a Net Zero Future," Government of India Press Information Bureau, August 19, 2025, https://www.pib.gov.in/PressNoteDetails.aspx?id=155063&NoteId=155063&ModuleId=3.

Figure 1: India's total energy supply, 2023

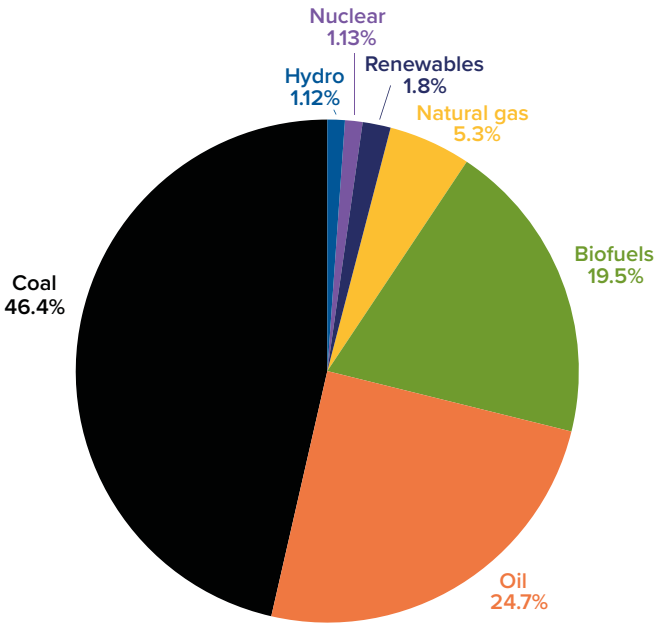


Figure 2: Evolution of India's total energy supply, 2000–2023

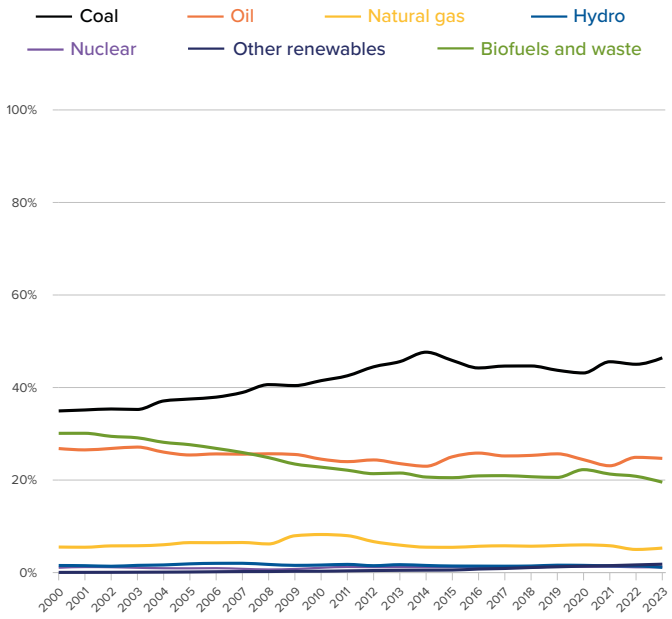


Figure 3: India's electricity generation sources, 2023

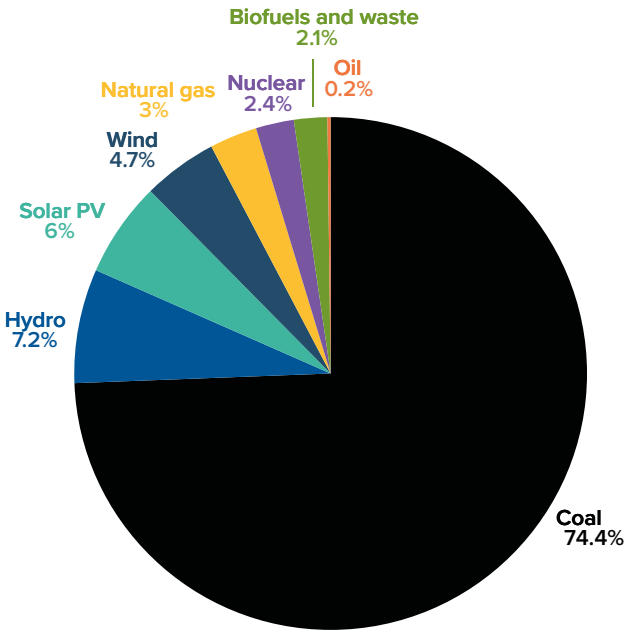
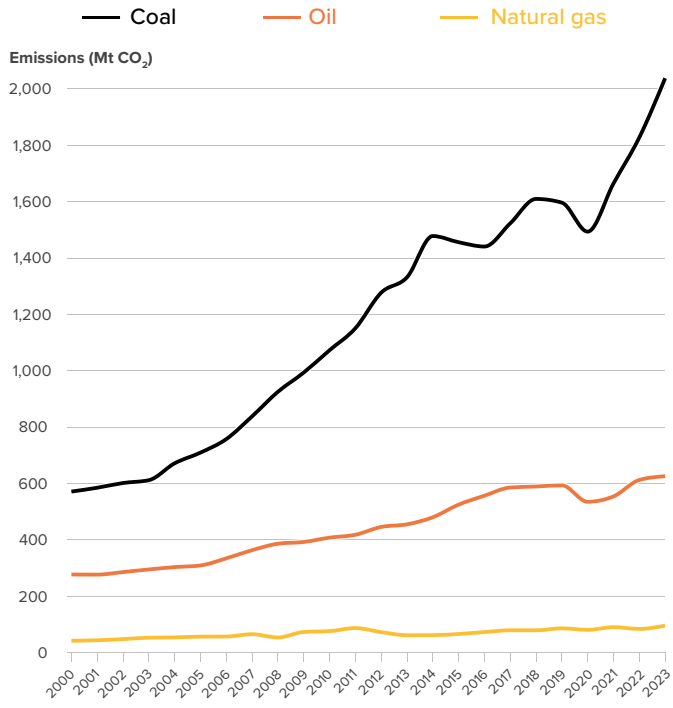


Figure 4: Evolution of India's CO_2 emissions by fuel, 2000-2023



Source: India, International Energy Agency.

Figure 5: Share of modern renewables in India's final energy consumption (percentage), 2000–2022 (ranked fifty-second in the world)

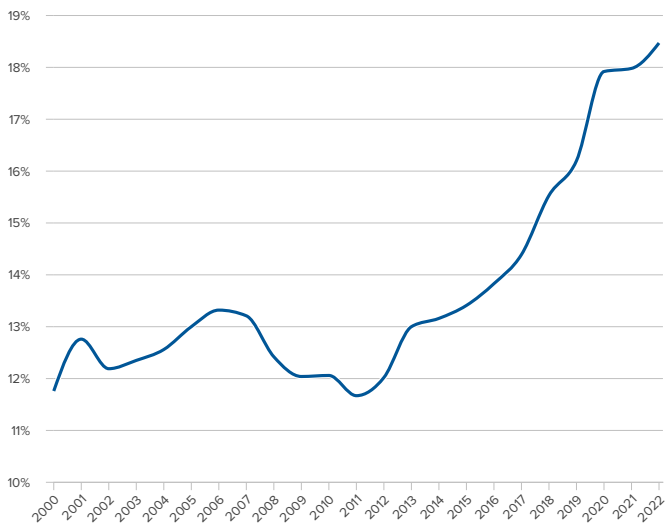
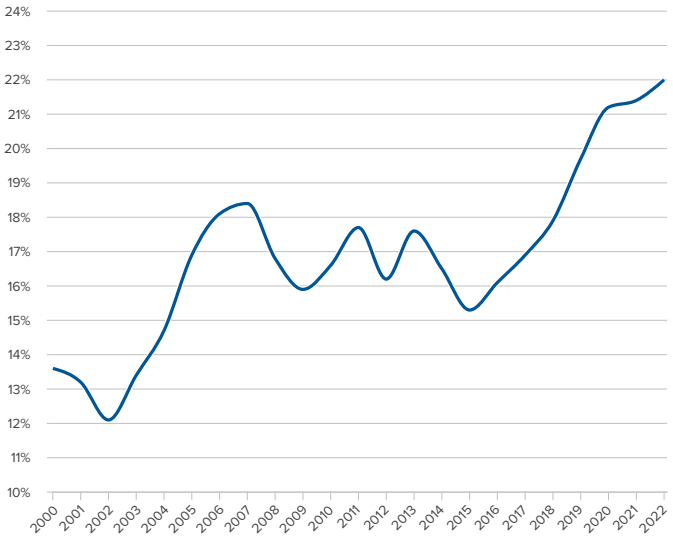


Figure 6: Renewables share of India's electricity generation (percentage), 2000–2022 (ranked eighty-ninth in the world)



Source: India, International Energy Agency.

total, which is close to the new NDC target of 50 percent.[5] However, in absolute terms, cumulative non-fossil fuel installed capacity stands at 203 GW, about 40 percent of the 2030 target.[6]

Moreover, coal (46 percent) and oil (25 percent) continue to dominate India's overall energy supply mix. The share of coal in electricity generation is 74 percent, with renewables and nuclear lagging far behind.[7] India has significant renewable energy potential due to abundant solar and wind resources, and the government has taken a number of steps to foster a favorable regulatory environment (discussed below), but the share of renewables in India's total energy consumption has only increased from 12 percent to 18 percent over the past two decades. The share of renewables in electricity generation has increased from 14 percent to 22 percent. A lack of financing and investment has been the main bottleneck.

Financing requirements and recent trends

Estimates for India's financing requirements to fulfill its climate and energy goals range considerably. The 2015 NDC document estimated a cumulative financing requirement of $2.5 trillion by 2030.[8] According to the government's Niti Aayog think tank, India's total investment costs stand at $250 billion per year until 2047, in line with the 2070 net-zero target.[9] Another estimate calculates total financing requirements at $10.1 trillion by 2070, implying an annual amount of about $200 billion.[10] According to a 2023 study by the World Bank's International Finance Corporation and the International Energy Agency,

5. "Power Sector at a Glance: 'All India,'" Government of India Ministry of Power, November 2024, https://powermin.gov.in/sites/default/files/uploads/power_sector_at_glance_Nov_2024.pdf.
6. "India's Renewable Energy Capacity Hits New Milestone: Renewable Energy Now Constitutes More than 46.3% of Total Capacity," Government of India Ministry of New and Renewable Energy, November 13, 2024, https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2073038.
7. "India," International Energy Agency, last visited October 16, 2025, https://www.iea.org/countries/india.
8. In India, the fiscal year (FY) starts on April 1 and ends on March 31 of the next calendar year. Note that in nominal terms, the $166.7 billion would correspond to a higher annual amount, subject to inflation and an appropriate discount rate.
9. "Economic Survey 2023–24," 198.
10. "India Will Require Investments Worth over USD 10 Trillion to Achieve Net-Zero by 2070," Council on Energy, Environment and Water (CEEW), November 18, 2021, https://www.ceew.in/press-releases/india-will-require-investments-worth-over-usd-10-trillion-achieve-net-zero-2070-ceew.

India's yearly requirements for clean energy investments alone stand at between $253 billion and $263 billion for 2026–2030, rising to between $325 billion and $355 billion from 2031–2035.[11]

Actual investments, however, have been significantly lower than any of these estimates. According to recent calculations, total investment stood at just $50 billion for 2021–2022.[12] These investments were spread across clean energy (47 percent), energy efficiency (35 percent), and transportation (18 percent). Out of the total amount, 66 percent, or about $33 billion, came from the private sector. Further, $27.5 billion was sourced domestically, while $5.2 billion came from international sources.[13]

Still, though existing investments are highly insufficient for India's overall climate and transition goals, they have been consistently rising (apart from a blip during the COVID-19 period). The share of the private sector in total investments increased to 66 percent in 2021–2022 from 50 percent in 2019–2020.[14] Moreover, specific sectors have seen rapid growth. For example, private investment in clean energy increased from $9 billion in 2019–2020 to $16 billion in 2021–2022, an increase of about 80 percent. Interestingly, the bulk of private-sector finance comes directly from banks' balance sheets, with project finance accounting for about 10 percent of total private-sector investment.

Historically, India has advocated for grant-based concessional finance toward developing countries' climate targets, under the common but differentiated responsibilities principle of the Paris Agreement. Both the 2015 and 2022 NDC documents look toward the Green Climate Fund (GCF) to mobilize "low-cost international finance" for renewable energy targets. They make no reference to private finance. More recently, the Ministry of Finance cast doubt on the private sector's ability to meet the scale of global climate finance by itself, also noting that the costs associated with such funding could affect macroeconomic stability in developing countries.[15]

Rather, India seems to seek a balance of public and private capital for funding its climate requirements. The government's chief economic advisor (CEA), for example, noted in 2023 that private finance is an "unavoidable option" for India's green transition, but the associated challenges—such as volatility of capital flows and a bias toward high-return projects and sectors—need to be assessed adequately.[16] Further, in January 2024, both the country's finance minister and the Group of Twenty (G20) sherpa called for multilateral development banks (MDBs) and international financial institutions (IFIs) to support innovative financing models to mobilize private capital.[17]

On the domestic front, India has undertaken a number of measures to raise private capital.

- *Green taxonomy*: In May 2025, the Ministry of Finance came out with a framework climate taxonomy document, which outlines some high-level principles. This constitutes the first step in the development of India's official climate taxonomy.
- *Sovereign Green Bond (SGrB) Framework*: In 2022, the Indian government announced the introduction of these bonds aimed at mobilizing resources for projects that it classifies as green (including transition-themed

11. "Scaling Up Private Finance for Clean Energy in Emerging and Developing Economies," International Energy Agency and International Finance Corporation, 2023, 58, https://iea.blob.core.windows.net/assets/a48fd497-d479-4d21-8d76-10619ce0a982/ScalingupPrivateFinanceforCleanEnergyinEmergingandDevelopingEconomies.pdf.
12. Malini Chakravarty, et al., "Landscape of Green Finance in India: India's Green Investment Flows in FY 2021/22," Climate Policy Initiative and Center for Sustainable Finance India, December 2024, https://www.climatepolicyinitiative.org/wp-content/uploads/2024/12/Landscape-of-Green-Finance-in-India.pdf. The report calculates an average of two years, FY 2020–2021 and FY 2021–2022.
13. Chakravarty, et al., "Landscape of Green Finance in India."
14. Neha Khanna, Dhruba Purkayastha, and Shreyans Jain, "Landscape of Green Finance in India: India's Green Investment Flows in FY 2019–20," Climate Policy Initiative, August 2022, https://www.climatepolicyinitiative.org/wp-content/uploads/2022/08/Landscape-of-Green-Finance-in-India-2022-Full-Report.pdf
15. "Economic Survey 2023–24," 204.
16. Gulzar Natarajan and V. Anantha Nageswaran, "Harnessing Private Capital for Global Public Goods: Issues, Challenges and Solutions," Centre for Social and Economic Progress, October 2023, https://csep.org/wp-content/uploads/2023/10/Harnessing-private-capital-for-global-public-goods-1.pdf.
17. "Climate Conference 2024 'Decoding the Green Transition for India,'" India Ministry of Environment, Forest and Climate Change, January 12, 2024, https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1995506; "Union Minister for Finance and Corporate Affairs Smt. Nirmala Sitharaman Meets AIIB Board of Directors in New Delhi, Today," Government of India Ministry of Finance, November 11, 2024, https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2072522.

projects).[18] The first bonds were auctioned in 2023.[19] SGrBs are available to foreign investors without any restrictions.[20]

- *Corporate Green Bond Framework*: In 2021, the capital market regulator, the Securities and Exchange Board of India (SEBI), established a framework for the issuance of green corporate bonds, with details on the eligibility criteria for green projects, as well as associated disclosure and verification requirements.[21]
- *Green deposits*: In 2023, the Reserve Bank of India (RBI) introduced a framework for green deposits, wherein interest-bearing deposits at banks and other regulated entities would be utilized for financing green activities and projects. This framework introduced an interim list of sectors and activities that these deposits could fund, pending the finalization of the official green taxonomy.[22]
- *Priority-sector lending (PSL)*: The RBI's long-standing PSL policy mandates that a certain proportion of a bank's loan portfolio be directed toward developmental sectors such as agriculture and micro, small, and medium enterprises (MSME). Small ticket loans to the renewable energy sector were included in this scheme in 2015.[23]
- *Reforms in the renewable energy sector*: The government has taken steps to attract investment in the renewables sector, including
  - allowing 100-percent automatic route foreign direct investment (FDI) in renewable energy projects (i.e., full foreign ownership without specific government approval);
  - laying out renewable purchase obligations (RPOs)—a requirement for distribution firms to purchase a minimum percentage of electricity from renewable energy sources—until fiscal year 2029–2030;
  - introducing the Green Term Ahead Market (GTAM), a pan-India, high-frequency trading platform for renewable energy contracts, in 2020.[24]

Unlocking capital: A guarantee facility to scale up private investment

Despite this progress toward increasing the deployment of renewable energy, India clearly needs to raise much more private capital than it has been able to galvanize for the country's energy transition.

Robust guarantee mechanisms like the proposed Emerging Market Climate Investment Compact (EMCIC) could help attract both FDI and domestic private capital. The mechanism is aimed at mobilizing $100–500 billion in private capital over the next decade to scale green energy and nature-based investments across EMDEs by making these investments "investment grade" in the eyes of internal credit committees. EMCIC would offer institutional investors credit guarantees covering up to 80 percent of non-currency risks across diversified climate-focused project portfolios. These risks, which are common to all energy projects to varying degrees, include regulatory and revenue risks, transmission bottlenecks and curtailment, price

18. A green project is one that fulfils one or more of the following criteria: Encourages energy efficiency; reduces carbon emissions and greenhouse gases, promotes climate resilience and/or adaptation; and "values and improves" natural ecosystems and biodiversity. See: "Framework for Sovereign Green Bonds," Government of India Ministry of Finance, 2022, https://dea.gov.in/files/policy_and_guidelines_document/FrameworkSovereignGreenBonds.pdf.
19. Farah Imrana Hussain and Helena Dill, "India Incorporates Green Bonds into Its Climate Finance Strategy," World Bank, June 12, 2023, https://blogs.worldbank.org/en/climatechange/india-incorporates-green-bonds-its-climate-finance-strategy.
20. "India Fourth Biennial Update Report to the United Nations Framework Convention on Climate Change," India Ministry of Environment, Forest and Climate Change, December 2024, 63, https://unfccc.int/sites/default/files/resource/India%20BUR-4.pdf?download.
21. "Revised Disclosure Requirements for Issuance and Listing of Green Debt Securities," Securities and Exchange Board of India, February 6, 2023, https://www.sebi.gov.in/legal/circulars/feb-2023/revised-disclosure-requirements-for-issuance-and-listing-of-green-debt-securities_67837.html; "Issue and Listing of Non-Convertible Securities Regulations 2021," Securities and Exchange Board of India, August 9, 2021, https://www.sebi.gov.in/legal/regulations/aug-2021/securities-and-exchange-board-of-india-issue-and-listing-of-non-convertible-securities-regulations-2021_51764.html.
22. "Framework for Acceptance of Green Deposits," Reserve Bank of India, April 11, 2023, https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=12487.
23. "Priority Sector Lending—Targets and Classification," Reserve Bank of India, April 23, 2015, https://www.rbi.org.in/commonman/Upload/English/Notification/PDFs/NT57323042015.PDF.
24. "Non-fossil Fuel Sources Account for Nearly 44 per Cent of India's Total Installed Electricity Generation Capacity," Government of India Ministry of New and Renewable Energy, December 6, 2023, https://pib.gov.in/PressReleasePage.aspx?PRID=1983201; "Indian Power Market Goes Green," Government of India Ministry of New and Renewable Energy, September 1, 2020, https://pib.gov.in/PressReleasePage.aspx?PRID=1650384.

volatility, and permitting and environmental challenges. The lender will need to evaluate the specific risks of each project to its portfolio and seek guarantees only for projects with risks that fit within parameters established by EMCIC.

EMCIC has several distinguishing features in comparison to other guarantee mechanisms and facilities. One distinctive feature of EMCIC is that it would not require sovereign guarantees from the countries where investments are made, which is a common barrier to project bankability in emerging market countries that often have existing indebtedness and cannot further strain their sovereign balance sheet with guarantees.[25] Instead, it would shift due diligence responsibilities onto prequalified investors, who would be required to manage diverse, standards-compliant investment portfolios across multiple markets. Second, EMCIC would provide comprehensive coverage of all risks except for currency risks, for which it will rely on market-based currency hedging operations. Many existing facilities only cover certain risks on projects (see table). Third, EMCIC presents a user-friendly, scalable model that reduces barriers for private investors that are unfamiliar or inexperienced with blended finance transactions while upholding robust environmental and social safeguards. EMCIC would pre-qualify private investors to use the guarantees based on a set of standards that are similar to existing standards governing climate investment-driven facilities. However, after pre-qualifying investors, the EMCIC facility would not perform due diligence itself. Instead, private investors would carry out their own due diligence, while the facility would perform spot checks on projects within each investor's portfolio to verify compliance with established standards and key performance indicators (KPIs).

By leveraging existing financial instruments alongside EMCIC's proposed risk-sharing mechanism, India could bridge its financing gap and accelerate its transition to a low-carbon economy. As a starting point, priority within EMCIC-backed portfolios should be given to lower-risk projects such as carbon capture, retirement of coal-fired plants in favor of natural gas, solar photovoltaic (PV), and wind farms.

India is a prime candidate for inclusion in EMCIC's proposed guarantee portfolio, given the country's status as a large EMDE with well-developed business and financial sectors.[26] This is further underscored by its strong ranking of seventh in EY's Renewable Energy Country Attractiveness Index (RECAI). India's favorable renewable energy policies, flourishing high-tech sector, increasing demand from rapid population and economic growth, and relatively low regulatory and political risks—along with the active role of the government—play a major role in creating this environment. Joining the proposed EMCIC while also focusing on involving international donors, MDBs, and innovative financial solutions such as blended finance and concessional funding could help India bridge the investment gap and drive its renewable energy agenda.

25. Mohseni-Cheraghlou and Willey, "Scaling up Private Capital."
26. The EMCIC concept note mentions that given its investor-led focus, clients in large EMDEs with a well-developed private sector would constitute good "initial targets" for the compact. Ian Callaghan, "Concept Note: Emerging Market Climate Investment Compact," Atlantic Council, September 2023, https://www.atlanticcouncil.org/wp-content/uploads/2023/09/Concept-Note_Emerging-Market-Climate-Investment-Compact-1.pdf.

Table 1: A comparison of proposed and active guarantee facilities

Guarantee provider	Eligible projects			Risks covered						Leverage	Funding	Target capitalization
	Clean energy	Nature-based / adaptation	SDG-aligned / other development goals	Project execution / construction	Political	Credit / default	Commercial / performance	First-loss / equity	Currency			
Proposed/In-Progress												
EMCIC	✓	✓	✗	✓	✓	✓	✓	✓ (anticipated)	✗	~1:10	5–10 developed countries	~$10B (proposed facility)
BRICS Guarantee Platform	✓	✗	✓	✗	✓	✓	✗	✓ (possible)	✗	~1:10	Existing NDB balance sheet	NDB capital: $100B authorized
The Green Guarantee Company	✓	✗	✗	✗	✗	✓	✓	✗	✗	~1:10	FCDO, GCF, NSIA, USAID / Prosper Africa, Norfund	$100M+ initial target
Active												
MIGA Guarantees	✓	✗	✗	✓	✓	✓	✓	✗	✗	~1:5–10	World Bank Group resources	$2.8B subscribed capital; targeting $20B annual issuance by 2030
IFC Guarantees	✓	✗	✗	✓	✓	✓	✓	✗	✗	~1:4–8	IFC balance sheet / blended finance	$40.9B total capital (June 2025)
iTrust Guarantee (RELP)	✓	✗	✗	✓	✗	✓	✓	✗	✗	TBF	Private investors	TBF
EFSD+	✓	✗	✓	✗	✓	✓	✓	✗	✗	~1:10	EU budget / EIB / DFIs	€60B target by 2027
African Development Bank Guarantees	✓	✗	✗	✓	✓	✓	✓	✗	✗	~1:6–8	AfDB capital base / donor trust funds	$318B authorized capital (2024)
DOE Loan Guarantee Program	✓	✗	✓	✓	✗	✓	✓	✗	✗	~1:10–15	US Federal appropriations	$290B loan authority through 2026
PIDG (GuarantCo)	✓	✓	✓	✓	✓	✓	✓	✗	✓	~1:3–10	UK, Netherlands, Switzerland, Australia, Sweden, Germany, Canada, IFC	~$1.5B in guarantees issued to date
Africa GreenCo	✓	✗	✗	✓	✗	✓	✓	✗	✓	~1:10	InfraCo Africa, IFU, GuarantCo backing	$27M GuarantCo guarantee facility
Infracredit (Nigeria)	✓	✗	✓	✓	✗	✓	✓	✗	✗ (local currency only)	~1:5–8	NSIA, GuarantCo, KfW, AFC, AfDB, InfraCo Africa	~~₦~~15B ($35M) initial capital
Asian Development Bank (ADB)	✓	✓	✓	✓	✓	✓	✓	✗	✓	~1:5–10	ADB capital / donor funds	$165B authorized capital (2024)
Asian Infrastructure Investment Bank (AIIB)	✓	✓	✓	✓	✓	✓	✓	✗	✗	~1:5–8	AIIB capital base	$100B authorized capital
IDA (World Bank)	✓	✓	✓	✓	✓	✓	✓	✗	✗	~1:5–10	IDA donor contributions	$93B IDA20 (2022-2025)
IBRD (World Bank)	✓	✓	✓	✓	✓	✓	✓	✗	✗	~1:5–10	IBRD capital / borrowings	$283B subscribed capital
European Investment Bank (EIB)	✓	✓	✓	✓	✓	✓	✓	✗	✗	~1:8–12	EIB capital / EU budget backing	€248.8B subscribed capital (2023)
Export-Import Bank of the United States	✓	✗	✗	✓	✓	✓	✓	✗	✗	Varies	US Government backing	$135B statutory exposure cap

Legend: ✓ = Covered/Eligible; ✗ = Not covered/Not eligible; **TBF** = To be finalized; **—** = Information not available; **Active** = Currently operational; **Proposed** = Under development; Leverage ratios indicate typical mobilization of private capital per dollar of guarantee/funding.

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