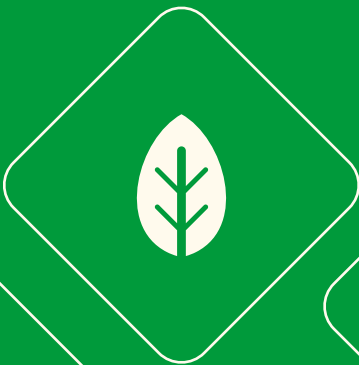




THE CONTRIBUTIONS OF THE NEW DEVELOPMENT BANK TO THE ENERGY TRANSITION PROCESS OF BRICS COUNTRIES (2016-2023)



BRICS
Policy Center
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e Pesquisas BRICS



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Maria Elena Rodriguez¹

Rafaela Mello Rodrigues de Sá²

Octávio Henrique Alves Costa de Oliveira³

Renan Guimarães Canellas de Oliveira⁴

1. Professor at the Institute of International Relations PUC-Rio. Coordinator of the Development Cooperation and Financing Laboratory (LACID) Brics Policy Center

2. Master in International Relations PUC-Rio.

3. PhD student at the Institute of International Relations PUC-Rio. LACID Team

4. Master's student at the Institute of International Relations PUC-Rio. LACID Team

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BPC TEAM

Director of the Institute of International Relations

Isabel Rocha de Siqueira

Director of the Brics Policy Center

Marta Fernández

Academic Board

Isabel Rocha de Siqueira

Maria Elena Rodriguez

Marta Fernández

Administrative Coordinator

Lia Frota e Lopes

Project Officer

Clara Costa

Project Assistant

Luana Freitas

Rua das Laranjeiras, 307, 3º andar – Casas Casadas | Laranjeiras

Rio de Janeiro/RJ CEP: 22240-004

www.bricspolicycenter.org / bpc@bricspolicycenter.org



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Policy Center
Centro de Estudos
e Pesquisas BRICS

Authors:

Maria Elena Rodriguez

Rafaela Mello Rodrigues de Sá

Octávio Henrique Alves Costa de Oliveira

Renan Guimarães Canellas de Oliveira

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1. INTRODUCTION



Considering the growing relevance of Multilateral Development Banks (MDBs) to finance the global process of energy transition, it is important to understand the efforts of these institutions to establish projects for reducing carbon emissions in many different economic sectors, especially in energy. This paper specifically analyzes the role the New Development Bank (NDB) plays in this process, presenting a new overview in its loan portfolio and goals regarding its contribution to the energy transition process.

The NDB, formerly called the BRICS Development Bank, stands out with its strategies in the area of clean energy, with a goal of dedicating 40% of its financing initiatives to climate projects in 2026, including operations supporting the clean energy transition (NDB, 2022a, p.28).

It is an ambitious goal and fitting to the field the NDB's area of operation. Together with nine other banks⁵, the NDB is a part of the Joint MDB Climate Finance Group,

created in 2011 to coordinate banking actions in global climate change. The group issues yearly reports measuring efforts by MDBs to combat climate change. In 2017, the group announced a joint framework for reaching the objectives of the Paris Agreement, tailoring their operations and metrics to assess their respective contributions to adapting to and mitigating climate change (World Bank, 2018).

If the NDB achieves its objective, it would be closer to the average value allocated for these purposes by MDBs, which expend on average 43% of their portfolio on climate change. The bank is currently the second-lowest contributor, with a contribution of 28%. Such a goal would also be within the average established by the Joint Group after the Covid-19 pandemic, both in terms of percentage and proximity to goal. Table 1 and Figure 1 put into perspective the current status of MDBs' contributions to climate change actions.

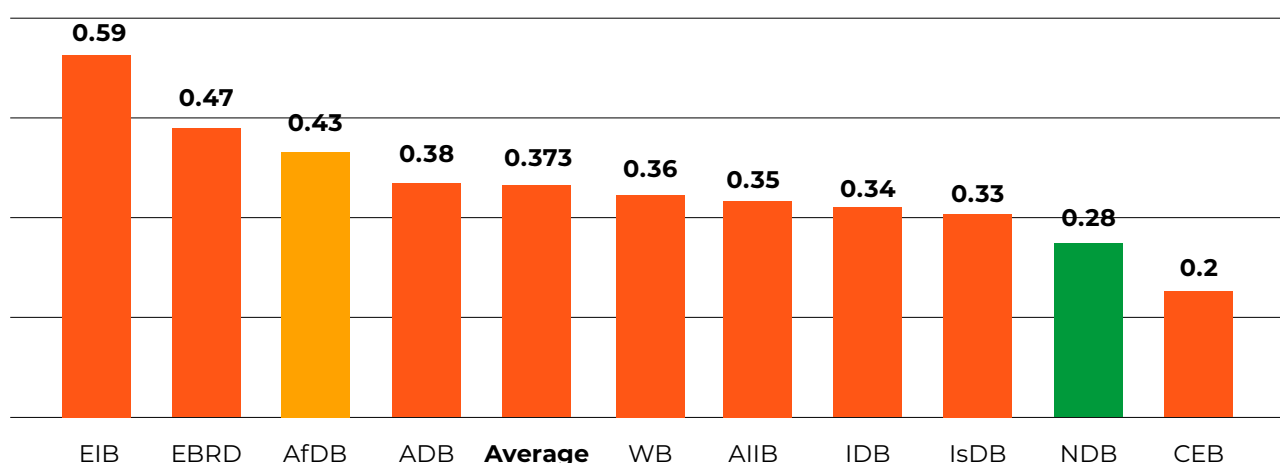
5. These banks are the African Development Bank (AfDB); the Asian Development Bank (ADB); the Asian Infrastructure Investment Bank (AIIB); the European Bank for Reconstruction and Development (EBRD); the European Investment Bank (EIB); the Inter-American Development Bank (IDB); the Islamic Development Bank (IsDB); the New Development Bank (NDB); and the World Bank (WB).

Table 1: Current MDB contributions to climate change and post-pandemic goals⁶

BANK'S CLIMATE TARGETS			
Bank	Current values (2022)	Goal	Period
AfDB	45%	Climate financing representing 40% of total annual approvals, of which at least 50% is for climate adaptation.	2020 - 2025
ADB	39%	75% of operations (on a three-year moving average) allocated to climate change mitigation and adaptation, totaling USD 100 billion.	2019 - 2030
AfDB	35%	50% of approvals, totaling USD 50 billion (accumulated)	2025 (50%), 2030 (50 billion)
EBRD	43%	50%	2025
EIB	57%	50%	2025
IDB	34%	Over 30%	2020 - 2023
IsDB	33%	35%	2025
NDB	28%	40%	2022 - 2026
WB	37%	35%	2021 - 2025
Average	39%	45%	2026

Source: Original work based on EIB (2023).

Figure 1: Percentage of MDB portfolios allocated to climate change (2019-2022)



Source: Original work from EIB (2023).

6. Among all banks, the Council of Europe Development Bank (CEB) was the only one not to mention a goal, which influences the average percentage of current values allocated to climate change. The average with CEB is 37.3%, while without CEB, it rises to 39%.

To that end, this study aims to assess the projects financed⁷ by the NDB from its beginning in 2016 through 2023 in order to analyze the overall trends in operations for member countries' economic transition processes. For this analysis, projects available on the institution's website were mapped from 2016 to 2023, emphasizing financing approvals that were categorized as belonging to the energy sector or that mentioned efforts to reduce carbon emissions in a certain sector.

An original table was created to help create this document (Appendix A). In addition to the categories available on the bank's website, such as social and environmental projects and their status, new categories were created by this document's authors. They were: "Energy transition" and "Decarboni-

zation or Energy Efficiency." The first category designates projects as contributing to the energy transition or not by considering the term "energy transition" and related forms in project descriptions. The main criteria for their choice being the description of projects that mention one or both terms, directly or indirectly.

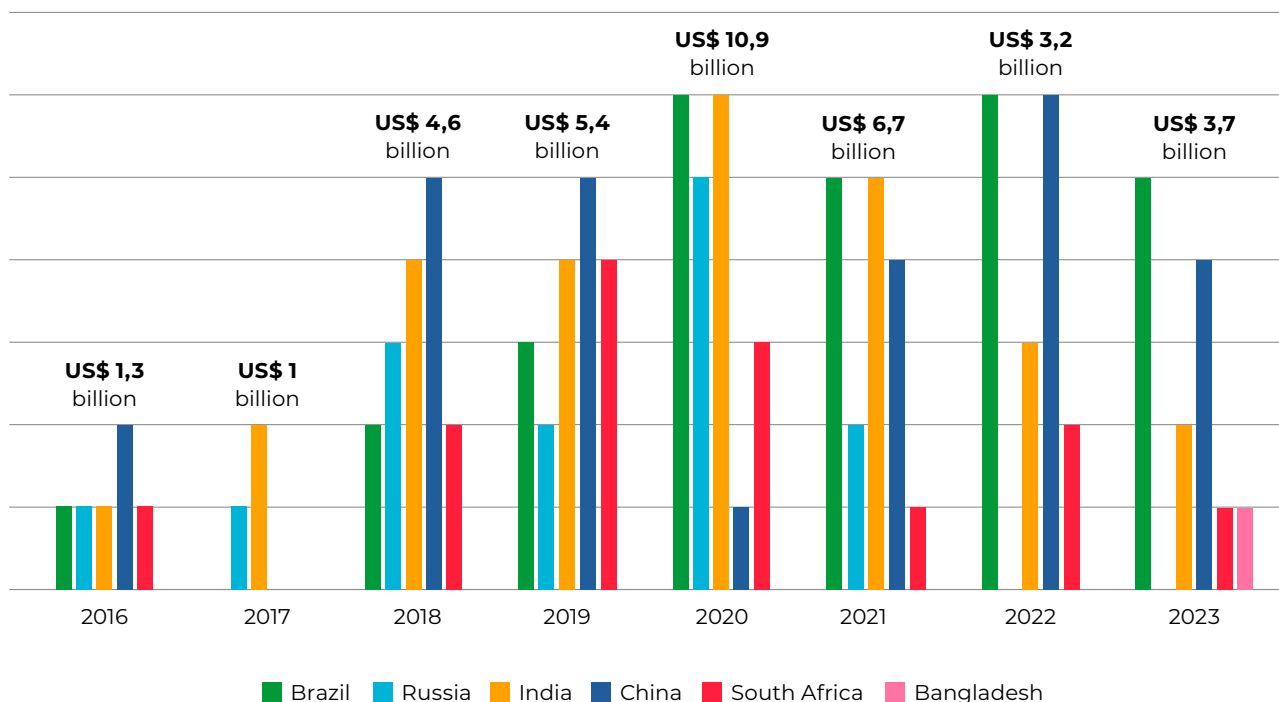
The first section offers a general overview of the bank's investments through 2023, analyzing them yearly by sector. The second section aims to define how institutions view the energy transition, and what such a definition implies, as different institutions approach the topic in different ways. Finally, we offer an overview of NDB's investment in the energy transition compared to other banks' investments and review its progress in this sector.

7. Approved projects and projects awaiting board approval were considered.



Mapping projects, we observed a trend of relative growth in financing over time, with a noticeable difference between countries, as seen in the figure below:

Figure 2: Distribution of projects approved by NDB by country (2016–2023)



Source: Original work based on NDB (2023a).

In Brazil, due to loans received because of the Covid-19 pandemic, the year of 2020 was a record in terms of values granted, with around USD 3.4 billion distributed across six projects. Brazil's constant growth as a borrower is worth mentioning, becoming the member with the highest number of projects approved (21) and loans between 2019 and 2022 totaling at le-

ast USD 700 million per year. China and India have stayed the main borrowers, being in first and second place historically, with USD 9.8 and USD 9.0 billion accumulated up to 2023 respectively. Russia, on the other hand, due to financial sanctions due to its military operation in Ukraine, did not record any projects between 2022 and 2023. In terms of volume of financing, 2020





8. In order to keep its international reputation, the NDB decided to stop new operations in Russia after it began its invasion of Ukraine: "In light of unfolding uncertainties and restrictions, NDB has put new transactions in Russia on hold. NDB will continue to conduct business in full conformity with the highest compliance standards as an international institution." (NDB, 2022b)

stands out with a total of USD 12 billion, due to emergency Covid-19 pandemic recovery measures.

A look at project distribution by sector confirms bank's prioritization of clean energy,





the sector being third place⁹ in terms of total loan value. However, although it has the second most projects (19), it is the sector with the third lowest average value per project, of just USD 258.53 million.

Table 2: NDB's definitions for approval categories¹⁰

 <p>CLEAN ENERGY AND ENERGY EFFICIENCY</p>	<p>NDB will continue to support member countries' transition to low-emission economies, focusing on financing projects that involve the implementation of large-scale clean and renewable energy, as well as those that increase the efficiency of energy systems. The bank will not consider financing any new capacity of coal energy generation.</p>
 <p>ENVIRONMENTAL PROTECTION</p>	<p>NDB's objective is to support projects that involve the conservation and restoration of key ecosystems, to promote nature-based solutions and better natural resource management, to contribute to pollution prevention and reduction, and to reduce or reverse the negative impact of social and economic activities.</p>
 <p>TRANSPORT INFRASTRUCTURE</p>	<p>NDB will support both intercity and intracity transport networks as well as infrastructure that promotes regional connectivity in order to facilitate the movement of people, services, and assets. To meet security and sustainability requirements, the Bank will prioritize transport infrastructure projects that improve efficiency and reduce greenhouse emissions, as well as those with the appropriate security measures and socially inclusive amenities.</p>
 <p>DIGITAL INFRASTRUCTURE</p>	<p>NDB will finance projects that involve the expansion and modernization of national and international digital backbones, such as land and underwater cables, towers, and telecommunication stations. To achieve universal, economical access, the Bank will prioritize projects in-underserved areas and those which improve last-mile connectivity to meet end users' needs.</p>

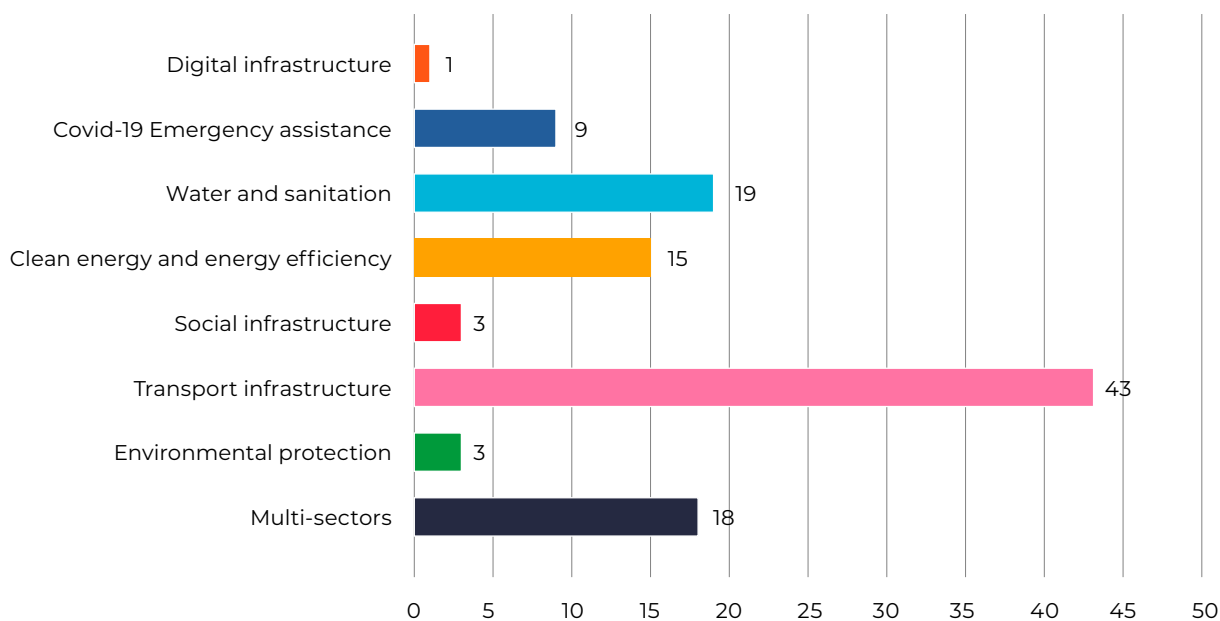
9. We did not take Covid-19 projects into consideration, as they happened only between 2020 and 2021 and had an average value of USD 1 billion.

10. These categories were listed how they are currently described in the most recent annual report. The projects were classified by their current categorizations available on the bank's website as accessed on January 4, 2024. This remark is necessary as the bank's projects categorizations have changed over the years, affecting how they are reported.

	WATER AND SANITATION	<p>NDB will finance projects for universal access to drinking water and sanitation, promoting the sustainable management of water resources and reducing vulnerability and exposure to water-related disasters, especially those caused by climate change.</p>
	SOCIAL INFRASTRUCTURE	<p>NDB will finance the construction and organization of social infrastructure, such as schools, hospitals, low-income housing, cultural heritage sites, and other long-term physical assets that support social services and a better quality of life.</p>
	MULTI-SECTORS	<p>Projects that cover different sectors simultaneously.</p>
	COVID-19 EMERGENCY ASSISTANCE	<p>Projects created during the Covid-19 pandemic, geared to relieving the social and economic consequences caused by the crisis.</p>

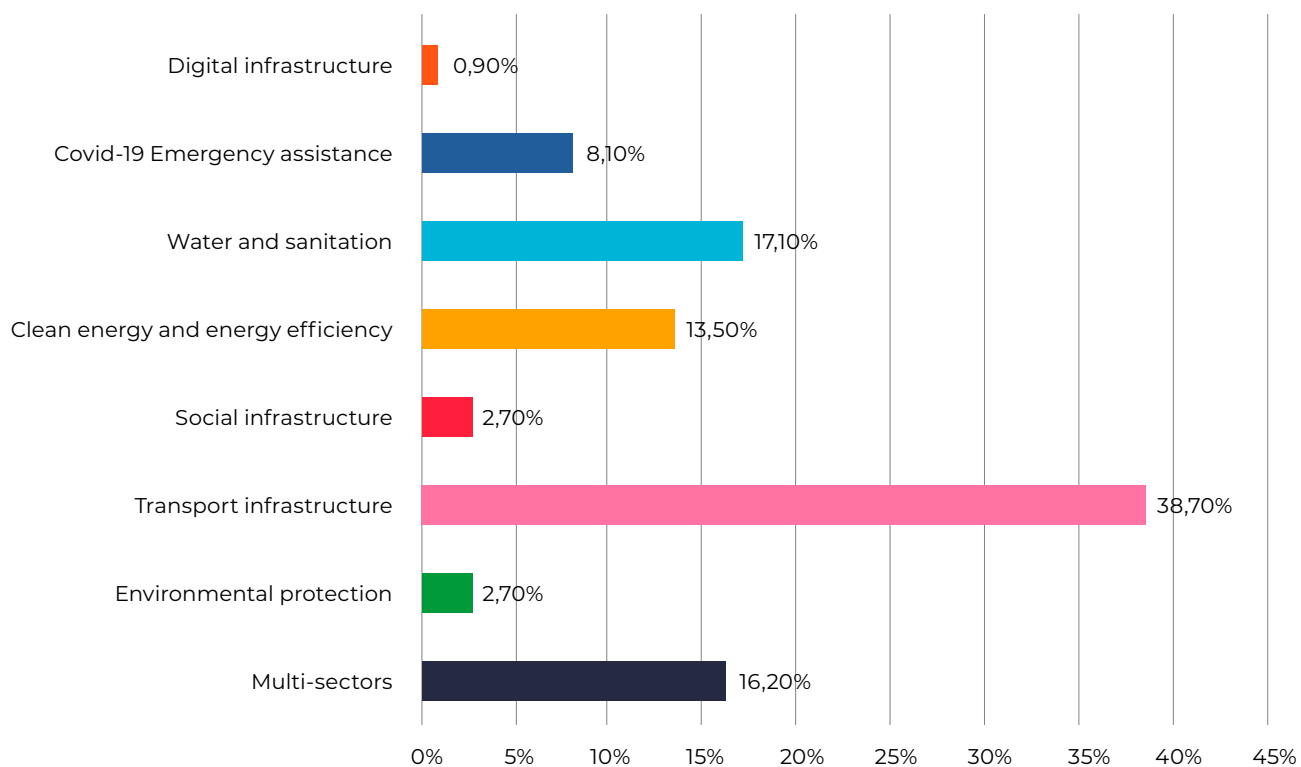
Source: NDB, 2023b.

Figure 3: Number of NDB projects by sector (2016–2023)



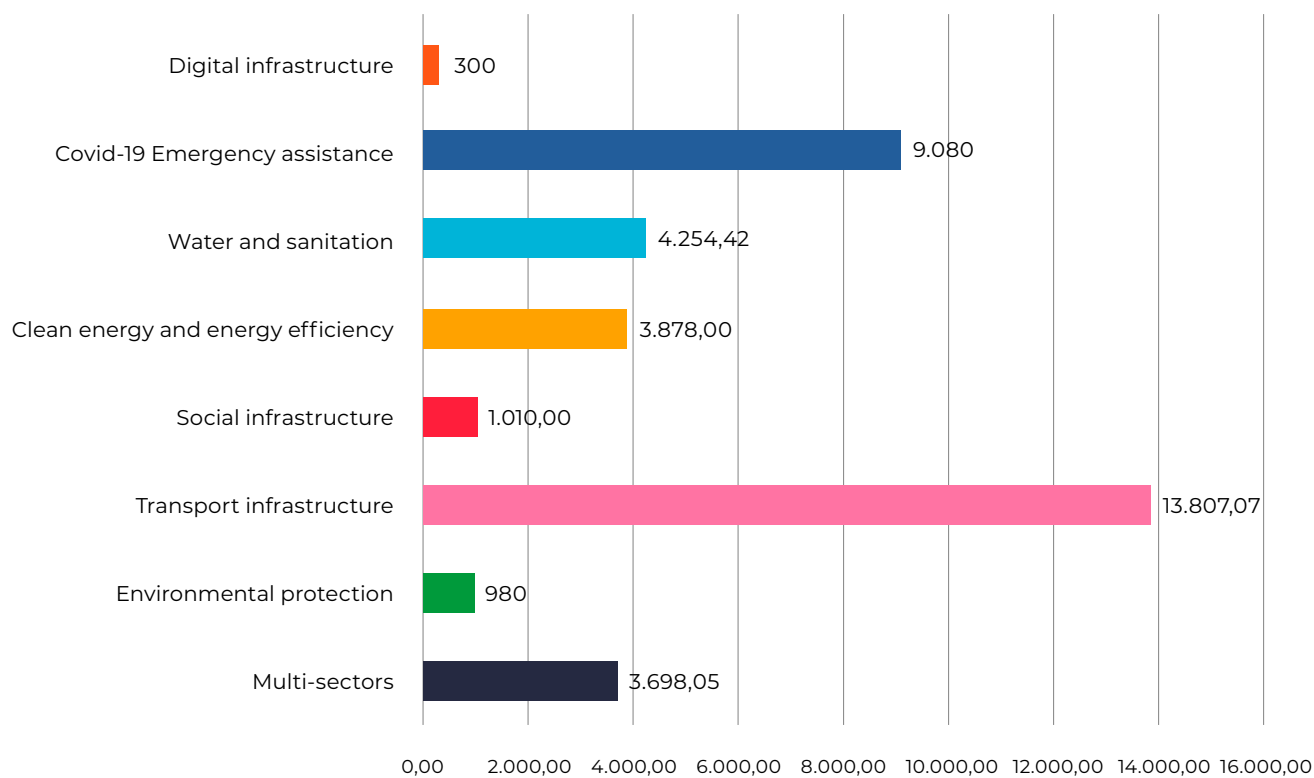
Source: Original work based on NDB (2023a).

Figure 4: Distribution of NDB projects by sector (2016–2023)



Source: Original work based on NDB (2023a).

Figure 5: Nominal value of NDB projects by sector (2016–2023)



Source: Original work based on NDB (2023a).

It may be observed that while 2016 and 2017 saw no multi-sector approvals, all subsequent years did. The year 2020 also stands out due to a higher nominal value total of USD 1.6 billion. This high value is due to NDB's joint sustainable infrastruc-

ture project with BNDES (Brazilian Development Bank), with a value of USD 1.2 billion. The year 2022 had the most projects with a total of 7. The table below summarizes the data:

Table 3: Status of multi-sector investments over time, in USD (millions) and number of projects (2016–2023)

MULTI-SECTOR

2016		2017		2018		2019	
Value	Number	Value	Number	Value	Number	Value	Number
0	0	0	0	USD 270	2	USD 100	1
2020		2021		2022		2023	
Value	Number	Value	Number	Value	Number	Value	Number
USD 1.655	4	USD 500	1	USD 803	7	USD 370	3

Source: Original work based on NDB (2023a).

For Environmental Protection, there were only investments in 2018 and 2019. Among the 3 projects financed by NDB, one was aimed at reducing sulfur dioxide (SO₂)

emissions at the coal-fired Medupi Power Station in South Africa (2019), with a cost of USD 480 million. The table below summarizes the data:

Table 4 – Status of Environmental Protection investments over time, in USD (millions) and number of projects (2016–2023)

ENVIRONMENTAL PROTECTION

2016		2017		2018		2019	
Value	Number	Value	Number	Value	Number	Value	Number
0	0	0	0	USD 500	2	USD 480	1
2020		2021		2022		2023	
Value	Number	Value	Number	Value	Number	Value	Number
0	0	0	0	0	0	0	0

Source: Original work based on NDB (2023a).

The Transport Infrastructure sector has seen investments every year with the exception of 2017. This is the field with the largest number of projects and with hi-

ghest nominal value. The year 2019 stands out with a total of 9 projects worth USD 3.2 billion. The table below summarizes the data:

Table 5 – Status of Transport Infrastructure investments over time, in USD (millions) and number of projects (2016–2023)

TRANSPORT INFRASTRUCTURE

2016		2017		2018		2019	
Value	Number	Value	Number	Value	Number	Value	Number
USD 327	1	0	0	USD 2.320	7	USD 3.253	9

2020		2021		2022		2023	
Value	Number	Value	Number	Value	Number	Value	Number
USD 327	1	0	0	USD 2.320	7	USD 3.253	9

Source: Original work based on NDB (2023a).

As can be seen below, the Clean Energy and Energy Efficiency sector is one of NDB's priority areas. However, projects in this sector were not financed in 2017, 2022, and 2023. The year with the largest

number of projects was 2016. The year with the highest nominal value is 2018, with a value of USD 1.2 billion. The table below summarizes the data:

Table 6: Status of Clean Energy and Energy Efficiency investments over time, in USD (millions) and number of projects (2016–2023)

CLEAN ENERGY AND ENERGY EFFICIENCY

2016		2017		2018		2019	
Value	Number	Value	Number	Value	Number	Value	Number
USD 969	5	0	0	USD 1.208	4	USD 680	3

2020		2021		2022		2023	
Value	Number	Value	Number	Value	Number	Value	Number
USD 417	1	USD 604	2	0	0	0	0

Source: Original work based on NDB (2023a).

The Water and Sanitation sector is another of NDB's priorities, given it is the second highest in terms of number of investments, with a total of 19. Only in the year 2016 did the sector not receive any

grants. The year of 2023 stands out with the highest number of projects, with 4, with a value totaling USD 1.5 billion. The table below summarizes the data:

Table 7: Status of Water and Sanitation investments over time, in USD (millions) and number of projects (2016–2023)

WATER AND SANITATION

2016		2017		2018		2019	
Value	Number	Value	Number	Value	Number	Value	Number
0	0	USD 591	2	USD 320	1	USD 907	4
2020		2021		2022		2023	
Value	Number	Value	Number	Value	Number	Value	Number
USD 100	1	USD 353	4	USD 400	2	USD 1.583	5

Source: Original work based on NDB (2023a).

For Covid-19 Emergency Assistance, it is important to highlight that these are emergency and pandemic recovery projects; in other words, they were available in

both 2020 and 2021, with more funding in 2020, when every member country received a loan of USD 1 billion. The table below summarizes the data:

Table 8: Status of Covid-19 Emergency Assistance investments over time, in USD (millions) and number of projects (2016–2023)

COVID-19 EMERGENCY ASSISTANCE

2016		2017		2018		2019	
Value	Number	Value	Number	Value	Number	Value	Number
0	0	0	0	0	0	0	0
2020		2021		2022		2023	
Value	Number	Value	Number	Value	Number	Value	Number
USD 6.000	6	USD 3.080	3	0	0	0	0

Source: Original work based on NDB (2023a).

For Digital Infrastructure, only one loan of USD 300 million was identified, in the year of 2020, made to Russia. The project aims to improve mobile network penetra-

tion across the country and also to provide companies with cloud services. The table below summarizes the data:

Table 9: Status of Digital Infrastructure investments over time, in USD (millions) and number of projects (2016–2023)

DIGITAL INFRASTRUCTURE

2016		2017		2018		2019	
Value	Number	Value	Number	Value	Number	Value	Number
0	0	0	0	0	0	0	0
2020		2021		2022		2023	
Value	Number	Value	Number	Value	Number	Value	Number
USD 300	1	0	0	0	0	0	0

Source: Original work based on NDB (2023a).

Finally, the Social Infrastructure sector does not present many projects, with only 3. One project per year occurred in 2017, 2020, and 2021. These projects were directed toward developing Russian le-

gal infrastructure; improving the education system of the city of Teresina, Piauí state, Brazil; and helping provide climate change-resistant housing in urban areas in India.

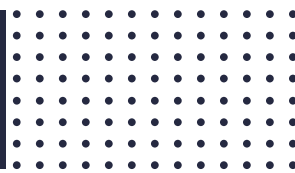
Table 10: Status of Social Infrastructure investments over time, in USD (millions) and number of projects (2016–2023)

SOCIAL INFRASTRUCTURE

2016		2017		2018		2019	
Value	Number	Value	Number	Value	Number	Value	Number
0	0	USD 460	1	0	0	0	0
2020		2021		2022		2023	
Value	Number	Value	Number	Value	Number	Value	Number
USD 50	1	USD 500	1	0	0	0	0

Source: Original work based on NDB (2023a).

ENERGY TRANSITION DEFINITIONS



The literature on the energy transition does not reach a consensus regarding the term, so different definitions and applications appear since the beginning of the 20th century (Araújo, 2014, 2022; Nalule, 2020). For scholars, this term has a broader connotation that includes the different geographical and historical peculiarities of the energy transition process of each region. Historically, there were three transitions: the first was the shift from wood and biomass to coal; the second, from coal to refined fossil fuels; and the current phase, toward clean and renewable matrices.

Although most international organizations and MDBs (including the NDB) treat the subject of energy transition as the mere decarbonization of energy matrices, it is most assuredly a more complex process. Table 11 illustrates some of the different definitions on hand, showing how some scholars and businesses see this topic. Asif (2022) divides the energy transition from different angles, including decarbonization, but also mentioning energy efficiency, decentralization, and digitalization.

Among these approaches, decarbonization is the route most MDBs and international organizations take, also the

case for the NDB. Decarbonization is the reduction of CO₂ emissions and other greenhouse gases. Projects in this sector include different forms of renewable energy generation, electric transportation, carbon capture and storage (CCS), and the elimination of fossil fuels.

Energy efficiency is a wide-ranging feature of the transition, given it involves new technologies, improvement in energy output, and cultural changes, in the way that energy is consumed and wasted. Decentralization is the idea of having energy generation closer to place of use, instead of having one single center responsible for energy generation. Decentralization makes power generation more flexible, resilient, and not exclusively dependent on a third party, as is the case for homes with solar panels. Finally, digitalization appears in the form of integrity for these processes, collecting and analyzing data to optimize the energy supply and demand (Asif, 2022).

According to the bank's most recent strategic outline, these four dimensions are presented as interchangeable. Digital infrastructure was announced as a new field of investment focus, along with technological integration being as a "cross-cutting consideration" (NDB, 2022a).

Table 11: Energy Transition Definitions

DEFINITIONS	ORGANIZATION / AUTHOR
<p>A considerable shift in the nature or pattern of how energy is used within a system, including the type, quantity, or quality of how energy is sourced, delivered, or utilized. This can be a planned or unplanned change that encompasses the emergence and decline of an energy industry, together with geopolitical, economic, social, and ecological factors that connect to all stages of energy utilization.</p>	<p>Routledge Handbook on Energy Transitions, 2022, p. 2</p>
<p>A progressive process that cannot occur globally, but differs depending on the country and region.</p>	<p>The Palgrave Handbook of Managing Fossil Fuels and Energy Transitions, 2020, p. 263</p>
<p>The success of the energy transition depends on a transformation of the global energy sector from fossil-based to zero-carbon sources by the second half of this century.</p>	<p>International Renewable Energy Agency (IRENA)</p>
<p>The energy transition is a continuing process requiring long-term energy strategies and planning, with a country-tailored focus on applying appropriated energy technologies to reach net-zero emissions.</p>	<p>United Nations Development Programme (UNDP)</p>
<p>Transition towards a low-emission development pathway, as guided by Nationally Determined Contributions (NDCs)</p>	<p>NBD</p>

Source: Original work based on Araújo, 2022; Asif, 2022; IRENA, 2023; NDB, 2022a; UNDP, 2023.

ENERGY TRANSITION OVERVIEW

The United Nations Programme for Development (UNDP) estimates that around USD 4 trillion will be needed by 2050 to achieve the level of carbon zero

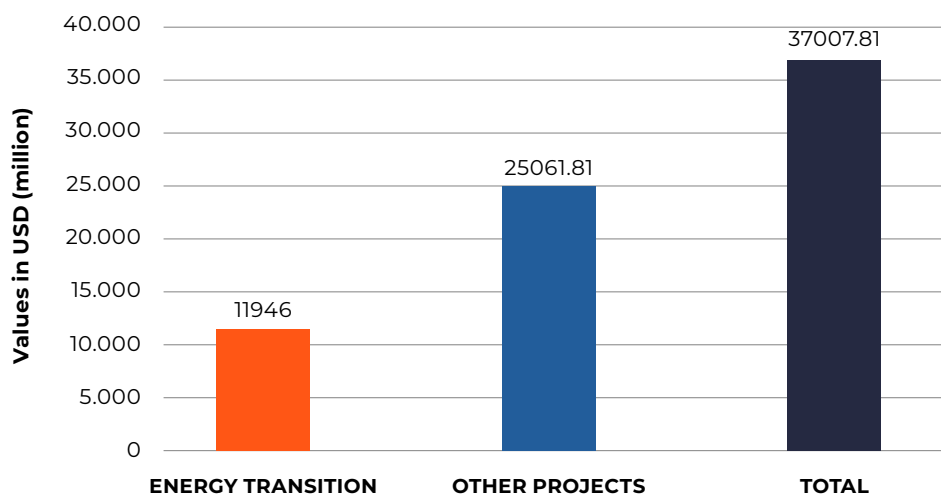
emissions, which would mean tripling global investments by 2030. In this scenario, NDB still plays a minor role even compared to other MDBs. Through 2022,

only 28% approvals were for climate finance, which is below the average of 43% for MDBs (EIB, 2023).

With the objective of analyzing the proportion of projects for energy transition out of the total of NDB's financing, this section addresses NDB projects focused on the energy transition, divided into three sections: projects dealing with decarbonization¹¹, energy efficiency, and both. Although the four dimensions proposed by Asif (2022) offer a more detailed overview, most of NDB's projects incorporate one of these two ways to contribute to the energy transition.

When viewing the current landscape of energy transition, we can see that over the period between 2016 and 2023 the investments allocated in projects focused on energy transition represent around 32% of the total value, or a total of around USD 12 billion. Of this, approximately 10 billion (83% of the total transition) was allocated to decarbonization projects, either as a priority or alongside energy efficiency. These numbers are even more representative of the bank's efforts if we disregard the Covid-19 investments announced in 2020–2021. Without the Covid-19 projects, energy transition has 10% greater weight compared to values for all projects, reaching 42%.

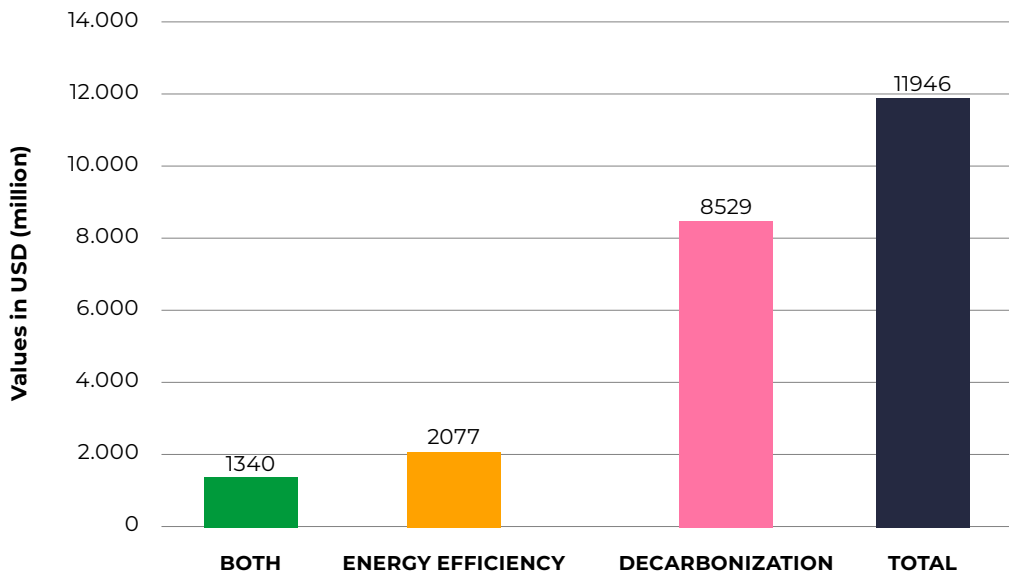
Figure 6: Energy transition overview in comparison with all NDB projects



Source: Original work based on NDB (2023a).

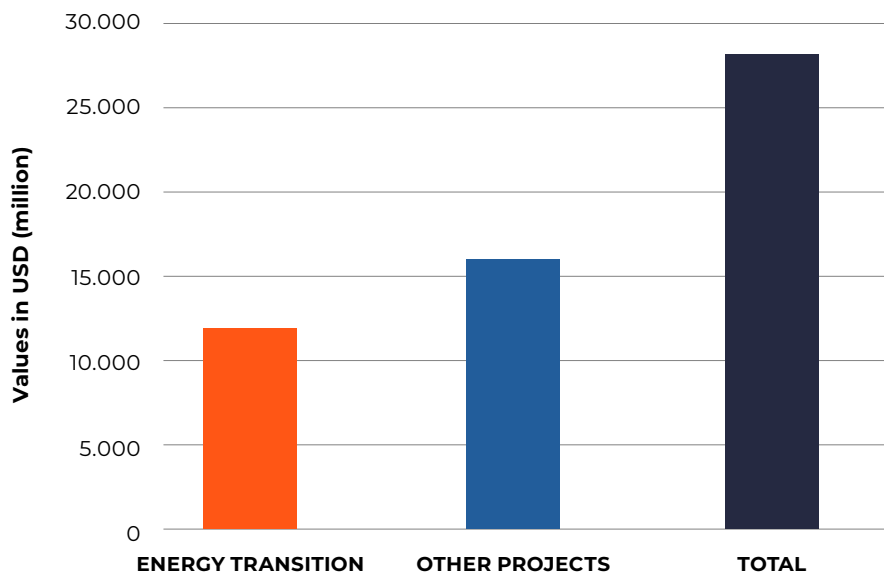
11. By adopting a broadened definition of decarbonization, not only projects that clean energy matrices and reduce CO₂ emissions were considered, but also those that result in a reduction of greenhouse gases overall. An example is the Environmental Protection Project For Medupi Thermal Power Plant, which aims to reduce sulfur dioxide (SO₂) emissions at the Medupi Power Station in South Africa from 3,500 mg/m³ to less than 500mg/m³ starting in 2026.

Figure 7: Energy transition overview and subcategories at NDB



Source: Original work based on NDB (2023a).

Figure 8: Energy transition overview in comparison with all NDB projects, excluding projects relating to Covid-19 (2016-2022)



Source: Original work based on NDB (2023a).

Table 12: NDB investments in energy transition, year over year

ENERGY TRANSITION • HISTORICAL

	2016		2017		2018		2019	
	Value (US, millions)	%	Value (US, millions)	%	Value (US, millions)	%	Value (US, millions)	%
Decarbonization	\$789,00	60,85%	\$0,00	0,00%	\$2.493,00	53,98%	\$2.203,00	40,64%
Energy Efficiency	\$180,00	13,88%	\$0,00	0,00%	\$300,00	6,50%	\$480,00	8,85%
Both	\$0,00	0,00%	\$0,00	0,00%	\$0,00	0,00%	\$417,00	3,79%
Other projects	\$327,73	25,27%	\$1.051,22	100,00%	\$1.825,00	39,52%	\$2.737,77	50,51%
Year total	\$1.296,73	100,00%	\$1.051,22	100,00%	\$4.618,00	100,00%	\$5.420,77	100,00%

	2020		2021		2022		2023	
	Value (US, millions)	%	Value (US, millions)	%	Value (US, millions)	%	Value (US, millions)	%
Decarbonization	\$816,00	7,42%	\$1.528,00	22,80%	\$500,00	15,53%	\$200,00	5,39%
Energy Efficiency	\$417,00	3,79%	\$500,00	7,46%	\$200,00	6,21%	\$0,00	0,00%
Both	\$1.200,00	10,92%	\$0,00	0,00%	\$90,00	2,80%	\$50,00	1,35%
Other projects	\$8.558,00	77,86%	\$4.673,27	69,74%	\$2.429,27	75,46%	\$3.459,55	93,26%
Year total	\$10.991,00	100,00%	\$6.701,27	100,00%	\$3.219,27	100,00%	\$3.709,55	100,00%

Source: Original work based on NDB (2023a).

Table 13: NDB investments in decarbonization, year over year

DECARBONIZATION • HISTORICAL

	2016		2017		2018		2019	
	Value (US, millions)	%	Value (US, millions)	%	Value (US, millions)	%	Value (US, millions)	%
Decarbonization + both	\$789,00	60,85%	\$0,00	0,00%	\$2.493,00	53,98%	\$2.203,00	40,64%
Other projects	\$507,73	39,15%	\$1.051,22	100,00%	\$2.125,00	46,02%	\$3.217,77	59,36%
Year total	\$1.296,73	100,00%	\$1.051,22	100,00%	\$4.618,00	100,00%	\$5.420,77	100,00%

	2020		2021		2022		2023	
	Value (US, millions)	%	Value (US, millions)	%	Value (US, millions)	%	Value (US, millions)	%
Decarbonization + both	\$2.016,00	18,34%	\$1.528,00	22,80%	\$590,00	18,33%	\$250,00	6,74%
Other projects	\$8.975,00	81,66%	\$5.173,27	77,20%	\$2.629,27	81,67%	\$3.459,55	93,26%
Year total	\$10.991,00	100,00%	\$6.701,27	100,00%	\$3.219,27	100,00%	\$3.709,55	100,00%

Source: Original work based on NDB (2023a).

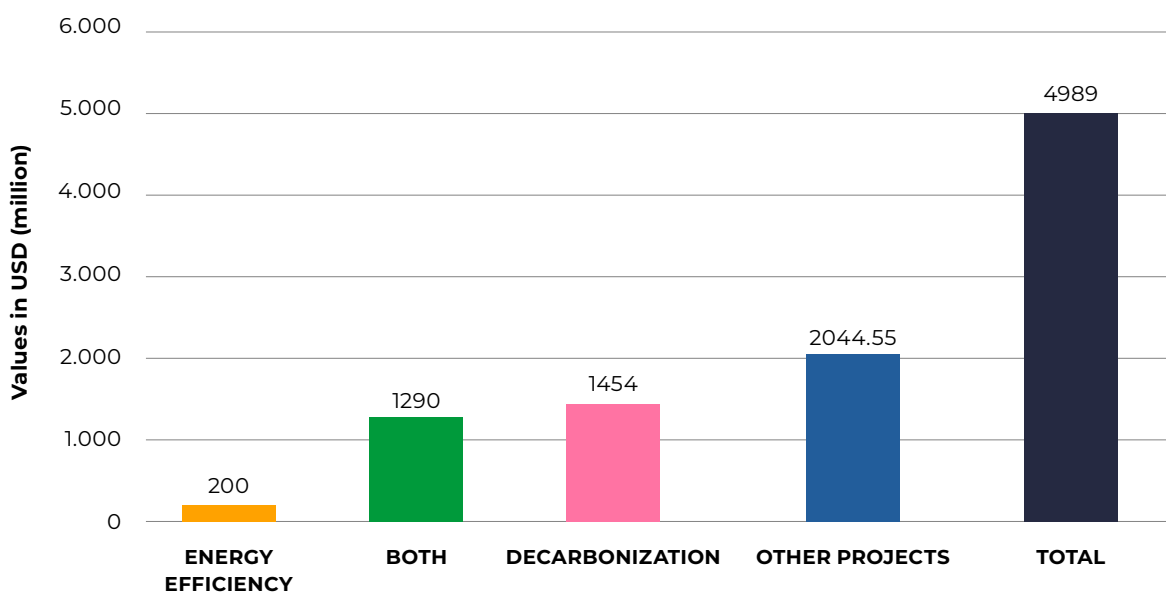
ENERGY TRANSITION INVESTMENT BY COUNTRY

This section's figures present data corresponding to the distribution of investments for energy transition projects by subcategory (decarbonization, energy efficiency, both) and country compared to the other allocations in the same country. Covid-19 relief projects were not considered, as they represent contingent allocations, with numbers around USD 1 billion per project, which drastically changes the weight of the other sectors and their percentages if considered.

For allocations in Brazil, 29.14% (USD 1.454 billion) went toward decarbonization pro-

jects, 25.86% (USD 1.29 billion) projects categorized under both decarbonization and energy efficiency, and 4.01% (USD .200 billion) to energy efficiency projects. The highest-value project to be designated as energy-transitional in Brazil has joint support from the BNDES (Brazilian Development Bank) and NDB, with a total of USD 1.2 billion. Its objective was boosting Brazil's growth through sustainable infrastructure development as well as aligning its commitments with the 2030 Agenda.

Figure 9: Energy transition overview in comparison with all NDB projects in Brazil (2016-2022)

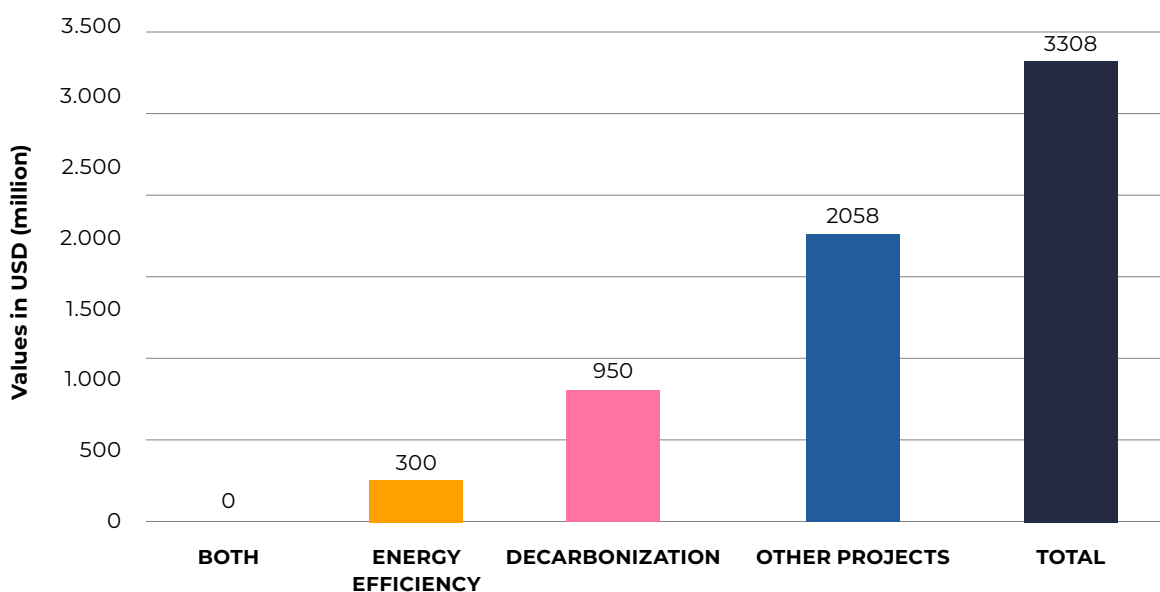


Source: Original work based on NDB (2023a).

For NDB projects in Russia, 28.72% (USD 950 million) of allocations went to decarbonization, of which 9.07% were energy efficiency projects (USD 300 million). The project with the highest value (USD 550

million) was categorized under Transport Infrastructure. Its objective is to replace around 20% of the Russian railway fleet with new locomotives, thereby reducing greenhouse gas emissions.

Figure 10: Energy transition overview in comparison with all NDB projects in Russia (2016-2022)

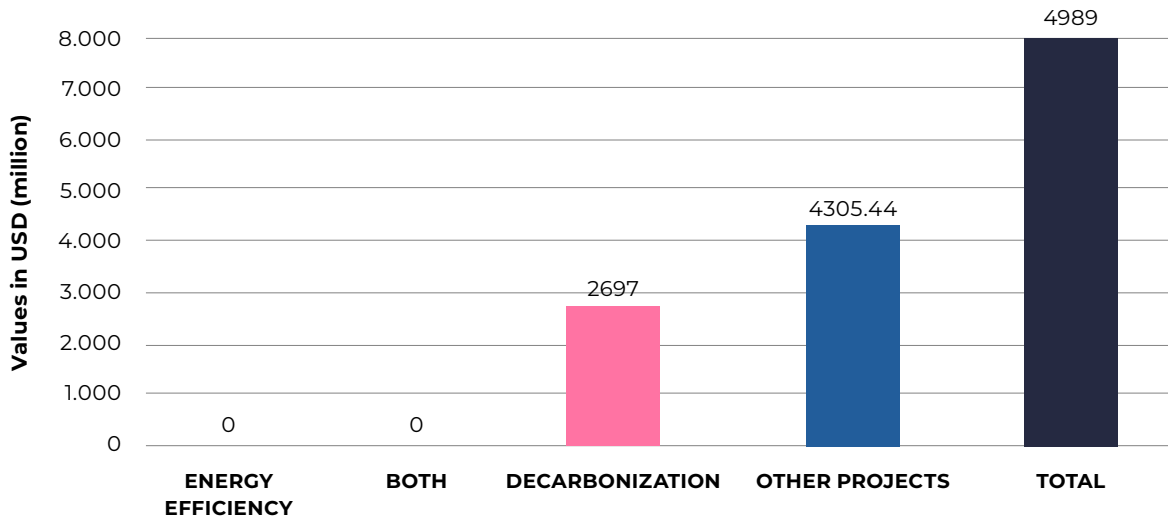


Source: Original work based on NDB (2023a).

In India, 38.52% (USD 2,697 million) of all projects in the country goes toward decarbonization. Out of 9 decarbonization projects, 8 are in Transport Infrastructure sector, whereas 1 is in Clean Energy and Energy Efficiency. From these projects, the

one with the highest value of allocations (USD 500 million) was an urban transport project in Mumbai, aiming to reduce traffic congestion, improve mobility, increase security and comfort in traffic, and improve the population's quality of life.

Figure 11: Energy transition overview in comparison with all NDB projects in India (2016-2022)

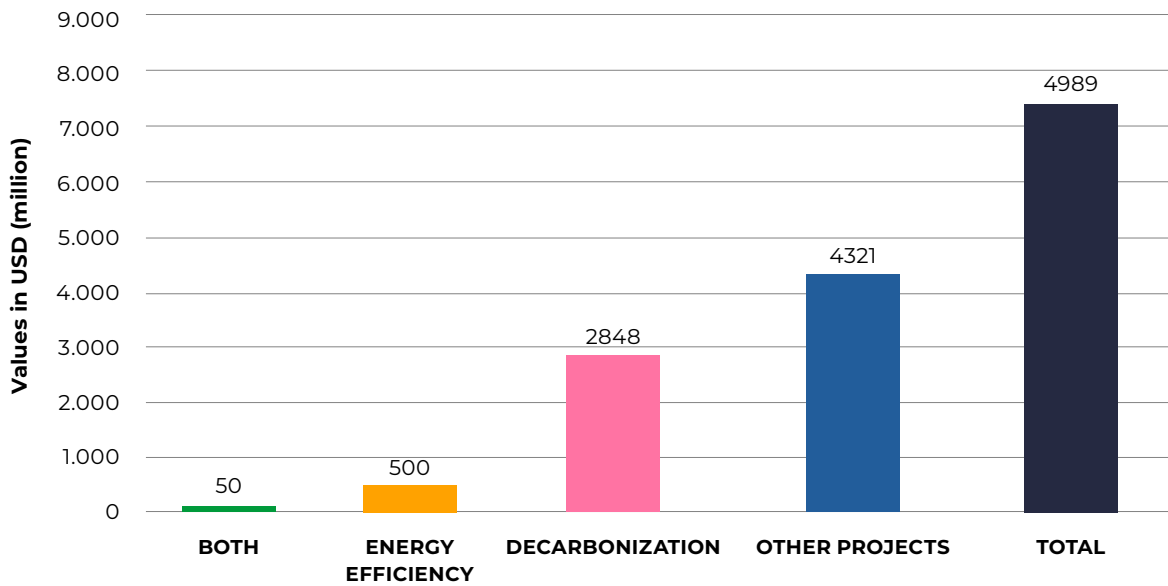


Source: Original work based on NDB (2023a).

Regarding NDB investments in China, 36.89% of the total (USD 2,848 million) contributes to decarbonization, whereas 6.48% (500 million) goes to energy efficiency, and 0.65% (50 million; 1 project) goes to support both. The project contributing both to decarbonization and energy efficiency, in particular, has the objective of increasing clean energy capacity and improving the local infrastruc-

ture and water conditions of Zhejiang province. The project is expected to be in alignment with the United Nation’s Sustainable Development Goal (SDG) 9 (building resilient infrastructure); with SDG 11 (making cities and communities inclusive, safe, resilient, and sustainable); and with SDG 13 (climate action) by contributing to reducing greenhouse effect gas emissions.

Figure 12: Energy transition overview in comparison with all NDB projects in China (2016-2022)

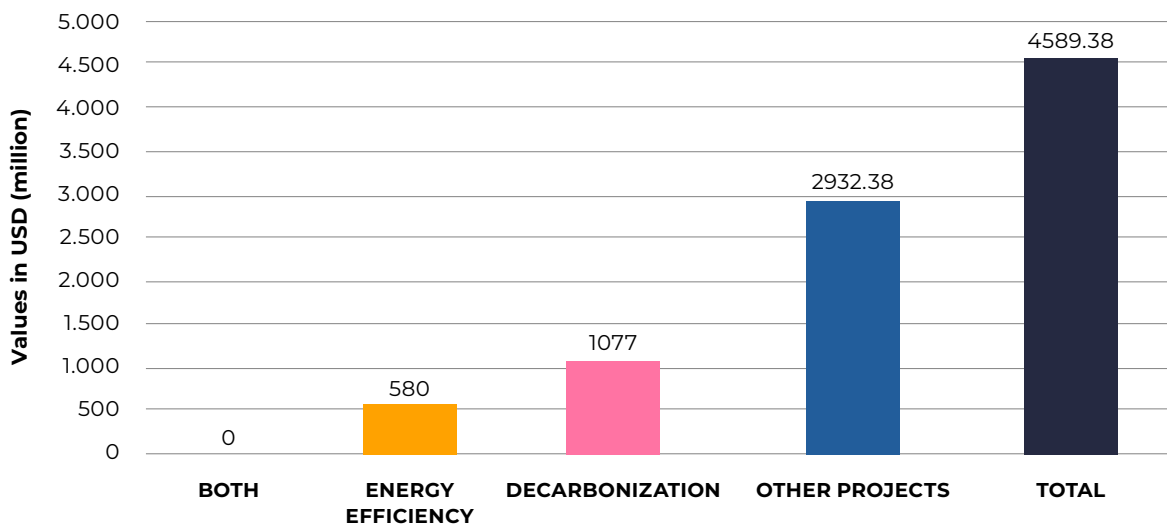


Source: Original work based on NDB (2023a).

Of investments put into South Africa, 23.47% (US\$ 1,077 million) corresponds to projects that contribute to the country’s energy efficiency, whereas 12.64% (USD 580 million) go to decarbonization. Unlike in other countries, South Africa’s energy efficiency projects outnumber ones for decarbonization. One interesting source of energy efficiency support in the country is a project that aims

to store excess renewable energy in low-demand periods and release it at rush hours in order to meet energy demands coming from renewable resources and minimizing use from fossil fuel-based energy generation. This project aims to reduce energy load on the transmission network and therefore delay the need for investment in network enhancement.

Figure 13: Energy transition overview in comparison with all NDB projects in South Africa (2016-2022)



Source: Original work based on NDB (2023a).

PROJECT EXAMPLES




BRAZIL

Curitiba's Bus Rapid Transit Rideability Improvement Project¹²


 **Value:** USD 75 million

 **Year:** 2020

 **Borrower:**
Curitiba city

 **Status:** Approved

 **NBD Sector:** Transport
Infrastructure

 **Decarbonization or
Energy Efficiency?**
Decarbonization

This project aims to prioritize public transport and discourage the use of individual transport, improving socioeconomic conditions through increased mobility and optimization, expansion, and an upgrading of public transport infrastructure. This project aims to increase the Bus Rapid Transit's (BRT) quality and efficiency, including through reducing operational and vehicle-maintenance costs, with an expectation of:

1. 35% increase in operational speed on average;
2. 25% trip time reduction;
3. 14% reduction in CO2 emissions; and
4. 5% increase in passengers on business days.

In addition, Curitiba has other banks that support urban mobility transformation in the city, such as Germany's KfW Development Bank and the Inter-American Development Bank.


¹². This project was categorized as a Decarbonization project due to its contribution to the reduction CO2 emissions. However, this is not a project that will clean the energy matrix of the city's public transport, since the investments in this project seek to increase and improve the bus's lines, offering structural benefits to the whole fleet. Curitiba is one of the five cities selected by the Brazilian Development Bank (BNDES) and the Regional Development Ministry for a study of electromobility viability, which is financed by the German KfW Bank. More details on the project are available at: <<https://www.ndb.int/project/brazil-curitibas-bus-rapid-transit-rideability-improvement-project/#tabbed-standard>>. More details on Curitiba's electromobility are available at: <<https://www.curitiba.pr.gov.br/noticias/especiais/brt-leste-oeste/30>> e <<https://www.curitiba.pr.gov.br/noticias/especiais/novo-inter-2-caminho-aberto-a-eletromobilidade/18>>.

RUSSIA


Development of Renewable Energy Sector in Russia Project


 **Value:** USD 300 million

 **Year:** 2019

 **Borrower:** Eurasian Development Bank (EDB)

 **Status:** Approved

 **NDB Sector:** Clean Energy and Energy Efficiency

 **Decarbonization or Energy Efficiency?**
Decarbonization

This project aims to facilitate investments in renewable energy plants in order to contribute to the Russian energy grid, per the country's energy strategy for 2030 to reduce carbon dioxide emissions. This initiative was drafted by the Eurasian Development Bank, an important borrower for the Russian energy sector. The loan proposed by NDB, through two-step program, will be used by the EDB to finance sub-projects that include renewable energy sources such wind, solar, and small hydropower (<25 MW).

The positive impacts of the project include an increase in energy generation capacity from renewable sources, resulting in a reduction in CO2 emissions. Successful implementation would mean annual generation of at least 320 GWh of electricity from renewables, corresponding to around 200,000 tons of CO2 savings per year.

INDIA


Renewable Energy Sector Development Project


 **Value:** USD 300 million

 **Year:** 2019

 **Borrower:** REC Limited

 **Status:** Complete

 **NDB Sector:**
Clean Energy and Energy Efficiency

 **Decarbonization or Energy Efficiency?**
Decarbonization

With financing from NDB, REC Limited's – the main financing supplier in the energy sector in India – Renewable Energy Sector Development Project was established to support the Indian government's renewable energy and sustainable development initiatives. NDB's loan resources to REC financed renewable power plant construction and subprojects for evacuation transmission lines.

The positive impacts include an annual coal consumption reduction of 488,292 tons; an annual carbon emissions reduction of 986,667 tons; a considerable reduction in a number of other harmful emissions, such as sulfur dioxide and nitrogen oxides; an increased transmission capacity to unload renewable energy; an increase of energy generation capacity from renewables, with an approximate annual electricity generation of 1,600 GWh; and an improvement in the energy matrix, as well as a greener footprint for India's power sector.



CHINA

Guangdong Yudean Yangjiang Shapa Offshore Wind Power Project



Value: RMB 2,000 million



Year: 2018



Borrower: Guangdong
Yudean Group



Status: Complete



NDB Sector: Clean Energy
and Energy Efficiency



**Decarbonization or
Energy Efficiency?**

Decarbonization (Wind
power generation)

This project was intended to support the development of the offshore wind energy industry in Guangdong by making use of its extensive coast and rich wind resources. In alignment with NDB's principle of promoting sustainable development, the main objective of this project is to finance construction of an offshore wind farm to provide clean energy and improve the province's energy structure.

Located in the shallow waters of Yangjiang, this project seeks to develop an offshore wind energy capacity of 300MW. It is in alignment with the People's Government of Guangdong Province's prioritization of stimulating offshore wind energy development and increasing the clean energy supply. By replacing coal-fired power plants, wind power can save an annual consumed 247,200 tons of coal.



SOUTH AFRICA

Greenhouse Gas Emissions Reduction and Energy Sector Development Project



Value: USD 300 million



Year: 2018



Borrower: Development Bank of Southern Africa (DBSA)



Status: Approved



NDB Sector: Clean Energy and Energy Efficiency



Decarbonization or Energy Efficiency?

Decarbonization

The Development Bank of Southern Africa (DBSA) financed the Greenhouse Gas Emissions Reduction and Energy Sector Development Project in order to support renewable energy projects in South Africa and to help guide the economy on a more sustainable energy path by way of structural transformations in the energy sector with emerging renewable energy technologies. DBSA has historically performed a significant role in South Africa's energy sector, allocating around 48.5% of its portfolio into energy loans in the country.

The project's main objective is to finance renewable energy investments that will contribute to the energy matrix and to reduced CO₂ emissions in South Africa, which is in alignment with the South African's Government Integrated Resources Plan from 2010 and the goal of greenhouse gas emissions reduction, as established in the National Development Plan of 2030. The project will also bring significant impacts through its subprojects, especially with social and environmental benefits due to reduction in carbon dioxide emissions, an increase in generation capacity from renewables, and an improvement in the energy sector's efficiency in South Africa overall. This project is also expected to unlock private investments and increase the availability of long-term funds for energy projects in South Africa.

CONCLUSION

Since its creation, the NDB has been an innovative, sustainable institution with a willingness to finance large sustainability projects for BRICS countries. Taking a look at its investment goals for climate change compared to those of other MDBs, we can observe that the bank's planning is on track to reach an average of 40% of portfolio by 2026. When we observe its current portfolio, discounting Covid projects, we can observe that more than 40% of the bank's projects are already focused on energy transition, which encompass decarbonization and/or energy efficiency projects.

In its first years of operation, the bank focused on energy transition projects, a standard that could not continue due to the Covid-19 pandemic. A targeted effort toward decarbonization is clear, given that projects involving it account for more than 70% of all energy transition projects. China and India, the major BRICS countries in terms of fossil fuel consumption, are also leaders in financial input for decarbonization, which represents around 40% of all their loans to the NDB.

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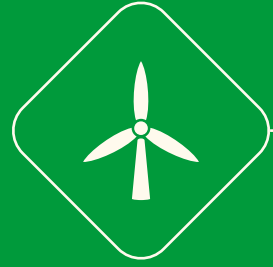
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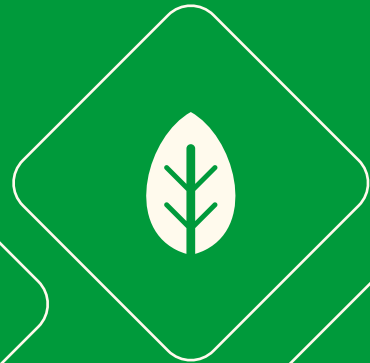
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