

# The Role of the Financial Institutions in Transition to Low Carbon Economy

A Master's Thesis submitted for the degree of  
“Master of Science”

supervised by  
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Vienna, 16.02.2022

## Affidavit

I, **JENNIFER VISHNOI, MBA**, hereby declare

1. that I am the sole author of the present Master's Thesis, "THE ROLE OF THE FINANCIAL INSTITUTIONS IN TRANSITION TO LOW CARBON ECONOMY", 81 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted the topic of this Master's Thesis or parts of it in any form for assessment as an examination paper, either in Austria or abroad.

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Signature

## Acknowledgement

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## Abstract

The deep connection between the financial system and ecological sustainability has attracted increased interest from the academic community. Specifically, the shift to a low carbon economy is now the center of the public debate. Climate change remains a direct and indirect threat to the global economy, significantly affecting the financial sector. Financial institutions continue implementing new strategies to shift their position and align their mandates towards a low carbon economy. Financial Institutions are integral in bankrolling emerging nations' efforts to moderate emissions and protect against climate change effects and are the primary sources of external finance, including government, public and private sectors. These financial entities encompass the International Monetary Fund (IMF) and the Multilateral Development Banks (MDBs). Financial institutions provide specialized funds, such as the Green Climate Fund, the Adaptation Fund, the Climate Investment Funds, Bilateral, and National Development Finance Institutions. The research paper evaluates the existing contribution by financial institutions, specifically Multilateral Development Banks, towards bridging the financial gap and innovations necessary for realizing a low-carbon economy. Besides, it assesses key challenges facing institutions attempting to incorporate climate change-related consideration in their lending approaches. The study also explores many financial instruments that help channel funds into solutions concerning low carbon economy challenges coupled with the barriers limiting scaling the financial instruments and leveraging financial Multilateral Development Banks' full potential towards transitioning to a low carbon economy. The study employed interviews for data collection and gathered unique insight instead of compiling a comprehensive list of existing practice or similar data for benchmarking the survey. Participants included stakeholders from major Multilateral Development Banks. Study findings indicated that Multilateral Development Banks are essential vehicles for funding projects generally not bankrolled by commercial banks for multiple reasons. The study further underlines Multilateral Development Banks' role in mobilizing funds, including acting as a channel for donors through climate funds and private sector capital. The study outlines Multilateral Development Banks' role in the transition. It identifies vital instruments, such as green bonds and guarantees adopted by development banks to promote and fast-track the transition to a low carbon economy.

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# 1. Introduction

One of the most significant issues in addressing climate change and the need to switch to a low carbon economy is ensuring the necessary finance flows. Many studies have been steered to determine the role of financial development in fulfilling the Paris Agreement (Ouyang & Li, 2018) (Zengchao, et al., 2018). Spirited ecological goals usually require large amounts of finance to execute the necessary investments. The question of how financial institutions can enhance support to the low carbon economy has become a considerable debate in the climate change context. The current climate change debate has identified environmental financing initiatives as significant elements.

Presently, significant financing exists between the funding needs to switch or more and the current level of bankrolling reinforcing this switch. Over the past few decades, financial actors and stakeholders have adopted numerous bottom-up programs to facilitate “accountability investment” and “sustainable finance<sup>1</sup>.” It is indisputable that green and sustainable finance has quickly been established and progressively taking more ambitious goals. However, it is also fair to distinguish that the influence on the funding of low carbon transition is far from being at the level needed by the fight against climate change. According to the United Nations Environment Program (UNEP, 2015), financial institutions should recognize the costs and risks of high-carbon assets and become more prepared for climate shocks to ease the switch to a low carbon economy (Timilsina & Malla, 2021).

Financial institutions should modify the incentives and the constraints they face when developing a lending strategy to increase credit creation direction towards attaining a low carbon economy (Campiglio, 2016). Economies worldwide have been working to empower climate-resilient<sup>2</sup> resolutions and decrease their carbon releases to address this impending risk of climate-induced calamity. However, governments and regulations need to address many financial, technical, and structural barriers. To ease such a

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<sup>1</sup> Investment decisions that consider an economic activity or project's environmental, social, and governance factors.

<sup>2</sup> Climate resilience is the ability to predict, prepare for, and respond to perilous events, trends, or disturbances related to climate.

considerable switch money-wise, numerous novel monetary yields and a large amount of capital would be required. Therefore, this generates substantial openings for Financial Institutions. Financial Institutions can make a noteworthy contribution towards decarbonization to and support innovation to succor in the move to a low carbon economy (Campiglio, et al., 2018)

In the past couple of years, climate finance has received increased attention. Financing instruments, such as grants, are integral in multilateral and bilateral financing, representing 3.5 percent climate finance flows, equivalent to USD 13 billion per annum. Within the climate and ecological space, grants are customarily offered for non-revenue-making actions in recipient nations—for example, financing knowledge management initiatives, capacity building programs, and technical plans. The study also focuses on other financial instruments, including debt swaps that encompass the sale of foreign currency-dominated debt by creditor financial institutions to investors. (Hallegatte, et al., 2019) (Campiglio, et al., 2018)

Financial resources and sound investments are necessary for addressing climate change by plummeting releases supporting adaptation to the already happening influences and establishing resilience. However, the resulting benefits from such investments dramatically overshadow any upfront expenses (Hallegatte, et al., 2019) (Timilsina & Malla, 2021). Empirical studies were undertaken before the COVID-19 pandemic indicate that investments in climate action would significantly establish a sustainable economy<sup>3</sup>. Transitioning to a green economy<sup>4</sup> can unlock new economic opportunities (Hallegatte, et al., 2019).

## 1.1 Motivation

Recent empirical studies on the low carbon economy indicate climate change impacts human societies and global economic activities. One motivation of this research paper is to offer a policy to advance the agenda of the Paris Agreement. This international treaty

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<sup>3</sup> A sustainable economy provides for the most significant amount of general well-being for the least amount of resource use and harm

<sup>4</sup> A low carbon, resource efficient and socially inclusive economy

was implemented by 196 parties at Conference of Parties (COP) 21 in Paris and entered into force on 4 November 2016 to prevent or minimize global warming<sup>5</sup> to 1.5 degrees Celsius. Under this agreement, countries support one another through capacity building, financial, and technical approaches. Under the financial segment, the agreement reaffirms the need for climate finance<sup>6</sup> to alleviate the negative impacts of climate change. For a significant reduction of emissions, large-scale investments are crucial. Furthermore, climate finance is essential for adaptation. Necessary finances are needed for acclimatization to the climate changes and removal of the impacts. The Agreement has set a new context for the financial institutions regarding their contributions to climate action, including realizing a role in meeting goals expressed in Article 2, predominantly Article 2.1c on making financial flows unswerving towards a pathway towards low greenhouse gas emissions climate-resilient development.

The characteristics of financial agreements and a low carbon economy are dominated by an imbalance of information between financiers and borrowers in the real world. Specifically, the study explored Multilateral Development Banks' (MDBs) part in bankrolling adaptation and addressing the adaptation gap by providing and leveraging large-volume finance under attractive terms (Pablo & Kearney, 2018). This paper further reviews the current MDBs progress in realizing Paris alignment commitment and the challenges and opportunities for upsurging their funding for adapting and bringing it into line with the Paris Agreement (Pablo & Kearney, 2018). Apart from these challenges, several deficiencies in the experimental literature in the connection between financial institutions and a low carbon economy motivate this research.

MDBs have a crucial role to play to meet the objectives of the Paris Agreement, being major finance providers to developing countries. MDBs also directly or indirectly summon additional finance by acting as lead investors, mobilizing, and congregating in investment from others. The MDBs have jointly committed to supporting the Agreement through

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<sup>5</sup> An increase in the earth's atmospheric and oceanic temperatures widely due to the rise in the greenhouse effect resulting mainly from pollutants like carbon dioxide, chlorofluorocarbon, etc.

<sup>6</sup> Financing from a diverse range of sources seeks to support mitigation and adaptation actions that address climate change.



aligning their activities, along with six “building blocks” that cover the following areas illustrated in the figure below.

|          |   |
|----------|---|
| <b>1</b> | <b>Alignment with Mitigation Goals</b><br>Operations consistent with national low-emissions development pathways and compatible with objectives of the Paris Agreement.   |
| <b>2</b> | <b>Adaptation and Climate-Resilient Operations</b><br>Operations systematically screened for climate resilience. Support increase in clients' ability to adapt to climate change.   |
| <b>3</b> | <b>Accelerated Contribution to the Transition Through Climate Finance</b><br>Further scale up climate finance, operationalize new approaches to support NDCs, and accelerate realization of ambitions agreed under UNFCCC and in line with science-based evidence identified by IPCC. |
| <b>4</b> | <b>Strategy, Engagement and Policy Development</b><br>Develop new services to support clients putting in place long-term strategies for low-emissions and climate-resilient development while ensuring consistency with SDGs.   |
| <b>5</b> | <b>Reporting</b><br>Develop tools and methods for characterizing, monitoring and reporting on Paris-aligned activities.   |
| <b>6</b> | <b>Align Internal Activities</b><br>Progressively ensure that internal operations, including facilities and other internal policies, are in line with the Paris Agreement.  |

**Figure 1: MDBs building block approach to Paris Alignment** *Source (Kachi, 2020)*

## 1.2 Core Objectives

- i. To assess the current contribution by financial institutions, specifically MDBs, towards bridging the existing financial gap and innovations needed for realizing a low carbon economy and the challenges facing financial institutions in their efforts to incorporate climate-related consideration in their lending.
- ii. To explore a wide array of financial tools and mechanisms that assist channel solutions required for the transition to a low carbon economy and the barriers that need to be addressed to scale up these financial instruments and mobilize financial institutions' full potential towards low transition carbon economy.
- iii. To appraise climate change-related financial threats for financial institutions, mainly focusing on MDBs.

## 1.3 Research Questions

- i. What is the current contribution by MDBs towards bridging the existing financial gap and innovations necessary for realizing carbon economy, and what key barriers do they experience in their attempts to incorporate climate change-related consideration in the lending strategy?
- ii. Which finance instruments MDBs employ to channel funding into the solutions necessary for transition to a low carbon economy, and what barriers need to be addressed to scale these financial instruments and mobilize the full potential MDBs towards the transition to a low carbon economy?
- iii. What climate change-related financial risks do MDBs face?

## 1.4 Organization of the Paper

Each section addresses a different objective; for example, the introduction familiarizes the topic and offers background information on the study objective. This research paper comprises six-chapter followed by an Executive Summary.

**Chapter 1** introduces the paper, underlining the paper's background and problem statement, the justification of the research, the research questions and objectives, the study's scope, and the study's significance.

**Chapter two** provides a brief overview of background information for the study, concentrating on the association between financial institutions and a low carbon economy. Delving into the impacts of financial institutions on the growth of a low carbon economy, this chapter recounts previous empirical findings and theories.

**Chapter 3** examines the current landscape of Climate Finance, types of financial instruments, key challenges faced by MDBs, and their risk mitigation tools.

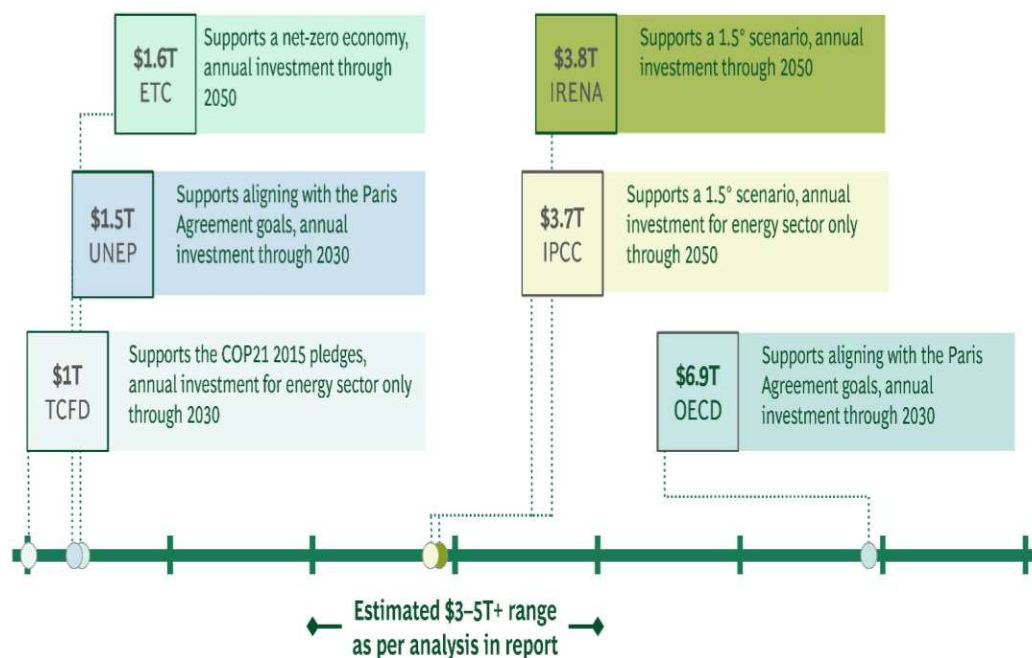
**Chapter 4** of this paper reports the methodical approach of this paper. It describes the working methods, research approach, models, description, discussion of the data used/collected, etc.

**Chapter 5** presents the paper's results and synthesizes lessons learned and prospects moving forward.

**Chapter 6** presents the conclusions of the study and provides recommendations.

## 2. Background Information

The most current estimation of the Intergovernmental Panel on Climate Change (IPCC)<sup>7</sup> states, "Warming of the climate system is unequivocal, and it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century." In a study steered by Boston Consulting Group (BCG) and Global Financial Markets Association (GFMA) in 2020, it is appraised that approx. USD 100–150 trillion+ collective investment is needed globally through 2050 to achieve a 1.5°C target across the sectors, and on average, USD 3–5 trillion+ is required per annum, as illustrated in the figure below.



**Figure 2: Estimate of investment needs through 2050** Source (GFMA & BCG , 2020)

<sup>7</sup> IPCC is the United Nations body for assessing the science related to climate change.

MDBs have guaranteed to address this gap by scaling up their offering of climate finance and better-incorporating climate change adaptation deliberations into their development finance portfolios (Pablo & Kearney, 2018). Mainstreaming adaptation deliberations into MDB investments would augment the financing accessible or obtainable to build pliability to climate change<sup>8</sup>. Simultaneously, there is necessary to guarantee that these investments reinforce adaptation activities highlighted by emerging economies' governments.

MDBs' obligations and procedures have advanced and extended in recent eras. The majority of MDBs were founded in the 1960s, during decolonization and however, others have formed the end of the Cold War to reinforce rebuilding, growth, and regional integration. The primary goal for their formation was to augment these efforts to pursue the Millennium Development Goals (MDGs) targeted to be realized by 2015, and now the ambitious, global, and cross-sector Sustainable Development Goals (SDGs) and Agenda 2030.

Given their commitments, industry and nation coverage, and familiarity, MDBs can be the facilitator for other bankrolling, private and sector, local incomes – summarized in the notion of increasing resources from 'billions to trillions' to turn the SDGs into a reality (Engen & Prizzon, 2018). MDBs are taking significant steps towards improving finance provision for adapting through their labelled climate funding and establishing finance streams. Nonetheless, they face challenges in operationalizing their Paris alignment commitment to fully mainstreaming climate resilience across their portfolios (Murphy & Parry, 2020) (Hallegatte, et al., 2019).

MDBs' have implemented reporting mechanisms to differentiate between their standard development finance and finance provided to reduce vulnerability to climate change. The figure below shows the data and statistics of MDB's Climate finance pledges reported for 2015-2018 for emerging and developing economies and for 2019-2020 for all economies in which the MDBs operate.

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<sup>8</sup> The long-term global alteration of temperature and weather patterns.



**Figure 3: MDBs' Climate Finance Commitments 2015-2020 (in USD billion)** Source: (EIB, 2021)

Climate finance pledged by major MDBs increased to a cumulative of USD 66 billion last year from USD 61.6 billion in 2019, based on the 2020 Joint Report on Multilateral Development Banks' Climate Finance<sup>9</sup>. Of this, 58 percent – or USD 38 billion – was committed to low- and middle-income economies. Out of the total investment of USD 66 billion, USD 63.11 billion came from the MDBs' own accounts and USD 2.93 billion from outside resources channeled through the MDBs. These comprised Green Climate Fund,

<sup>9</sup> Yearly joint report on Multilateral Development Banks' of MDB climate finance figures, together with a clear explanation of the methodologies for tracking Climate finance.

Climate Investment Funds, climate-related funds under the Global Environment Facility, European Union combined facilities, etc.

The aggregate climate co-finance dedicated during 2020 alongside that from MDB resources was USD 85 billion. This means MDB climate finance plus climate co-finance totaled more than USD 151 billion, and private direct mobilization summed up at USD 5.9 Billion. Speeding up the switch to low-carbon and climate-resilient economies via climate finance is a central component of the MDBs' commitment to bringing into line their activities with the goals of the 2015 Paris Agreement to maintain global warming well below 2°C, with efforts to limit it to 1.5°C, along climate-resilient expansion paths. It is reported that in the past six years, the MDBs have conjointly pledged a total of USD 257 billion in climate finance, of which USD 186 billion was bound for at low- and middle-income economies.

Climate change encompasses a measurable risk for MDBs and systemic financial strength. Furthermore, there is growing consciousness that finance is vital in realizing the universal climate change goals. MDBs have an exclusive catalytic situation in realizing the Paris Agreement objectives by supplementing inadequate government resources and exploiting their investments from private capital numerous times. In addition, MDBs help client governments arrange project groundwork such as drafting tenders and offer economic advice on development pathways, especially for the low and middle economies (Pauw, 2015).

Nonetheless, up to the present time, climate threats are not adequately accounted for deterring sustainable investments (Monasterolo & de Angelis, 2020) (Carney, 2015). Thus, it is vital to sufficiently evaluate progressive climate risks for loaning and finance decisions to align investment with sustainability and safeguard macro-financial stability. The increasing attention to sustainable investment can be credited to the growing consciousness of climate-related financial threats (Buchner, et al., 2019). They encompass physical risks connected to recurrent life-threatening climate happenings and long-term climate effects, as well as transition threats, which originate from unexpected variations in climate policy and guideline or technological modifications (Carney, 2015) (Hallegatte, et al., 2019) (Pauw, 2015).

Sustainable financing mechanisms—such as Ecological, Social, and Governance (ESG) yields and green bonds—have advanced promptly in the last decade. Nevertheless, they still characterize a small portion of the global securities market. Such instruments target investments associated with climate and other sustainability objectives and offer an opening to Bankroll sustainable, low-carbon shift Engen & Prizzon (2018), Carney (2015), and Pauw (2015) underline that the finance industry should play a leading role in realizing the universal climate targets.

Nonetheless, presently, sustainable investments are delayed for numerous motives. For example, limited operational sustainability classification and the limited incorporation of climate-financial threat evaluation in stakeholders' portfolios (Berensmann, et al., 2017). According to Monasterolo & Volz (2020) and Hallegatte, et al., (2019), sustainable finance has advanced from a position market, attracting a small number of moral moneylenders and shareholders to a domain generating substantial attention across the monetary system.

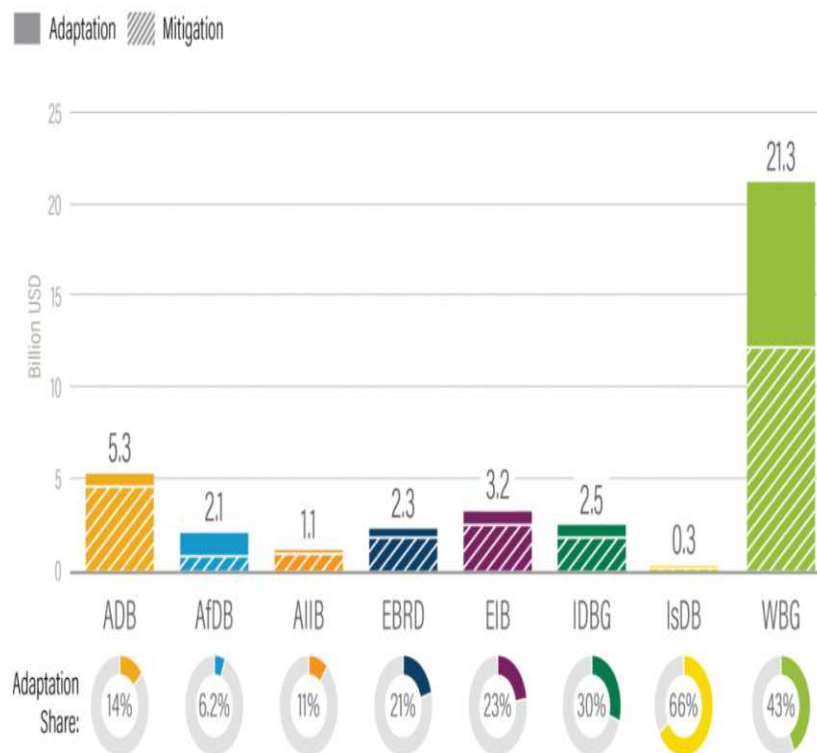
The increasing attention in maintainable finance among MDBs is due to increasing alertness of climate-related financial threats, including physical risks linked with more recurrent life-threatening climate happenings and long-term climate effects coupled with transition threats originating from unforeseen variations in climate course of action and directive or innovation changes (Carney, 2015) (Berensmann, et al., 2017) (Monasterolo & de Angelis, 2020) (Engen & Prizzon, 2018).

According to Monasterolo & Volz (2020) and Engen & Prizzon (2018), MDBs experience numerous obstacles in their attempts to bring into line portfolios with sustainability objectives, including inadequate consistent, functioning catalog to categorize investments based on their shades of “green” and “dirty,” discovery of climate-related monetary threats, integrating climate-risk evaluation in fiscal portfolios and agreements, and constant and comprehensible rule actions to support the low-carbon shift.

The Paris Agreement demands a balance in climate finance between mitigation and adaptation. (Carney, 2015) (Hallegatte, et al., 2019). The figure below illustrates MDBs



mitigation<sup>10</sup> and adaption<sup>11</sup> climate finance to Low- and middle-income countries in 2020. The figure below indicates the increased participation of MDBs in adaptation climate finance. Bar height in the figure above signifies the total amount of climate finance to mitigation and adaptation; proportions on bars denote the share of climate finance going to adaptation.



**Figure 4: MDB mitigation and adaption climate finance, 2020 (in USD million)**  
Source: (Neunuebel, et al., 2020)

Finance reinforcing adaptation in emerging economies augmented slightly, from 34% of MDB climate backing in 2019 to 35% in 2020. This shadows the favorable growing trend

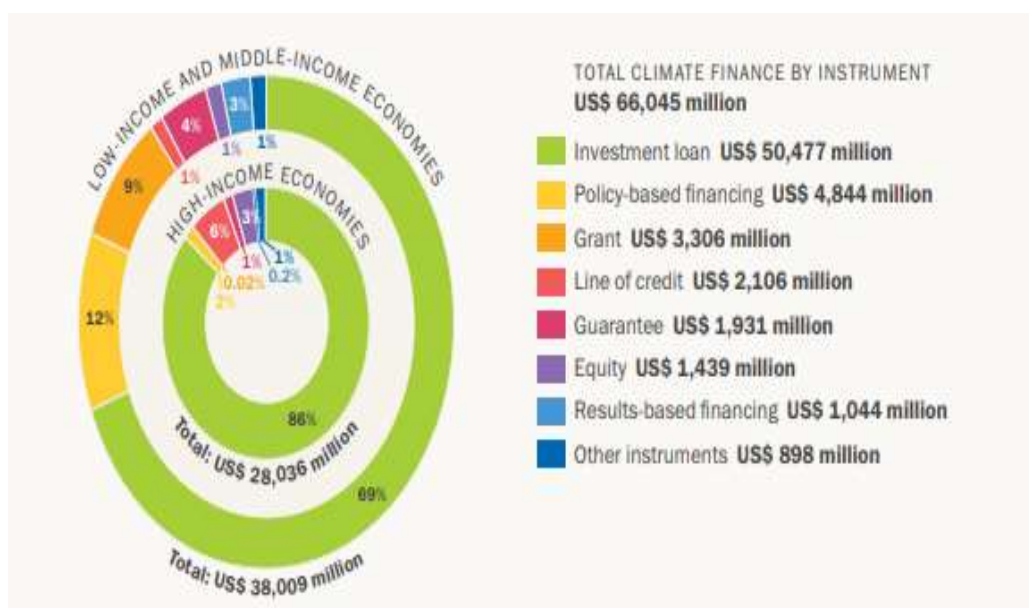
<sup>10</sup> Mitigation: actions to reduce greenhouse gas emissions.

<sup>11</sup> Adaptation: ability to reduce vulnerability to the effects of climate change, lessen the effects and moderate damage. It includes economic stability and institutional capacity.



of the last half a decade, as adaptation signified only 20% of MDB climate finance in 2015. Adaptation finance has remarkably signified over half of the AfDB's climate funding for two years, and the IsDB jumped from 40% of its climate finance reinforcing adaptation in 2019 to 66% in 2020.

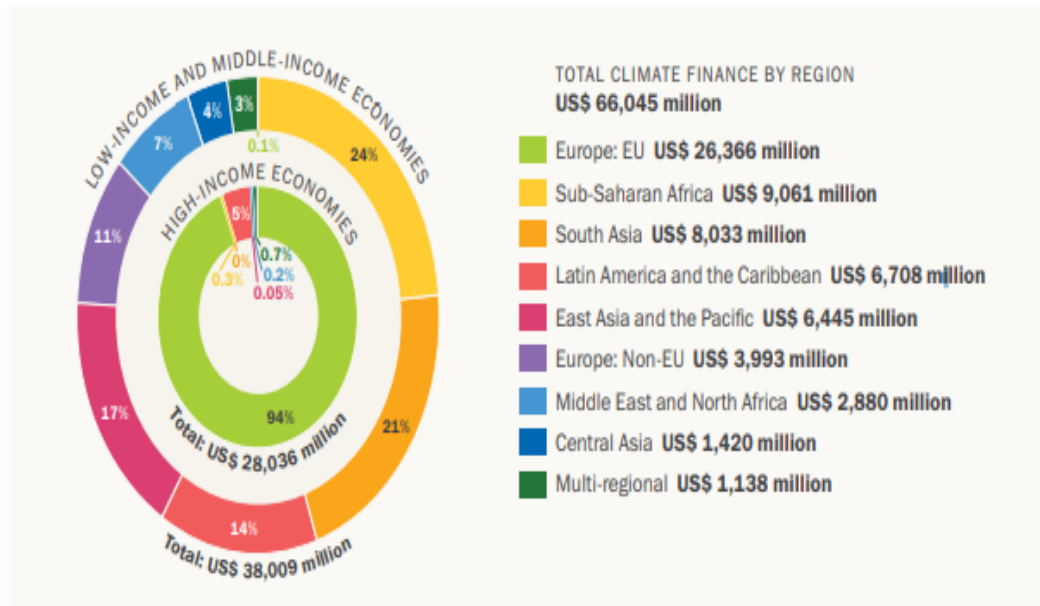
Project-based loans, policy-based finance, and Grants are presently the principal mechanisms to distribute climate funding (Buchner, et al., 2019). Other financial instruments, such as results-based finance, equity finance, and guarantees, have been utilized with climate finance to a much lesser amount or level. Using a wider variety of financial instruments and increasing their usage where applicable will improve the impact of climate finance distributed (Buchner, et al., 2019). The figure below outlines MDBs total climate finance by instruments in 2020. Accordingly, investment loans represented the highest value at USD 50,477 million, with result-based financing representing the lowest at approximately USD 1,044 million.



**Figure 5: Total MDB climate finance by instrument type, 2020 (in USD million)**  
 Source: (Joint MDB Report, 2020)

The figure below outlines the geographical spread of MDBs channelling funds for climate finance. Accordingly, the total climate finance reached USD 66,045 million in 2020, with

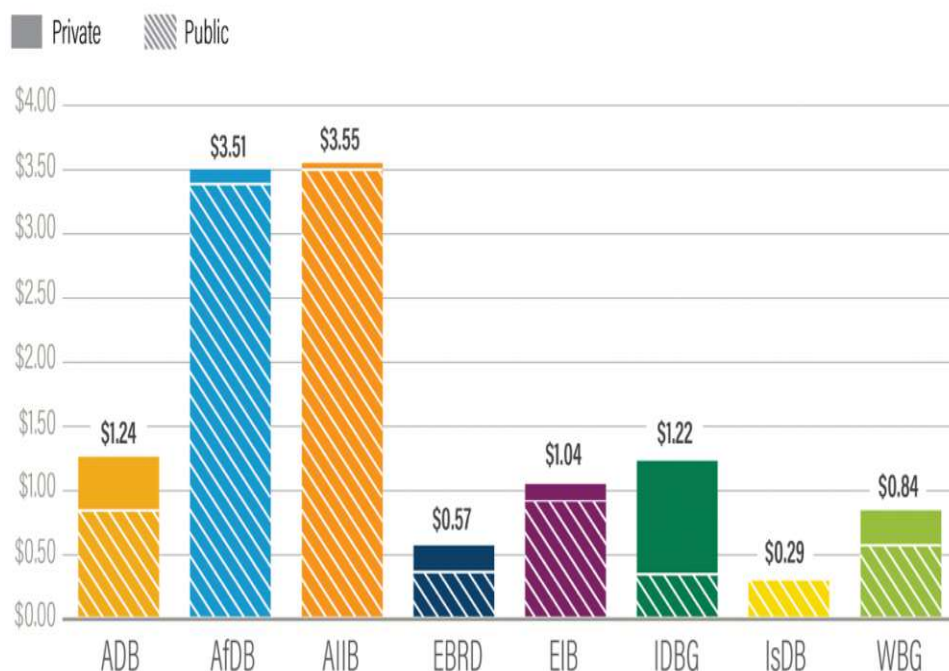
Europe taking the highest share at USD 26,366 million and Central Asia among the lowest at USD 1,420 million.



**Figure 6: MDB climate finance by region, 2020 (in USD million)** Source: (Joint MDB Report, 2020)

As part of their “Billions to Trillions” program founded in 2015<sup>12</sup>, MDBs emphasized utilizing public backing to rally orders of magnitude more private co-finance. Co-finance organized by each dollar of MDB climate backing to low-and middle-income countries in 2020 is illustrated below: MDBs co-bankrolled many climate-related projects, with AfDB and AIIB recording the highest values.

<sup>12</sup> In April 2015, the Asian Development Bank (ADB), African Development Bank (AfDB), European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD), Inter- American Development Bank Group (IDBG), and the World Bank Group (WBG), together known as the MDBs, and the International Monetary Fund (IMF) presented a joint concept of what they can do, within their respective institutional mandates, to support and finance the achievement of the SDGs.



**Figure 7: Co-finance mobilized by MDBs in 2020 (in USD million)** *Source: (Neunuebel, et al., 2020)*

There is an increased need for climate investment by 2050 in different sectors, including energy systems, building and infrastructure, waste and wastewater, and transport that represent the leading backers to the climate-related risks facing financial institutions. For example, the annual investment needs for energy systems are at an average of USD 7,272 billion, for building and infrastructure at USD 800 billion, industry, waste, and wastewater at USD 364 billion, and transport at USD 2,565 billion.

These mean annual climate investment needs can exceed the value mentioned above. Table 1 illustrates climate investment needs data through 2050 and summarizes the yearly investments needed in various sectors. It outlines the total mitigations for different programs within the energy systems, building and infrastructure, industry, waste, wastewater, transport, Agriculture, Forestry, and Other Land Use (AFOLU). Besides, it illustrates the cumulative total adaptation for low, mean, and high in USD billion.

**Table 1: Sector-wise climate investment need data through 2050** *Source based on: (Naran, et al., 2021)*

| CPI Sector  | Annual investment needs (USD bn) # |              |               |
|---|------------------------------------|--------------|---------------|
|   | Low                                | Mean         | High          |
| <b>Total Mitigation:</b>                                | <b>4,961</b>                       | <b>7,272</b> | <b>11,098</b> |
| <b>Energy Systems:</b>                                  | <b>1,495</b>                       | <b>3,287</b> | <b>6,594</b>  |
| Renewable Energy:                                       | 662                                | 1,142        | 1,983         |
| Renewable Power   | 620                                | 1,074        | 1,896         |
| Biofuel & Biogas  | 42                                 | 68           | 87            |
| Electricity T&D   | 556                                | 727          | 854           |
| Innovation:   | 277                                | 1,418        | 3,757         |
| Integration solutions (Hydrogen, Pumped Hydro, Storage) | 277                                | 1,286        | 3,266         |
| CCUS  | 0                                  | 132          | 491           |
| <b>Buildings &amp; Infrastructure:</b>                  | <b>480</b>                         | <b>800</b>   | <b>1,119</b>  |
| Energy efficient buildings                              | 441                                | 749          | 1,057         |
| Renewables direct uses and district heat                | 39                                 | 50           | 62            |
| <b>Industry, Waste &amp; Wastewater:</b>                | <b>280</b>                         | <b>364</b>   | <b>448</b>    |
| Efficient and Low-carbon processes                      | 280                                | 364          | 448           |
| <b>Transport:</b>                                       | <b>2,449</b>                       | <b>2,565</b> | <b>2,681</b>  |
| BEV   | 1,422                              | 1,445        | 1,468         |
| EV Chargers   | 100                                | 125          | 150           |
| Rail & Urban Transport                                  | 770                                | 770          | 770           |
| Energy Efficiency                                       | 157                                | 225          | 293           |
| <b>AFOLU:</b>   | <b>256</b>                         | <b>256</b>   | <b>256</b>    |
| Forestry - Re/Afforestation                             | 152                                | 152          | 152           |
| Agriculture – Sylvopasture                              | 104                                | 104          | 104           |
| <b>Total Adaptation:</b>                                | <b>180</b>                         | <b>180</b>   | <b>180</b>    |
| Mangrove and Peatland Restoration                       | 11                                 | 11           | 11            |
| <b>Total CF</b>   | <b>5,141</b>                       | <b>7,452</b> | <b>11,278</b> |

IPCC approximates that regulating the temperature increase to 2°C, the objective of the Paris Agreement, will necessitate approximately USD 3 trillion of investment each year to 2050. The Paris Agreement's long-term temperature objective as stated in Article 2 is to reinforce the global response to climate change, reaffirming the aim of limiting universal temperature increase to below 2°C while pursuing efforts to decrease the rise to 1.5 degrees. While the targets mirror changing digress or levels of determination, the implementation of novel objectives indicates the lasting significance of MDBs' role in meeting universal climate financial needs. As illustrated below, all the significant MDBs have now set post-2020 climate finance objectives.

**Table 2: MDBs' post-2020 Climate Finance Targets** (Source: Own Table)

| <b>MDB</b>  | <b>Post 2020 Targets</b>  |
|-------------|---|
| <b>ADB</b>  | USD 80 billion for 2019-2030, and 75% of projects (by number of projects rather than the amount of financing) by 2030   |
| <b>AfDB</b> | At least USD 25 billion for 2020-2025   |
| <b>AIIB</b> | 50% of annual loan volume by 2025 (aiming to reach USD 10 billion in total annual loan volume by 2025)  |
| <b>EIB</b>  | Global: 50% of operations support climate action and environmental sustainability by 2025; USD 1 trillion (around USD 1.18 trillion) of investments in climate action and sustainability from 2021-2030 |
| <b>EBRD</b> | More than 50% of commitments support green finance by 2025  |
| <b>IDBG</b> | At least 30% of finance from IDB, IDB Invest and IDB Lab (the three components of the IDB Group) for 2021-2024  |
| <b>IsDB</b> | Dedicated to a climate finance target of 35% of the total financial commitment by 2025.   |
| <b>WBG</b>  | 35% of overall financing from 2021-2025; 50% of International Development Association and IBRD climate finance to support adaptation and resilience   |

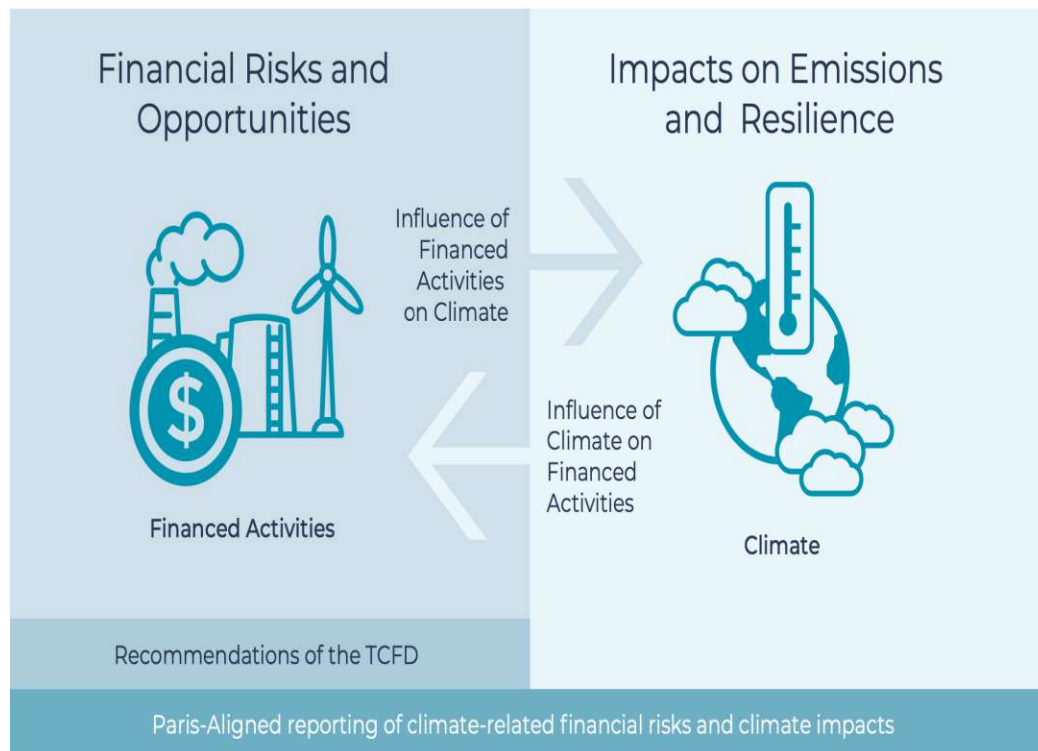
Climate change characterizes a material risk for separate financial establishments and systemic financial constancy. Furthermore, there is cumulative consciousness that

finance plays a fundamental role in accomplishing the global climate objectives. Nonetheless, such risks are not sufficiently accounted for to date, hindering sustainable investments. It is crucial to evaluate forward-looking climate threats adequately for lending and investment decisions. Financial institutions need to design procedures applicable to their balance sheets and portfolios to manage transition risk.

Integrating climate-financial threat evaluation in monetary agreements is vital for emerging financial tools that bridge the sustainable investment gap (Smallridge, et al., 2012) and support the financial steadiness (Battiston, et al., 2017) (Nelson, et al., 2014). The Financial Stability Board Task Force on Climate-related Financial Disclosure (TCFD, 2017) shows that shift risks stem from policy directives, markets, innovation, or consumer behavior modifications. Campiglio et al. (2018) underline those factors such as inadequate access to data is needed to hinder climate-related financial risks assessment. The authors also identify factors, such as the evaluation of climate-related monetary threats requiring modelling the dynamic connections between the macro-economy, the monetary structure, climate change, and ecological guidelines. These models face deep uncertainty.

The Financial Stability Board (FSB) founded the Task Force on Climate-Related Financial Disclosures (TCFD) in 2015. The task force developed recommendations across all sectors and provided supplementary guidance for financial institutions. TCFD establishes constant climate-related financial risks disclosures that MDBs use to provide information to stakeholders. MDBs offer grants, investments, and loans to bankroll emerging economies (Abadie, et al., 2013) (Pablo & Kearney, 2018) (Nelson, et al., 2014). They include global financial institutions that support economic and social progress in their emerging economies' governments. MDBs extend roughly USD 50 billion in investments, loans, and grants to the private and public sectors to facilitate socio-economic development in emerging markets annually (Pablo & Kearney, 2018) (Nelson, et al., 2014).

To become Paris aligned, MDBs need to report the results of their activities and the level to which their portfolios and projects are Paris aligned—for instance, reporting on climate-related financial risks and the impacts on emissions and resilience. The figure below illustrates the dimensions of Paris- aligned Reporting.



**Figure 8: Dimensions of Paris-aligned Reporting** *Source: (Voß, et al., 2020)*

### 3. Methodology

This section includes the procedures, methods, tools, materials, and respondents utilized in the present study to address the research questions. The research methodology below enabled us to assess the study's inclusive reliability and validity systematically. Besides, it explained the research design, data generation, gathering, and scrutiny approaches.

#### 3.1 Research Design

The proposed approach is based on a multipronged research process that began with a widespread review of Financial Institutions' current policies, project databases, and annual reports. It does this by examining the work of critical financial Institutions reviewing their strategies, policies and organizational frameworks, country programs, and partnerships (Rajasekar, et al., 2006). A limited number of financial institutions were



selected to address the questions and consider the time and resources available. The selection process included the following criteria:

- Inclusion of climate change in strategic objectives.
- Role in financing Adaptation and Mitigation

Based on the above criteria, the following financial institutions were selected:

## Multilateral Development Banks

- ADB:** The Asian Development Bank (ADB) is the IFI responsible for working with Asia and the Pacific. ADB is headquartered in Manilla, Philippines and was established in the year 1966.
- AfDB:** The African Development Bank (AfDB) is the IFI's primary responsibility for working with the African continent. It is estimated, Africa will account for nearly half the world's population increase over the next 30 years and faces development challenges. AfDB was established in the year 1964 and is headquartered in Abidjan, Cote D'Ivoire.
- AIIB:** The Asian Infrastructure Investment Bank (AIIB) is the IFI with a focus on the economic development of Asia. AIIB is headquartered in Beijing, China and was established in the year 2016.
- EBRD:** The European Bank for Reconstruction and Development (EBRD) was founded to create a new post-Cold War era in central and eastern Europe in 1991. It is headquartered in London, United Kingdom.
- EIB:** The European Investment Bank (EIB) is the lending arm of the European Union (EU). EIB is the largest climate finance provider and works with lower- and middle-income countries outside the EU and EU member countries. EIB was established in 1958 and is headquartered in Luxembourg.
- IDBG:** The Inter-American Development Bank Group (IDBG) is the IFI responsible for working with Latin America and the Caribbean. The region is a lesser greenhouse gas emitter because of its relatively more minor population and an abundance of



lower-carbon energy resources, including hydropower. IDBG was established in 1959 and is headquartered in Washington, DC, United States of America.

- g) **IsDB:** The Islamic Development Bank (IsDB), a leader in Islamic Finance, focuses on promoting economic and social development in its member countries and Muslim communities. IsDB is headquartered in Jeddah, Saudi Arabia and was established in 1973.
- h) **WBG:** The World Bank Group (WBG) was established in 1944 and is headquartered in Washington, DC, United States of America.

## Development Finance Institution

- a) **OeEB:** Oesterreichische Entwicklungsbank AG (OeEB) was founded as the development bank of the Republic of Austria in March 2008. It finances private investment projects in emerging markets and developing economically viable countries and contributes to sustainable development and better living conditions.

The study is not an evaluation; it does not seek to compare the performance of one MDB against the other. Instead, it is a learning exercise that aims to provide insights into the constraints and opportunities faced by the MDBs. Given the scope of the work and interviews, the study sheds only limited light on the role of these organizations in the transition to a low carbon economy. Additionally, also looked at the policies and current practices of DFI's like the Development Bank of Austria (OeEB)

The second part of the research entailed a series of stakeholder interviews during December 2021 and January 2022. Criteria for inclusion of stakeholders included: 1) their significance in the decision-making process, 2) their importance as evidenced by the volume of financing, and 3) their availability for interview. Information gathered through interviews was used to form the basis for discussing significant themes in the study, including MDBs stakeholders' views regarding the role of Financial Institutions in

transition to a low-carbon economy, their current contributions, and critical challenges. Several further rounds of consultation were also conducted with the stakeholders.

## 3.2 Data Collection and Research Instruments

The study relied on a widespread review of documents and selected interviews with key stakeholders. All established financial institutions except AIB and the IDBG did not respond to the request for an interview. Besides, the study-controlled responses were recorded as qualitative information. However, the interviews included open-ended questions to offer a broader perspective of the participants' opinions and attitudes towards the low-carbon economy and potential climate-related risks and opportunities. Both primary and secondary data sources were integrated. The rationale for selecting this approach was that it was economical, easy to implement, and allowed a more broad population inclusion (Rajasekar, et al., 2006). It also placed less weight on the respondents, reinforced privacy, and was comparatively flexible.

In addition to strategic and policy documents, the analyses also included a review of a broad range of research, policy, and advocacy documents related to climate change. The next step included conducting critical analyses and systematic reviews of recently published secondary sources to reinforce the primary data collected using interviews (Rajasekar, et al., 2006). The primary objective for incorporating the secondary research was to integrate data previously obtainable regarding recent trends about MDB's current role in promoting a low-carbon economy and potential climate-related risks and opportunities. Therefore, this section included performing systematic reviews of multiple; contemporary works literature, mainly from reputable journals and publications (scholarly and peer-reviewed journal articles, credible websites, government publications, and financial institutions reports).

## 3.3 Interview Design and Method

The interviews were kept short and comprised of open-ended questions, as illustrated in Appendix A. Each question in the interview concentrated on a definite research hypothesis or offered contextual info indirectly answering the research objective. The participants were provided with the required information making the questions

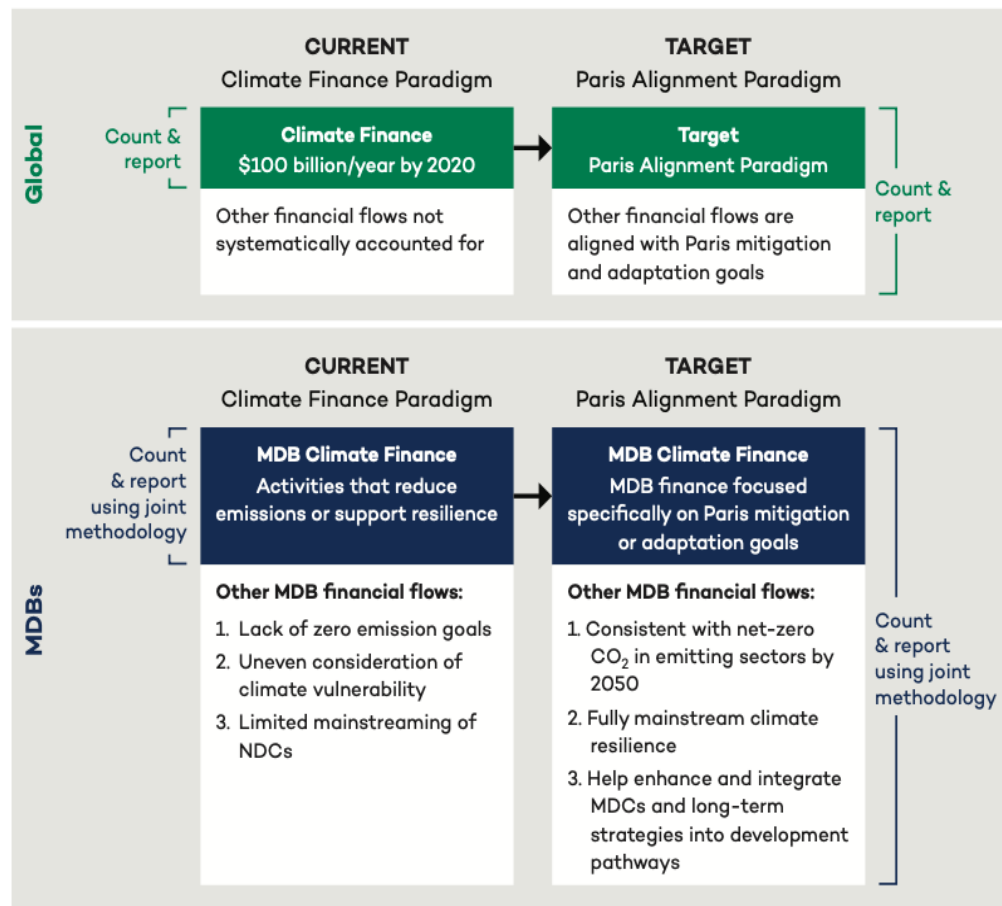
understandable, ensuring an improved survey completion rate and more thoughtful and informative answers. The study avoided bias, vagueness, and sensitive queries, facilitating the accuracy and precision of answers. Interviews were executed using phone calls video conferencing calls. Due to the Covid-19 pandemic restrictions, face-to-face interviews were not conducted.

### **3.4 Analysis and Data Preparation**

The study uses as building blocks analyses of the response of each MDB. The MDB analysis was conducted based on publicly available documentation and supplemented by interviews with key stakeholders from each MDB and with a limited number of other Financial Institutions like Development Finance Institution (DFI). The interviews with DFI provided different and helpful perspectives and their functionality concerning climate finance more broadly. The research employed thematic analysis to analyze feedback and classify themes, such as stakeholders' opinions and trends on the low-carbon economy and potential climate-related risks and opportunities.

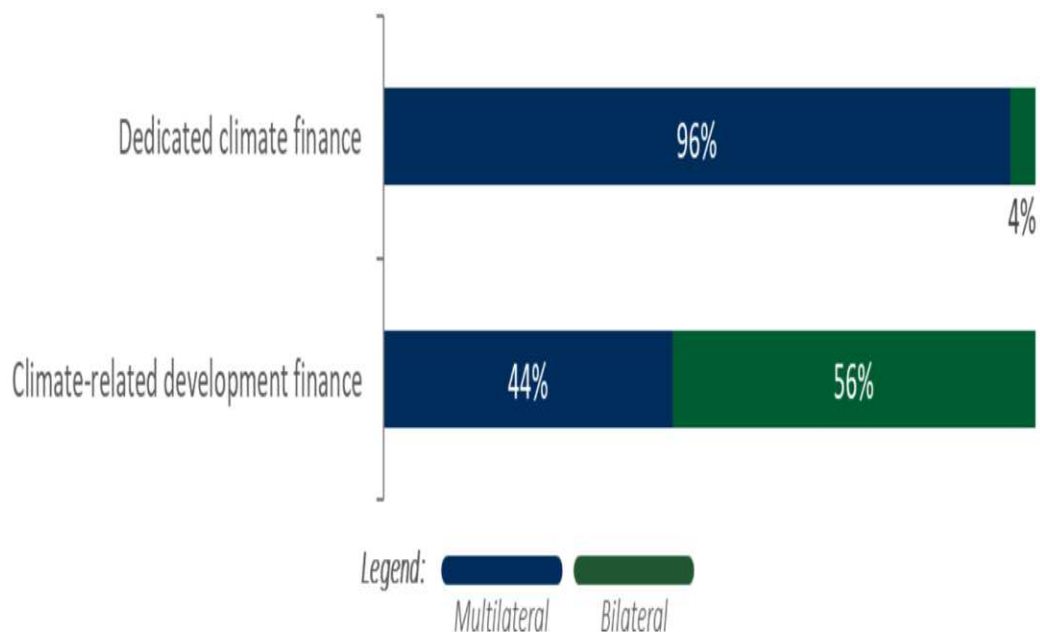
## **4. Climate Finance**

Climate finance is still integral to attaining a low-carbon transition. The global climate finance structure is complex and constantly evolving. The committed climate finance is delivered by specific climate institutions or from explicitly defined backing set aside for climate action. This bankrolling is offered by Organization for Economic Co-operation and Development (OECD) governments with the explicit aim of reinforcing low-carbon resilient development, characteristically on concessional or grant terms, typically via unique climate funds or specific climate funding pools and instruments. Paris alignment model stresses the use of finance, policy support, tracking, capacity building, and reporting, to shift finance flows to low-carbon, climate-resilient pathways (OECD, 2019) and requires MDBs to go beyond mobilizing and tracking the amounts of climate finance they are contributing toward achieving the goal as illustrated in the figure below.



**Figure 9: Transitioning from the climate finance paradigm to the Paris alignment paradigm** Source: (Larsen, et al., 2018)

Meanwhile, climate-related expansion funding with climate co-benefits is delivered through DFI and methodologies rather than through definite climate funds or funding pools. This funding is usually offered by multilateral and bilateral sources with the principal objective of reinforcing economic or social development in a climate-friendly approach. This encompasses on-balance-sheet MDB bankrolling to governments or private companies (Timilsina & Malla, 2021). It is customarily offered at the market or near-market terms and on concessional terms for nations at earlier stages of economic development. The figure below illustrates the share of climate finance flows through Dedicated climate finance and Climate-related development finance channels.

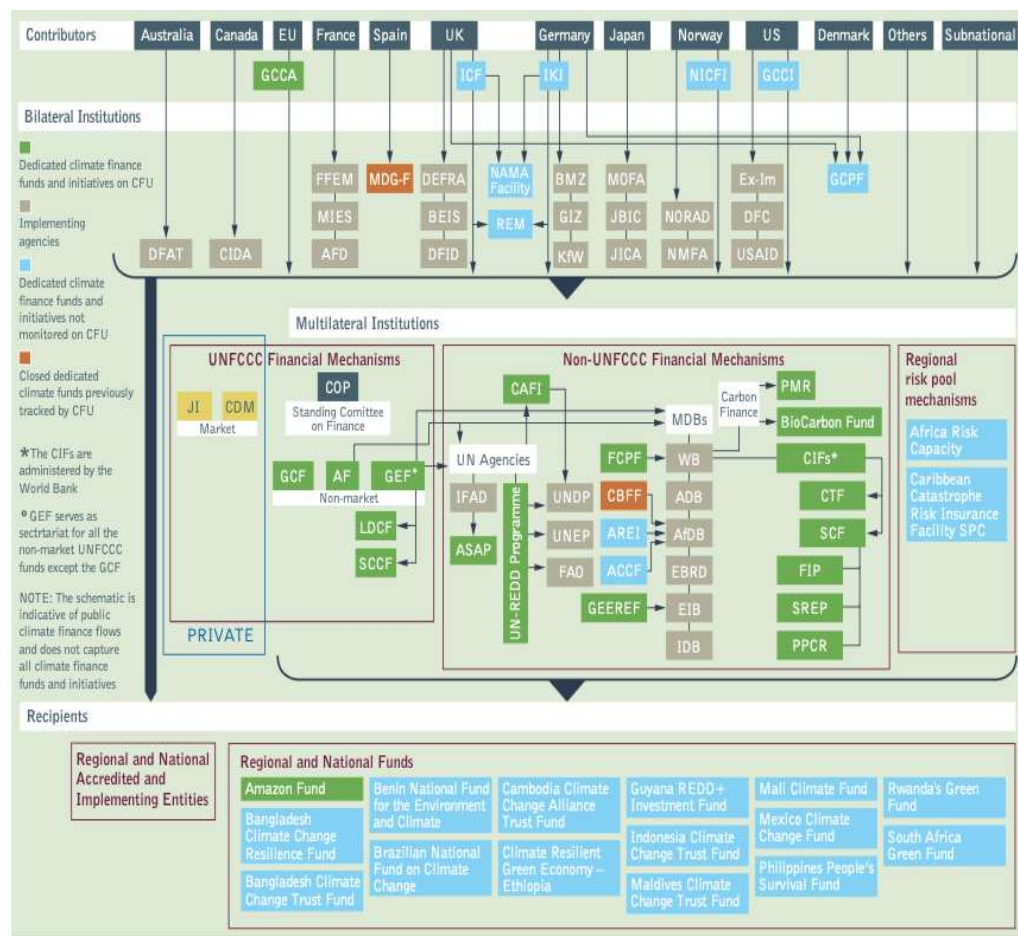


**Figure 10: Shares of Climate Finance Flows by Channel** Source: (Vivid Economics , 2020)

The great majority of climate investment continues to be from the MDBs' own resources, with committed climate resources and other co-financing, such as from the private sector, establishing a comparatively small portion of total climate finance.

The Figure below presents an indicative overview of the global climate finance structure illustrating the flow of funds both within and outside the UNFCCC Financial Mechanism<sup>13</sup> through bilateral and regional initiatives and other channels. The UNFCCC entered into force in 1994, and the 197 countries that have endorsed the Convention are referred to as Parties to the Convention. The Convention formed a financial mechanism to provide financial resources to developing country Parties to facilitate climate finance and states that the operation of the financial mechanism can be entrusted to one or more existing international entities.

<sup>13</sup> The Financial mechanism established by convention to provide financial resources to developing country Parties.



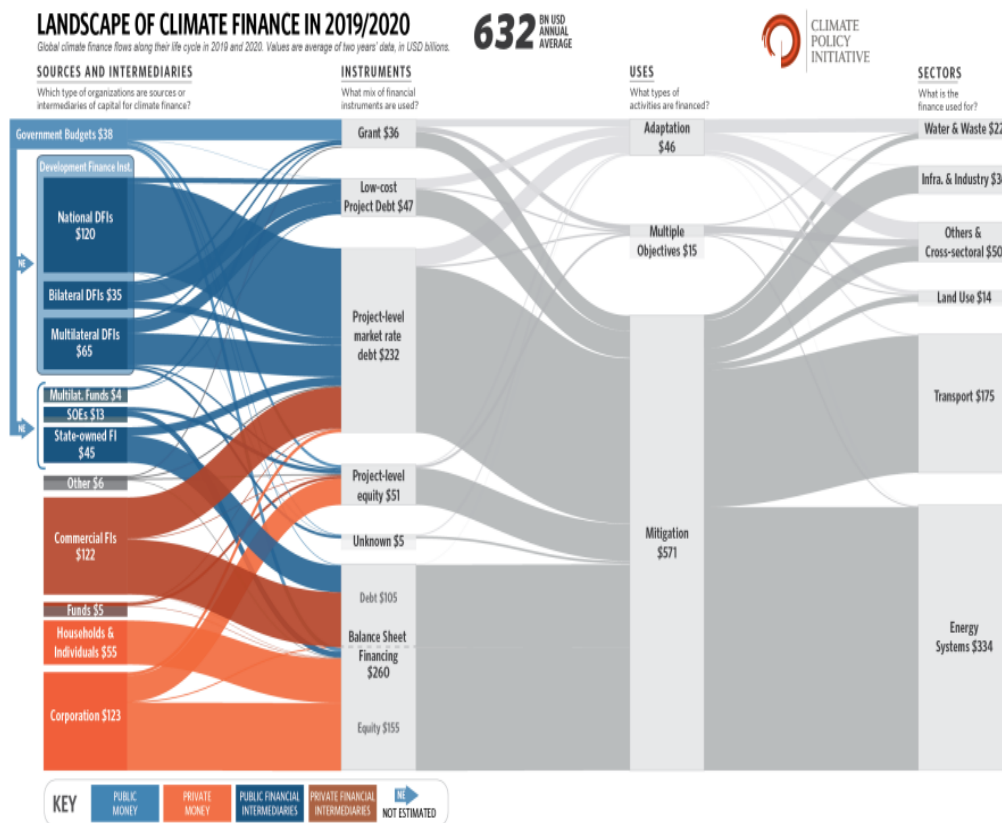
**Figure 11: Climate Finance Structure** Source: (Watson & Schalatek, 2021)

## 4.1 The Current Landscape of Climate Finance

*Climate finance* is defined as bankrolling that reinforces the switch to a climate-resilient economy by empowering mitigation activities, particularly the reduction of Greenhouse Gas (GHG)<sup>14</sup> emissions, and adaptation programs supporting the climate resilience of

<sup>14</sup> Gases that absorb and emit radiant energy, causing the 'greenhouse effect.' The primary GHG in the Earth's atmosphere are, carbon dioxide, water vapor, methane, nitrous oxide, and ozone.

infrastructure as well as generally of social and economic resources as defined by International Capital Market Association (ICMA). The figure below presents a detailed illustration of the climate finance landscape in 2019/20 in USD in billions and it illustrates a steady increase in private and public actors in their climate-related investments.



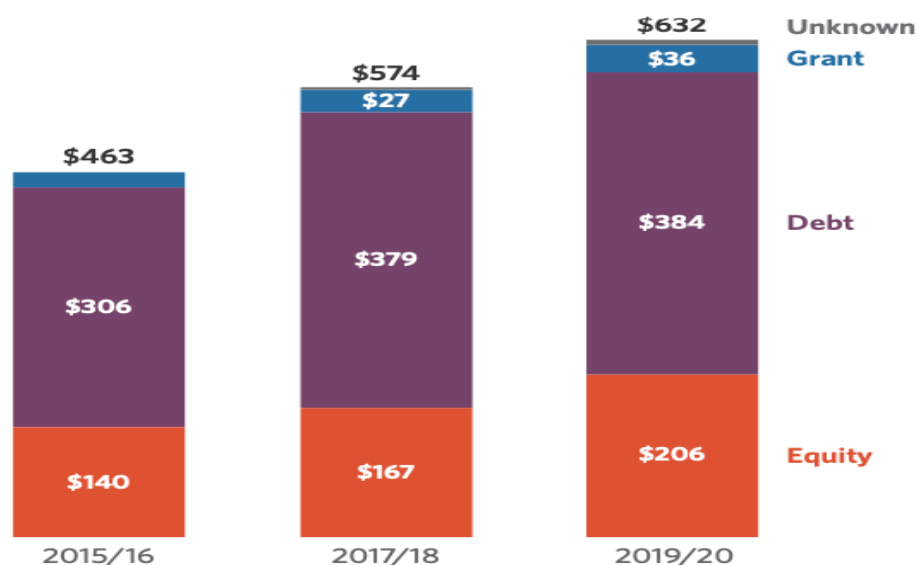
**Figure 12: Landscape of Climate Finance in 2019/2020 (in USD billion) Source:**  
(Buchner, et al., 2021)

The Glasgow Climate Pact<sup>15</sup> has highlighted the insistence of making financial flows consistent with low GHG and resilient development. Nevertheless, the implementation of the Paris Agreement still needs to be augmented to circumvent a temperature rise of more than 1.5°C. This requires comprehending the current landscape of climate finance, especially by MDBs.

<sup>15</sup> The Glasgow Climate Pact is an agreement reached at COP 26 held at Glasgow, United Kingdom, in 2021

## 4.2 Financing Instruments

Exploiting stockholder capital and rallying and pooling concessional<sup>16</sup> flows are two prospective opportunities through which MDBs can exploit and transitional resources to, in the end, upsurge the volume of climate bankrolling. The MDB model is to issue debt in international capital markets at a low cost and loan the proceeds to insolvents in emerging economies at reasonable rates, covering costs but not generating revenues. MDBs have solid records of accomplishing their funding work and offer adequate transparency and accountability on the different projects they undertake. The figure below illustrates climate finance by instrument, covering unknown grants, debt, and equity. Essentially, the 2019/20 financial year has recorded higher investments by these instruments than the previous three fiscal years. For example, financing by debt instrument increased from USD 306 billion (2015/16) to USD 379 billion (2017/18) and recorded a slight increase in 2019/20 to USD 384 billion.



**Figure 13: Climate Finance by Instrument (in USD billion)** Source: (Buchner, et al., 2021)

<sup>16</sup> Concessional finance is below market rate finance provided by major financial institutions



## 4.2.1 Types of Instruments

MDBs utilize multiple financial instruments and mechanisms to kick-start their climate change initiatives and begin centralizing and mainstream emerging economies' climate financing related to mitigation and adaptation, as summarized in the table below.

**Table 3: Climate finance Instruments and their relevance** (Source: Own Table)

| Instrument                    |  |
|-------------------------------|--|
| <b>Advisory Services</b>      | Advisory services or Policy dialogue include guiding national and local governments and private sector actors on a variety of topics.  |
| <b>Equity</b>                 | Ownership interest in an organization that represents a claim on the entity's assets in proportion to the number and class of shares owned.  |
| <b>Grants</b>                 | Grants are provided for policy-based support, investment support, and/or technical assistance and advice.  |
| <b>Bond</b>                   | The proceeds of Bonds are applied exclusively to financing or re-financing, in part or whole, new, and existing climate projects.  |
| <b>Guarantees</b>             | Guarantees are extended for entitled projects that enable financing partners to transfer certain risks that they cannot easily absorb or manage on their own.  |
| <b>Investment Loans</b>       | Loans are transfers for which repayment is required. Investment loans can be used for any development activity that has the overall aim of promoting sustainable social and economic development.                        |
| <b>Lines of Credit</b>        | Lines of credit provide a guarantee that funds will be made available, but no financial asset exists until funds have been advanced.   |
| <b>Policy-based financing</b> | Supports a programme of policy and institutional actions for a particular theme or sector of national policy. Disbursements are conditional on the borrower realizing their policy commitments in the lending agreement. |

## 4.2.2 Climate Funds

Climate funds play a significant role in boosting MDBs' climate bankrolling. The major partners in this respect are the Climate Investment Funds (CIF), the Global Energy Efficiency and Renewable Energy Fund (GEEREF), the Global Environment Facility (GEF) Trust Fund, the Green Climate Fund (GCF), and European Union's funds for Climate Action. However, there exist numerous, some managed by a single MDB, and some designed to address one climate change area. MDBs have meaningfully established their climate change undertakings from current capital and by utilizing committed trust funds for co-investment and co-lending. The GCF was adopted to reinforce emerging economies towards low emission and climate-resilient pathways. GCF has a much more comprehensive range of implementing agencies than GEF or the CIFs. GCF structures its monetary funding through a combination of concessional lending, guarantees, grants, and equity instruments to leverage blended concessional finance and crowd in private investment.

Two standard universal fund measures have helped to exploit MDB resources: Global Environment Facility, which exploits resources from the World Bank and the IFC, and second is CIFs. Bilateral donors have played an essential role in both. MDBs and other UN agencies serve as implementing agencies for GEF, a multilateral financial mechanism established in 1991, one of the largest sources of grant and concessional finance for mitigation. Major MDBs like AfDB, ADB, EBRD, IDBG, and WBG is also implementing CIF agencies, which fast-tracks climate action by sanctioning transformations through its current initiatives' clean technology climate resilience, are also implementing CIF agencies, which fast-tracks climate action by approving transformations through its current clean technology, climate resilience, and energy access, sustainable forests, etc. in developing and middle-income countries. The CIFs have been a critical revolution in empowering concessional backing to be integrated at a large scale with MDB bankrolling to reinforce transformational climate change investments. CIFs fulfil the gap in the global architecture for low carbon technology backing at more concessional rates than the standard terms used by the MDBs.

CIF's resources are distributed through MDBs to beneficiary nations as technical support and recommended services for both public and private sector operations, often through

non-reimbursable grants; and as investments, implemented through a variety of mechanisms including senior concessional loans, subordinated loans or mezzanine instruments, equity, exchangeable grants, and contingent recovery grants, investment grants, and guarantees. Through utilizing MDBs capability and expertise, the CIFs mobilize novel and add-on resources at scale, try and test new instruments, and pilot new ideologies. The CIFs are made of the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). The CIF has introduced five unique programs: (i) accelerating the Coal Transition; (ii) renewable energy integration and storage to accelerate micro-grid development; (iii) sustainable cities to aid more resource-efficient growth in medium-sized cities; (iv) nature-based solutions at scale; and (v) industrial de-carbonization in GHG intensive and hard-to-abate sectors, for instance, steel.

Climate-related trust funds at MDBs are often categorized into mitigation and adaptation funds. These funds are utilized differently; for example, some have been used in capacity-building activities while others are in knowledge generation and learning on climate change mitigation and adaptation of sustainable measures. The different categories of funds must follow different resource allocation criteria to maximize their influence on sustainable development. For example, for adaptation funds, susceptibility should be the central criterion. On the other hand, the main criterion should encompass reducing emission potential for mitigation funds.

General information at the trust fund level is accessible for all MDBs. Nonetheless, there is limited detailed information regarding climate financing instruments and trust fund-reinforced programs across MDBs. Besides, specific research and literature exploring climate-related MDB trust funds are limited, and MDBs have formed over 200 such trust funds. Most trust funds receive support directly from donors, while others receive funding from Financial Intermediary Funds (FIFs). Nevertheless, some initial work on individual trust funds, especially on the WBG's Prototype Carbon fund and the development of carbon funds at WBG, can be employed to build a research analysis (Michaelowa, et al., 2020). Among the MDBs, the WBG leads in terms of the number of financial mechanisms and funds dedicated to climate finance. IDBG and AfDB have also executed some programs to finance climate change adaptation.

The table below outlines climate-related financial intermediary funds and MDB trust funds. The numbers reflect complete records but are derived from different periods and are subject to data accessibility. Besides, they comprise funds that are no longer active. On the other hand, programs outline a classification or cataloging established to regroup trust funds concentrating on the same topic.

Data presentation in this care faces one central challenge of differentiating independent trust funds from the myriad of secondary funds appearing as distinct units in the MDBs' trust fund databases coupled with avoiding double counting if the resources of individual trust funds are directed via others or included separately by banks performing the role of implementing entities.

**Table 4: Summary of MDB funding mechanisms for climate finance** *Source: (CFID, 2019)*

| Name of Fund   | Administrating MDB | Financing Instruments                     |
|--|--------------------|---|
| Global Facility for Disaster Reduction and Recovery (GFDDR)    | World Bank         | Grant                                     |
| Global Index Insurance Facility (GIIF)                         | World Bank and IFC | Worldwide                                 |
| IDB Regional Fund of Agricultural Technology (FONTAGRO)        | IDB                | Grant                                     |
| IDB's Infrastructure Fund                                      | IDB                | Loan, TA                                  |
| IDB's Sustainable Energy and Climate Change Initiative (SECCI) | IDB                | Grant, TA                                 |
| IFC Partial Credit Guarantees                                  | IFC                | Loan, Guarantee                           |
| Climate Investment Funds (CIF)                                 | World Bank         | Different for individual funds            |
| IFC Risk Sharing Facility (IFC RSF)                            | IFC                | RSF                                       |
| International Development Association                          | World Bank         | Grant, loan                               |
| Korea Green Growth Trust Fund                                  | World Bank         | Grant, TA                                 |
| MDB Pilot Program for Climate Resilience                       | MDB                | Grant, loan, TA                           |
| Multilateral Investment Fund (MIF) of the IDB Group            | IDB                | Grant, loan, equity, TA                   |
| Partnership for Market Readiness (PMR)                         | World Bank         | Grant                                     |
| Pilot Program for Climate Resilience (PPCR)                    | World Bank         | Grant, loan                               |
| Public-Private Infrastructure Advisory Facility (PPIAF)        | World Bank         | Grant, TA                                 |
| World Bank Group Catastrophic Risk Management                  | World Bank         | Weather hedges contingent financing       |
| ADB Climate Change Fund (ADB-CCF)                              | ADB                | Co-financing, grant, TA                   |
| Africa Climate Change Fund(ACCF)                               | AfDB               | Grant                                     |
| Africa Water Facility (AWF)                                    | AfDB               | Co-financing, grant, loan risk management |
| ASEAN Infrastructure Fund (AIF)                                | ADB                | Co-Financing, loan, TA                    |

**Table 5: Top-ten trust funds at MDBs** Source based on: (Michaelowa, et al., 2020)

|                                       | Trust Fund Name   | Trust Fund Size <sup>1</sup> |
|---------------------------------------|---|------------------------------|
| World Bank                            |   |                              |
| 1                                     | Global Environment Facility Trust Fund <sup>2</sup>   | 2320.7                       |
| 2                                     | First Tranche of the Umbrella Carbon Facility   | 833.7                        |
| 3                                     | Strategic Climate Fund <sup>2</sup>   | 597.9                        |
| 4                                     | Carbon Fund of the Forest Carbon Partnership Facility   | 593.0                        |
| 5                                     | Readiness Fund of the Forest Carbon Partnership Facility  | 315.5                        |
| 6                                     | Transformative Carbon Asset Facility  | 212.2                        |
| 7                                     | Prototype Carbon Fund   | 206.1                        |
| 8                                     | Third Tranche of the BioCarbon Fund (BioCFT3)   | 204.6                        |
| 9                                     | Carbon Fund of the Forest Carbon Partnership Facility   | 200.5                        |
| 10                                    | Multi Donor Trust Fund for Mainstreaming Disaster Reduction Initiative of the Global Facility for Disaster Reduction and Recovery | 199.2                        |
| Asian Development Bank                |   |                              |
| 1                                     | Clean Technology Fund <sup>2</sup>  | 490.2                        |
| 2                                     | Strategic Climate Fund <sup>2</sup>   | 243.9                        |
| 3                                     | Canadian Climate Fund for the Private Sector in Asia (CFPS) II  | 149.5                        |
| 4                                     | Urban Climate Change Resilience Trust Fund (UCCRTF)   | 149.4                        |
| 5                                     | Global Environment Facility Trust Fund <sup>2</sup>   | 135.1                        |
| 6                                     | Clean Energy Fund (CEF)   | 122.0                        |
| 7                                     | Future Carbon Fund  | 115.0                        |
| 8                                     | Canadian Climate Fund for the Private Sector in Asia (CFPS) I   | 77.8                         |
| 9                                     | Climate Change Fund   | 74.0                         |
| 10                                    | Carbon Capture and Storage Fund (CCSF)  | 70.9                         |
| Inter-American Development Bank       |   |                              |
| 1                                     | Clean Technology Fund <sup>2</sup>  | 346.9                        |
| 2                                     | Canadian Climate Fund for the Private Sector in the Americas (C2F)  | 249.5                        |
| 3                                     | OC-SDP for Sustainability II  | 207.7                        |
| 4                                     | Global Environment Facility Trust Fund <sup>2</sup>   | 203.0                        |
| 5                                     | Strategic Climate Fund <sup>2</sup>   | 140.8                        |
| 6                                     | UK Sustainable Infrastructure Program   | 68.9                         |
| 7                                     | Sustainable Energy and Climate Change Initiative (SECCI)  | 55.3                         |
| 8                                     | Biodiversity/Natural Capital Lab  | 25.0                         |
| 9                                     | UK Low Carbon Agriculture to Avoid Deforestation Fund   | 22.3                         |
| 10                                    | Colombia Sostenible   | 21.7                         |
| African Development Bank <sup>3</sup> |   |                              |
| 1                                     | Clean Technology Fund <sup>2</sup>  | 388.6                        |
| 2                                     | Strategic Climate Fund <sup>2</sup>   | 137.0                        |
| 3                                     | Sustainable Energy for Africa (SEFA)  | 106.0                        |
| 4                                     | Least Developed Countries Fund <sup>2</sup>   | 60.2                         |
| 5                                     | Global Environment Facility Trust Fund <sup>2</sup>   | 36.7                         |
| 6                                     | Clim-dev Africa Fund (CDSF)   | 27.1                         |
| 7                                     | Africa Climate Change Fund (ACCF)   | 12.7                         |
| 8                                     | Special Climate Change Fund <sup>2</sup>  | 5.5                          |
| 9                                     | Adaptation Fund <sup>2</sup>  | 4.5                          |

The table above lists the most significant active climate-related trust funds based on their total contributions received. The size of FIFs is enormous because many of them operate under UNFCCC financial mechanisms or as parts of the Climate Investment Funds (CIFs).

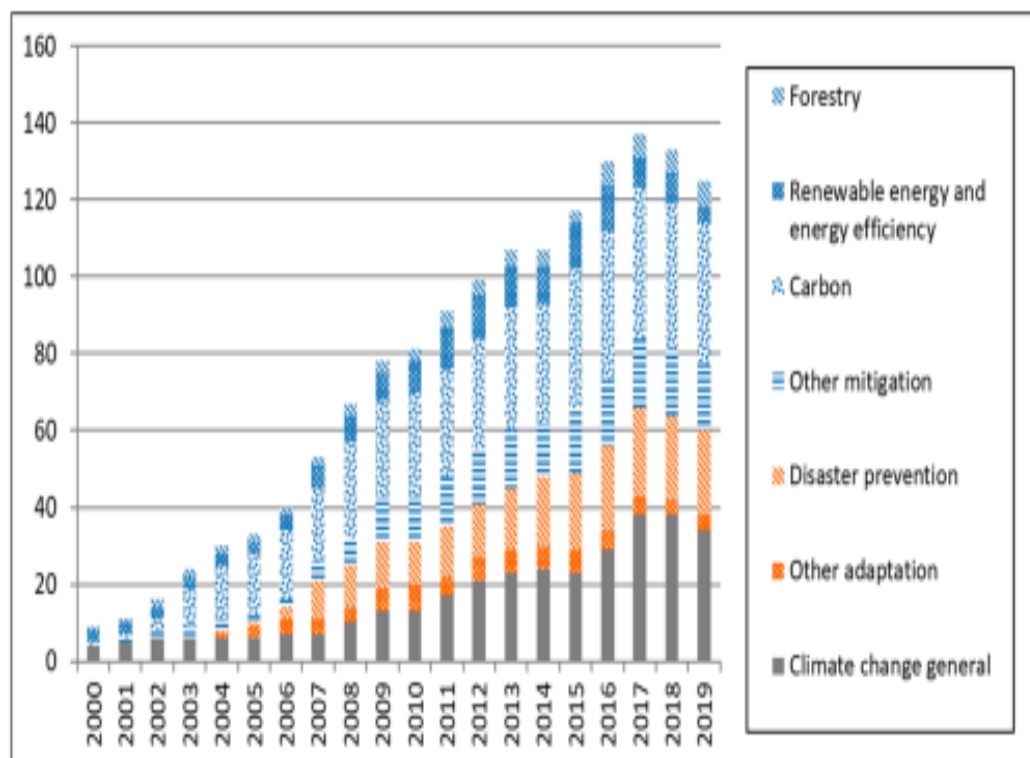
Climate-related trust funds can be classified based on their substantive link to climate change. Such taxonomies are as illustrated below:

- **High relevance.** Defines trust funds directly focusing on climate change, including carbon funds that concentrate on reinforcing the establishment of global market instruments for climate change mitigation and creating emission credits with many uses under such mechanisms.
- **Medium relevance.** Outlines trust funds indirectly concentrating on climate changes, such as renewable energy and energy-efficient funds. They target replacing carbon-intensive economic activity with low-emission substitutes. These funds can produce considerable co-gains in other capacities.

Trust funds can also be categorized based on the category of the climate change-related interventions, as illustrated below.

- **Mitigation.** Defines trust funds to prevent climate change by reducing or avoiding greenhouse gas emissions. Good examples comprise carbon funds that concentrate on renewable energy and energy efficiency, including funds focusing on forestry activities.
- **Adaptation.** These are trust funds aimed at dealing with or mitigating climate change impacts; however, they also focus on other initiatives, such as water management.
- **Climate change general.** Include trust funds aimed at handling both mitigation and adaptation.

The figure below illustrates vital areas; for example, blue is mitigation, orange is an adaptation, and grey is general. On the other hand, shapes outline thematic sub-fields. The data illustrates a robust increase in climate-related trust funds. Besides, it indicates the dominance of carbon funds and climate-related funds without a fixed concentration towards a single goal and encompasses mitigation and adaptation activities.



**Figure 14: Active trust funds, by fiscal year and thematic orientation** Source: (Michaelowa, et al., 2020)

### 4.2.3 Climate Bonds

Highly rated and liquid assets are indispensable portions of a well-diversified investment portfolio when high market unpredictability and improbability. AAA-rated<sup>17</sup> MDB and green bonds offer defensive fundamentals to the portfolio, a level of protection against deteriorations in risky assets, such as stocks and high yield bonds. MDBs were forerunners in the green bonds and climate bonds market, distributing their first bonds more than a decade ago. The table below highlights the MDBs support for Green and Climate Bonds.

<sup>17</sup> AAA is the highest possible rating that may be assigned to an issuer's bonds by any of the major credit rating agencies.



**Table 6: MDB Green and Climate bonds** (Source: Own Table)

| <b>MDB</b> | <b>Green and Climate Bonds</b>  |
|------------|---|
| AfDB       | AfDB has successfully issued more than six green bonds raising a total of USD1.5 billion from environmentally conscious investors. These funds have supported 24 projects in 14 countries.  |
| ADB        | ADB's Green Bond Program focusses on projects that promote the transition to low-carbon and climate-resilient growth as set out in its Bank Green Bond Framework. Since its launch in 2015, the program has raised about USD 7.6 billion.   |
| AIIB       | In 2019, AIIB launched the USD 500 million Asia Climate Bond Portfolio in partnership with Amundi. The portfolio engages with companies issuing categorized green bonds and uncategorized climate bonds to transition their business models to increase climate resilience and green leadership.  |
| EBRD       | EBRD has been issuing green bonds since 2010, with Euro 6.8 billion already issued more than 103 transactions by September 2020. In 2019, the EBRD introduced two new bonds: the Climate Resilience Bonds and Green Transition Bonds. Climate Resilience Bonds are supported by a portfolio of assets focused on climate change adaptation. In contrast, Green Transition Bonds are supported by a portfolio of assets focused on economic sectors that are highly dependent on the use of fossil fuels to enable their transition to low-carbon and resource-efficient operations. |
| EIB        | EIB issued the first Climate Awareness bond in 2007. Since then, it has issued more than Euro 30.8 billion in Climate Awareness bonds, the proceeds of which have helped finance renewable energy and energy efficiency projects worldwide.   |
| IDBG       | IDB Group has backed its partners in Latin America to develop green bonds, often in collaboration with other development partners.  |



|      |   |
|------|---|
| IsDB | In November 2019, IsDB issued its debut Green Sukuk (Islamic bond), raising USD 1 billion for renewable energy, clean transportation, energy efficiency, sustainable water, wastewater management projects, etc., across its 57 member countries.   |
| WBG  | The World Bank issued the first green bonds in 2008. Since then, IBRD has raised about USD 15 billion to support transportation, sustainable agriculture, clean energy and ecosystems, and water and wastewater management projects in member countries. The World Bank also supports green projects through its Sustainable Development Bond program. It provides advisory services to promote transparency and help emerging market sovereign issuers build green, social, and sustainable bond programs and engage with market stakeholders on environmental, social and governance considerations for investment. IFC launched its Green Bond Program in 2010 and was the first issuer to list a billion-dollar green bond in global market in 2013. This landmark transaction proved that green bonds were a scalable product that appealed to investors worldwide. By June 2020, IFC had issued about 170 green bonds in 20 currencies, totaling more than USD 10 billion. IFC also shares expertise and supports finance sector regulators and industry associations in emerging markets to develop green bonds, including through its Green Bond Technical Assistance Program and the Sustainable Banking Network, representing 39 countries and more than USD 43 trillion in assets in emerging markets economies. |

MDB and green bonds<sup>18</sup> offer protective features to the portfolio, a safety level against a decline in threatening assets, such as stocks and high-yield bonds. According to Clapp & Pillay (2017), green bonds apply ecological labelling to conventional bonds for financing green and climate projects. Their market has developed rapidly in recent years, and it is

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<sup>18</sup> Instrument where the earnings are used exclusively to finance and re-finance projects that contribute to climate change mitigation, climate change adaptation, natural resource conservation, biodiversity conservation, and pollution prevention and control.

promising for furthering climate action. Clapp & Pillay (2017) underline that MDBs have been highly active in issuing green bonds to reinforce their ecological and development agendas.

Green bonds represent a new investment product that enables more proactive climate investment strategies. The green bond trend is expanding in developed and emerging economies. Since its market introduction in 2008, the World Bank has actively developed new green bond issuance and reporting. MDBs and DFIs now comprise a considerable percentage of the green bond market (Clap & Pillay, 2017).

MDBs issue over 40% of the green bond market, supporting climate action. Recent empirical studies indicate that climate finance can help address the hindrances that deter climate-compatible investments in emerging economies. MDBs should deploy their capabilities and capital on low-emission investments to adjust risk-return (Smallridge, et al., 2012).

Investment in MDB bonds functions as double purpose as they offer the opportunity of potentially attractive financial earnings and the option of assisting emerging economies. MDB bonds' investments contribute to economic recoveries, as many nations' MDBs are lenders of first and last resort (Smallridge, et al., 2012).

Each financial instrument and mechanism explored above are only suitable in specific economic and country/ economy contexts. This means it is impossible to have the context right approach to generate these instruments. It values the time to think carefully about the instrument and mechanism that is the most appropriate, the reason it is the best fit, and the instrument's design to ensure the incentives are aligned.

### 4.3 Key Challenges

Climate challenges encompass a material risk for MDBs and systematic financial solidity. However, financial actors still price climate risks and opportunities into monetary contracts, such as loans and bonds. According to Monasterolo & Volz (2020), Battiston et al. (2019), and Monasterolo and de Angelis (2020), this issue is despite the cumulative availability of joint methodologies to implant advanced climate threats into financial risk estimates, such as climate stress tests. The mispricing of climate-related monetary risks

disturbs the addition of investments towards the low-carbon strategies needed to achieve climate objectives (Battiston, et al., 2017). Besides, it leaves MDBs exposed to assets of carbon-intensive institutions that can potentially lose value or usefulness, becoming stranded in an unsystematic shift to a low-carbon economy.

The financial sector is integral in achieving the universal claim goals. However, sustainable investments are delayed for various reasons, including limited functioning sustainability classification and lack of integration of climate-financial risk evaluation in stakeholders' portfolios (Berensmann, et al., 2017). In general, it is integral to adequately assess forward-looking climate threats for loan and investment decisions to align finance with sustainability and maintain micro-finance stability.

Sustainable investment has been established from a niche market, attracting limited ethical moneylenders and stockholders to a field that creates substantial interest across the financial system. The cumulative interest in maintainable finance can be credited to the increasing consciousness of climate-related financial threats, including physical threats linked with more recurrent weather events and long-term climate impacts coupled with transition risks originating from rapid climate policy and rule changes (Carney, 2015).

MDBs face challenges in their efforts to align portfolios with sustainability objectives, such as limited consistency and functioning classification to categorize investments based on their shades of 'green' and 'brown'<sup>19</sup>. Other barriers include lack of disclosure of climate-linked threats and limited mainstreaming of climate-associated evaluation in financial agreements and portfolios coupled with lack of constant and comprehensible policy measures to promote low-carbon switch.

MDBs fail to provide consistent ESG ratings<sup>20</sup>, according to empirical findings by Busch (2020) and Humphrey (2018). The European Commission (EC) recently announced a sustainability classification, but it has not been implemented (Monasterolo & de Angelis, 2020). The limited uniform grouping hinders investors from revealing ecological and

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<sup>19</sup> 'Brown' finance are finance flows that support carbon-intensive projects or activities and pathways that do not necessarily consider future climate risks.

<sup>20</sup> An ESG rating measures exposure to long-term environmental, social, and governance risks.

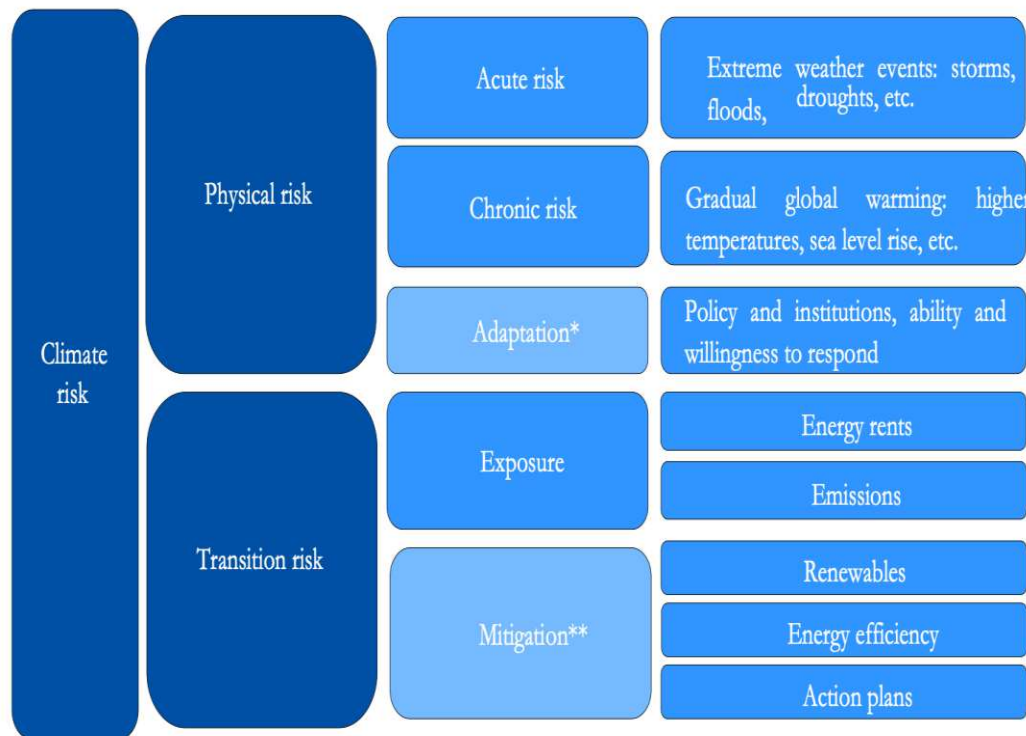
climate threats and pricing the risks and opportunities originating from substitute portfolios' allocations (Humphrey, 2020) (Monasterolo & de Angelis, 2020). Besides, it inhibits financial administrators from quantitatively evaluating MDBs exposure to climate-associated monetary threats and outlining prudential actions, including a review in capital necessities from financial institutions highly unprotected from carbon-intensive companies to alleviate such threats. Existing monetary policy methods fail to distinguish between sustainable and traditional financial instruments (Monasterolo & Volz, 2020).

## 4.4 Climate-Related Finance Risk

Robust, shared, and stable economic growth is intricately tied to managing and mitigating physical and transition risks of climate change coupled with avoiding catastrophic tipping points while also leveraging the economic openings linked with the transition to a carbon-neutral economy. The establishment of novel techniques for robust evaluations and disclosures of climate-related risks can help realize this outcome. Improved evaluation and disclose is the first step toward mitigating threats. According to Carney (2015), these include physical risks related to more frequent extreme weather events and chronic climate impacts and transition risks originating from sudden changes in climate policy and regulation or scientific changes.

Policymakers should follow this should adopt new approaches of evaluating the systematic risk of climate for the macro-economy. Mainstreaming climate-financial risk evaluation in financial contracts is crucial for developing financial instruments that bridge the sustainable investment gap (Siaba Serrate, 2019) and promote financial stability (Battiston, et al., 2017).

The physical impacts of climate change are expected to create pressures on finances by decreasing revenues and increasing costs. Specific forces will build over time as gradual changes in the climate, including reduced labour supply from extreme weather conditions and increased investments in an adaptation that will divert from more productive investments. Financial regulators and supervisors need to develop stress tests for financial institutions. The figure below illustrates the classification of Physical and Transition risks.



**Figure 15: Overview of risks stemming from climate change** Source: (Ferrazzi, et al., 2021)

## 5. Results and Discussions

This study drew lessons from the literature on the current climate landscape, technologies and activities that align with the global temperature goal, extensive consultations with MDB stakeholders, and the authors' expertise based on past research relating to MDBs and Paris alignment. The study and resulting recommendations also benefited from interviews and discussions with MDB stakeholders, including ADB, EBRD, EIB, IsDB, OeEB, and WBG, for example, and their written responses to questions.

Most of the data were collected using interview and survey questions submitted to top management executives from different MDBs in a just and orderly switch to a low-carbon economy. Most participants' views regarding the role of MDBs were identical. For

example, they identified the three leading roles that are synergistic and reinforce each other.

The first role is that MDBs are financing vehicles and participate in bankrolling finance projects that are generally not funded by commercial banks for various reasons. Secondly, MDBs mobilize funds by acting as a donor channel through climate funds and private sector capital approaches. Lastly, they provide advice and technical support regarding financially sustainable economies. The results are as discussed below.

## **5.1 Current Contribution by Multilateral Development Banks towards Bridging the Existing Financial Gap and Innovation to Achieve Low-Carbon Economy**

Study findings MDBs have enormous contributions towards bridging the existing financial gap and innovation aimed at realizing LCE. MDBs provide green intermediary financing to financial intermediaries on condition green terms to green domestic financial systems in multiple countries. These findings align with results from (Smallridge, et al., 2012). Substantial reserves are necessary to reinforce the universal shift to a low-carbon, climate-resilient future.

Smallridge et al. (2012) underline that existing finance flows are inadequate to meet global financing needs. Consequently, a colossal increase is necessary to unravel different financial assets and promote a sustainable investment pathway. These are systematic interventions, and EBRD has launched Green Economy Transition (GET) approach 2021-2025 to include investments that bring ecological benefits at the center of their internal mandate. This method targets increasing green bankrolling to an estimated 50% of its annual business volume by 2025 and enhancing policy engagement for the development of long-term low carbon strategies and greening of financial systems by collaborating with policymakers in the region to reinforce the development of institutional and regulatory frameworks (EBRD, 2021).

Overcoming obstacles to multilateral investments is vital, and global climate finance is key to the catalytic part in this context. According to Smallridge et al. (2012), MDBs have an exclusive role in this regard. They are vital in supplementing and catalyzing private

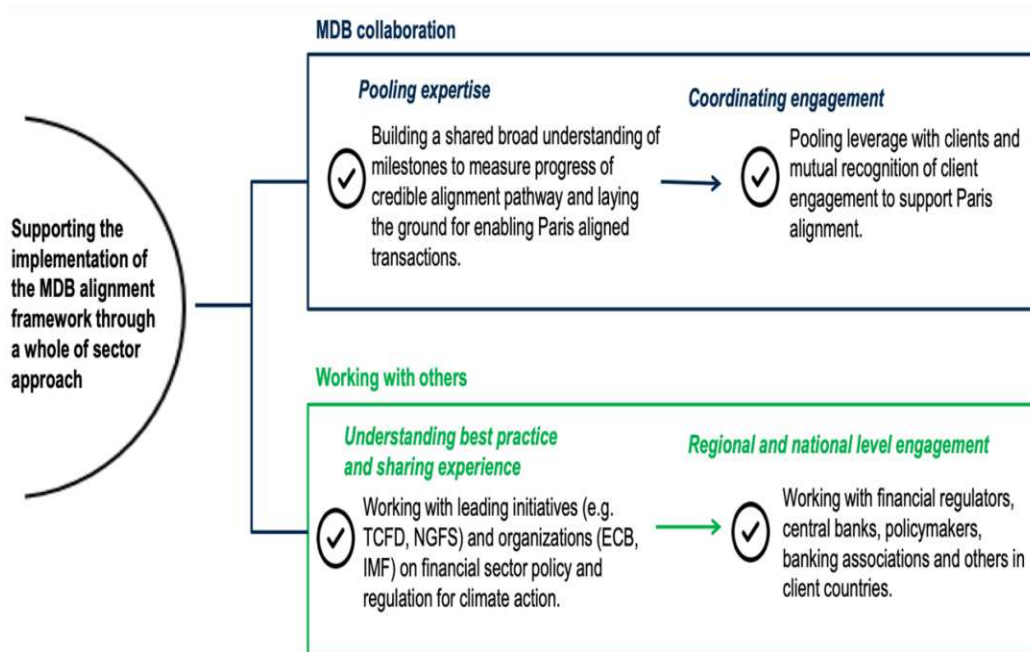
sector actors. They have an advantaged position in their local markets, robust familiarity of and long-standing interactions with the local private sector, a good comprehension of local obstacles to investment and opportunities, and an enormous understanding of long-term investment bankrolling (ADB, 2022) (WBG, 2022) (EBRD, 2021)

Smallridge et al. (2012) illustrate that during the pre-investment stage, donations or financial grants can address technical support requirements in capacity building, generating demand for low carbon projects, establishing proficiency in preparing and assessing climate ventures, conducting viability and ecological impact studies, formulating business plans, and designing and executing monitoring, reporting, and verification systems for findings.

In the investment stage, the critical elements of the capital structure include debt and equity. Common concerns are regarding the local financial institution's capacity to provide long-term debt for the projects. In such cases, MDBs can give a tier 2 loan. MDBs can assist the equity structure by offering extra equity on equal or more favorable terms (ADB, 2022). Besides, they offer assurance as to the best suited to bear the risks other banks are unwilling or unable to pay. Overall, MDBs have a slightly different role besides financing like bridging the knowledge gap (EIB, 2022) (WBG, 2022) (EBRD, 2021)

Financial institutions, specifically MDBs, play a vital role in transitioning to a low carbon economy. The present study findings indicate that climate change threatens international development efforts (WBG, 2022) (EIB, 2022). The impacts proportionally hit the most vulnerable and can annulate the significant development achievements of the last decades in reducing the poverty (WBG, 2022). Therefore, MDBs must align development and climate finance by ensuring their operations are climate-informed and by investing additional efforts in fostering climate action on the ground (ADB, 2022).

MDBs have a unique position to mobilize international finance for mitigation and adaptation for climate action in their client countries and support their client countries to address climate change while pursuing country-specific development priorities (EIB, 2022). The figure below illustrates how MDBs work together and with others to green the financial system.



**Figure 16: MDB Collaboration** Source: (EIB, 2021)

Notably, more action is needed for adaptation, where MDBs can play a significant role in mobilizing the private sector investments (ADB, 2022). MDBs also need to spearhead knowledge development and capacity building in developing countries and ensure their operations lay the foundation for low-emissions and green, sustainable development in their client countries (WBG, 2022) (ADB, 2022). WBG has contributed to bridging the existing financial gap and innovations for transition to a low carbon economy. It is already the largest multilateral provider of WBG has been active in helping countries address climate change, reaching USD 21.4 billion in a single year in 2020. To deliver on MDBs' twin goals of reducing poverty and boosting shared prosperity, it is critical to help countries integrate climate and development fully. It is also essential to help countries maximize the impact of climate finance, with measurable improvements in livelihoods through computable reductions in GHG emissions through mitigation and adaptation (ADB, 2022) (WBG, 2022).



WBG is leading the efforts to develop innovative climate finance instruments like Climate Co-Benefits or Climate Finance, Concessional finance, Emission Reductions Payment Agreements (ERPA)<sup>21</sup>, Green Loans<sup>22</sup>, Resilience Rating System<sup>23</sup>, Sustainable Development Bonds, IFC Green Bonds. WBG is mainstreaming climate in all operations and financing instruments (Development Policy Financing (DPF), Investment Project Financing (IPF), Program-for-results Financing (PforR). Five corporate climate commitments apply to all financing instruments – Climate and Disaster Risk Screening; Climate Co-benefits; GHG Accounting; Shadow Price of Carbon<sup>24</sup>; Climate Indicators<sup>25</sup>; and the Climate resilience tool that is being introduced – ensuring that projects are climate-informed and contribute to climate action (WBG, 2022).

Moreover, the Bank is using technical assistance projects (Advisory services and Analytics, ASA) to develop knowledge and build capacity on climate change in client countries (ADB, 2022). The Bank Group has a unique position to foster climate action through Development Policy Operations (DPOs) and the analytical work required for facilitating the DPOs. Obstacles include a lack of analytical data capacity in institutions for the necessary transformative action (EIB, 2022) (WBG, 2022).

WBG began the Action Plan on Climate Change Adaptation and Resilience to further empower nations' determinations to adapt and manage climate risk and establish resilience in 2019. The plan includes developing a new rating system to improve global progress tracking on adaptation and resilience and create incentives for engaging in more and better adaptation. The Resilience Rating System was piloted in more than 20 World Bank projects across all regions, covering human development, infrastructure, and sustainable development sectors in 2021. The system provides guidance on developing climate-resilient projects and a way to evaluate what projects are doing to increase climate resilience (WBG, 2022).

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<sup>21</sup> Legally binding contracts that allow one party to deliver carbon credits to another

<sup>22</sup> A form of financing that raises capital for green projects

<sup>23</sup> Rates projects on how well they can be expected to withstand climate change impacts and disasters and help people and communities become more resilient

<sup>24</sup> Shadow price on carbon is a theoretical or assumed cost per ton of carbon emissions.

<sup>25</sup> A set of parameters that describe the changing climate comprising key information for the most relevant domains of climate change: temperature and energy, atmospheric composition, ocean, and water.

ADB supports developing client countries in Asia and the Pacific region that create economic and development impact, delivered through its public and private sector operations, advisory services, and know-how support. Participants indicated their desire and plan to bring in the expertise and support our client countries by channelling grants. In addition, the participants indicate they channel grants to implement pilot projects. MDBs' client countries are mostly middle-income and low-income countries (mainly the emerging economies), and we act as a bridge so that they have access to new technologies (ADB, 2022).

Going into the granular level, we have many examples, like we introduced High-Temperature Low Sag Conductors (HTLS) in Nepal, which can bear operating temperatures of up to 210°C, thus carrying higher power compared to conventional conductors and allowing an increase of the ampacity without the need to modify most of the existing towers. There is not much need to acquire the right of way or cut trees with this technology. Similarly, in certain countries like Vietnam, Bangladesh, etc. ADB introduced floating Solar. The research findings also indicate that MDBs incorporate sector expertise within the bank, pool expertise from external resources, and provide support to our client countries' (ADB, 2022). They have an advantage because we are seen as honest technology-agnostic brokers (EIB, 2022).

ADB's framework identifies climate change risks in the early stages of project development and integrates adaptation measures in designing projects at risk. The framework comprises climate risk screening at the concept development stage to classify projects at medium or high risk, vulnerability and technical evaluation, identification of adaptation options in project design, and monitoring and reporting of the level of risk and climate-proofing measures (ADB, 2022).

Through European Investment Fund (EIF), the EIB Group is also the largest provider of venture capital in the European Union, furthering innovation. Also, EU-backed financial instruments like the European Fund for Strategic Investments (EFSI) and InnovFin have transformed the innovation landscape in Europe. In addition to its financing, the EIB provides technical assistance and advisory services for innovative projects. Being one of the main financiers of climate action in EIB, it has invested billions in fighting climate change. It plays a leading role in implementing the Paris Agreement. EIF's Climate and

Infrastructure fund investments primarily focus on climate action & environmental sustainability. Targeting a 70% climate content at the portfolio level, the underlying investments focus on various priority sectors like green energy transition, energy efficiency, etc. (EIB, 2022).

IsDB has put Science, technology, and Innovation (STI) at the heart of its growth strategy, investing heavily in these sectors through its flagship programs, the Engage Platform and Transform Fund, which is closely aligned to SDGs like access to affordable and clean energy, and sustainable industrialization across the developing world. (IsDB, 2022).

## **5.2 Key Challenges faced scaling Financial Instruments Multilateral Development Banks Employ to Channel Funding**

The present study findings indicate that overwhelmingly MDBs utilize debts as their financial instruments. Accordingly, debts cover an estimated 80 percent, whereas about 10-15 percent is covered by equity and a small percentage by guarantees (EBRD, 2021). Results support these study findings by Buchner et al. (2019). MDBs are playing a more prominent part as an intermediary of sustainable and green debt tools coupled with a broader trend of setting climate-related targets (EIB, 2022).

Buchner et al. (2019) classify transactions by the instrument employed to structure climate finance provision, including debt and equity instruments. The two are distinguished between arrangements at the project level and on the balance sheet. The third category includes grants that do not often demand repayment (EBRD, 2021) (ADB, 2022) (WBG, 2022). Like this present study's findings, Buchner et al. (2019) also identify debts as the main instrument for climate finance. However, the authors highlight that equity's share and the amount continue to increase.

One of the biggest challenges is to change the mindset (IsDB, 2022). Especially energy sector has much inertia, particularly for the renewable energy sector as its intermittent source v/s conventional power plants are highly controlled. Utilities are resistant to

change as they are liable for power supply. (EIB, 2022). The participants underlined the need for MDBs to put in a continuous effort to shift the mindset create awareness, and it is a long-term intervention (EBRD, 2021) (EIB, 2022) (ADB, 2022).

Accordingly, most of the climate finance (61% equivalent to USD 384 billion) was raised as a liability in 2019/2020. The next largest category after debt (equity investments) was at 33% of total climate finance, an increase of 29% from the previous financial year. Grant finance included 6% of the total fiancé flows, compared to 5% in 2017/2018. Among others are the lack of knowledge and capacity to implement climate action and the lack of incentive systems to mobilize mitigation and adaptation finance. Overall, global climate finance flows reached USD 632 billion in 2019/2020, but with a reduced growth rate.

According to Buchner et al. (2019), public and private stakeholders progressively augmented their climate investments in the last ten years, however, flows plateaued chiefly in a previous couple of years. Buchner et al. (2019) underline this trend as disturbing, given that COVID-19's influence on climate finance is yet to be observed. The increase from 2017/2018 to 2019/2020 was only 10%, much slower than preceding periods. Between 2013/2014 and 2017/2018, annual climate finance flows increased by over 24% each period (Buchner, et al., 2019).

Finding innovative solutions for mobilizing private sector participation is key to any success in climate action. Climate action requires engagement across various activities, including policy support, creating the enabling environment for investment, project development, design, and, importantly, project finance (EIB, 2022). It requires harmonizing, and where relevant blending, different pools of capital - commercial, concessional, and grants to the appropriate element of each project undertaken (ADB, 2022).

Partnerships and synchronization efforts, including through country platforms and the development of advanced methods to pool resources from private investors and companies looking to fulfil their net-zero commitments, will be critical to driving the available financing toward impactful results (EBRD, 2021) (WBG, 2022)

## 5.3 Climate Change-Related Risks Faced by Multilateral Development Banks

Climate change depicts a material risk for individual financial institutions and systemic financial stability (Carney, 2015). Nonetheless, financial actors have not priced climate risks (and opportunities) into financial contracts see, e.g., Monasterolo and De Angelis (2020). Study findings highlight that MDBs face many barriers that need to be addressed to scale up financial instruments and mobilize their full potential. They outline the main problem as the lack of a fully supported regulatory environment for low carbon investment. The fundamental regulatory failure is limited to proper carbon price (Bouchet & Le Guenedal, 2020).

While funding projects furthering innovation, they experience multiple risks. One of the main obstacles is technology risk; for example, most MDBs are not set up to take technology risks. The participants indicated that they support projects where technology is proven, but there is unclear commercial or economic case, e.g., battery storage or even green hydrogen (WBG, 2022) (ADB, 2022) (EIB, 2022)

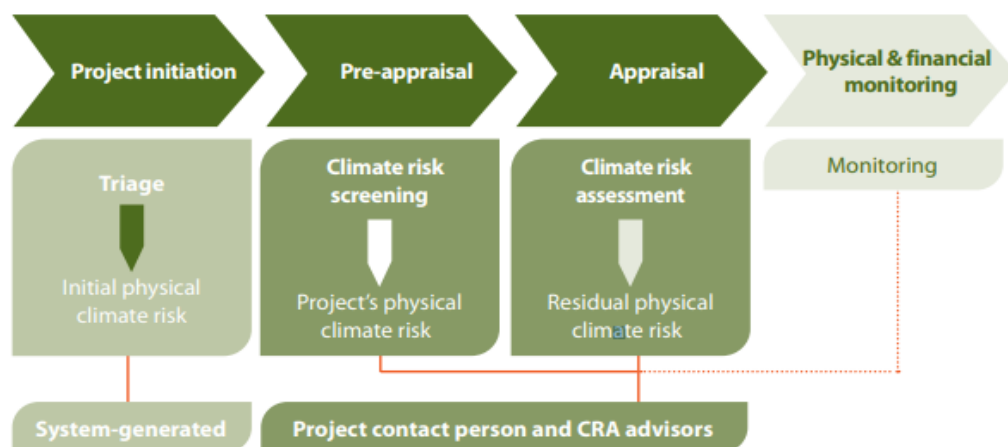
The majority of interviewed top management executives indicated that they had established roadmaps for evaluating and tracking the impact of climate risks. MDBs and DFIs typically adopt TCFD and follow its principles (Nisanci, 2021). They are increasingly and systematically assessing all their projects for climate risks, both physical and transition risks. Over time, they expect that the methodologies will become standardized and driven by central banks. When asked whether their financial institutions will be reviewing climate impact on existing assets, they underlined the need for it in the long run (ADB, 2022).

The majority indicated that they would perform a climate risk assessment for all portfolios, but it will take time and resources (EIB, 2022). Besides, MDBs need to be pragmatic regarding how they do this, such as it is worth doing a climate risk assessment on projects with 3-4 years left of the loan agreement to run (EIB, 2022) (WBG, 2022). The majority intend to take up a sort of pragmatic view that is performing a detailed assessment of significant exposures in climate-vulnerable sectors and climate-vulnerable countries with

more years of loan tenure instead of every single project, as it is resource-intensive (EIB, 2022) (ADB, 2022)

The climate risk assessment system estimates the residual physical climate risk. This represents the threat that a project may still be impacted by climate change following adaptation measures have been integrated (Nisanci, 2021). It covers a qualitative output metric of the climate resilience of EIB investments. Many studies have explored incorporating climate resilience into direct lending as a physical climate risk assessment system (Nisanci, 2021). For example, the EIB screens direct lending operations for physical climate risk through its climate risk evaluation system that encompasses two levels of screening coupled with a more detailed evaluation for projects evaluated to be at risk, as illustrated in the figure below. Present research findings indicate the significance of this climate risk assessment system supporting its role in the entire process.

The figure below outlines the various steps of the EIB climate risk assessment system at the project level. The first step encompasses project initiation, followed by pre-appraisal and appraisal. Project initiation includes initial physical climate risk generation. Pre-appraisal includes climate risk screening, whereas appraisal encompasses climate risk assessment. The EIB climate risk assessment system at the project level is vital in project implementation and appraisal.



**Figure 17: Steps of the EIB climate risk assessment system at the project level**  
 Source: (EIB Group, 2020)

The EIB designed a country score in-house to evaluate individual nations' exposure to physical and transition risks. Accordingly, the scores are employed in the context or situation of a risk management tool to map the exposure of the EIB portfolio to the climate risk (Ferrazzi, et al., 2021). This technique reflects the constraints of the problem, including the vast region coverage, the evaluation of the weights, the necessity to evaluate physical and transition risk, and the inclination to acquire transparent scores exploited on a parsimonious model (Ferrazzi, et al., 2021).

EIB Climate Risk Country Scores include 184 nations, covering physical and transition risks that can materialize over the next 5 to 10 years (Ferrazzi, et al., 2021). The scores are exploited on a chosen number of components outlined as the most applicable and aggregate the applicable subcomponents in a rigorous manner (Ferrazzi, et al., 2021).

The EIB Climate, Risk Country Scores model is designed utilizing many sources. Generally, climate risk data are not easily accessible for many nations, and the data accessibility differs considerably for physical and transition risk. The critical component of the physical risk scores is evaluated using data from the Emergency Events Database (EM-DAT), maintained by the Center for Research on Epidemiology of disease of the Université Catholique de Louvain. This data considers disasters conforming to several criteria, such as a call for universal assistance, 100 or more individuals affected, and ten or more persons dead. Under this category, events can be categorized into three primary groups:

- Hydrological<sup>26</sup>; floods and landslides
- Meteorological<sup>27</sup>; extreme temperatures, fog, and storm
- Climatological<sup>28</sup>; glacial lake outburst, wildfires, and droughts.

The chronic risk component of the EIB Climate Risk Country Scores includes subcomponents as illustrated in the table below.

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<sup>26</sup> The scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

<sup>27</sup> The science that deals with the phenomena of the atmosphere, mainly weather and weather conditions.

<sup>28</sup> The meteorological study of climates and their phenomena.

**Table 7: Physical Risk Components** Source: (Ferrazzi, et al., 2021)

| Dimension                     | Sub-dimension  | Variable used  | Unit                  | Source            |
|-------------------------------|--|--|-----------------------|-------------------|
| <b>Physical risk: acute</b>   | Hydrological (floods and landslides), meteorological (extreme temperatures and storms) and climatological (droughts and wildfires) impacts | Damage   | % of GDP              | EM-DAT            |
|                               |  |  |                       |                   |
| <b>Physical risk: chronic</b> | Fewer crops  | Agriculture  | % of GDP              | WDI               |
|                               |  | Production loss  | % of GDP              | FAO (2017)        |
|                               | Impact of higher level of seawater   | GDP impact   | % of total population | Diaz (2016)       |
|                               |  | Population living in areas where elevation is below 5 metres | % of total population | WDI               |
|                               |  | Land area where elevation is below 5 metres                  | % of total land area  | WDI               |
|                               |  |  |                       |                   |
|                               | Need to upgrade infrastructure   | Adaptation gap   | % of GDP              | World Bank (2016) |
|                               |  | Quality of infrastructure                                    | Index                 | WDI               |
|                               | Impact of heat on productivity   | Labour productivity  | %                     | McKinsey (2020)   |
|                               |  | Monthly average temperatures                                 | Degrees Celsius       | World Bank        |
| <b>Adaptation capacity</b>    | Economic ability to respond  | Fiscal revenues  | % of GDP              | IMF               |
|                               |  | EIB internal sovereign rating                                | Rating scale          | EIB/ECON          |
|                               | Institutional ability and governance   | Governance indicators  | Index                 | WB                |
|                               |  | Human Development Index                                      | Index                 | UN                |

The transition risk scores come from integrating ten distinct indicators accumulated from 2010 to 2017, as illustrated in the table below. The primary goal for compiling this dataset is to establish a consistent, credible, and quantifiable indicators set, covering transition risk scopes coupled with applying to a broader selection of nations to outline trends and draw general conclusions (Ferrazzi, et al., 2021). Data on fossil fuel rents, given the gross domestic product ratio, was sourced from WBG. All energy and climate-related indicators were sourced from the Energy Information Administration (EIA).

The assessment includes the CO<sub>2</sub> emissions level and energy consumption, either per individual or in terms of gross domestic product, based on the correlation between



different indicators. Besides, the energy intensity and emission indicators were supplemented using the share of renewables in the gross inland energy consumption. Lastly, the World Resources Institute obtained data on nationally determined contributions (NDCs)<sup>29</sup>. Accordingly, an indicator classifying nations into four groups was developed, with countries with low ambition levels receiving a higher score. The transition risk scores result from the combination of various different indicators compiled for the period 2010-2017 in the table below.

**Table 8: Transition risk components** *Source: (Ferrazzi, et al., 2021)*

| Dimension  | Sub-dimension     | Variable used   | Unit   | Source       |
|------------|-------------------|---|--|--------------|
| Exposure   | Revenues          | Oil, gas and coal rents                                     | % of GDP   | WB           |
|            | Costs             | Current greenhouse gas emissions per capita                 | MMtonnes CO <sub>2</sub> /capita   | EIA          |
|            |                   | Past greenhouse gas emissions per capita                    | Annual average change over the past five years (%)   | EIA          |
|            |                   | Future greenhouse gas emissions per capita                  | Gap from the 2030 global average (MMtonnes CO <sub>2</sub> /capita)  | EIA, UN      |
| Mitigation | Energy efficiency | Current energy consumption per GDP                          | quad BTU/GDP   | EIA          |
|            |                   | Past energy consumption per capita                          | Annual average change over the past five years (%)   | EIA          |
|            |                   | Future energy consumption per capita                        | Gap from the 2030 global average (quad BTU/capita)   | EIA, IEA, UN |
|            | Renewables        | Current renewables production in primary energy consumption | % of renewable production in primary energy consumption  | EIA          |
|            |                   | Past renewables production change                           | Annual average change over the past five years (%), weighted by the share of annual renewable production in primary energy consumption | EIA          |
|            | Climate ambition  | Commitments to mitigate greenhouse gas emissions            | 0-1  | CAIT/NDCs    |

<sup>29</sup> A caveat of the Paris Agreement allowing each country to set its own emission reduction targets

MDBs continue to develop tools to mitigate or control climate-related financial risks. For example, research findings indicate they often conduct cost-benefit evaluations with carbon prices for all projects they undertake for transition risks (Bouchet & Le Guenedal, 2020). Besides, they systematically assess every project for physical climate change risk mitigation measures.

MDBs should have insurance products to de-risk the transition and improve risk modelling. However, their challenge in this regard includes the changing spectrum of risks they plan or want to insure against. On the whole, some green projects, notably renewable electricity, are now competitive even without a carbon price. Nonetheless, due to limited implicit or explicit carbon price, many green investments have simply not been commercially viable, making projects non-bankable vis-à-vis the fossil-fuel-based alternatives (Bouchet & Le Guenedal, 2020)

## **6. Conclusion and Recommendations**

### **6.1. Conclusion**

Climate change is a material risk for different financial institutions and systemic monetary stability. Additionally, there is a snowballing consciousness that finance is central to realising the universal climate targets. Nonetheless, climate threats are not adequately accounted for to date, obstructing sustainable investments. Thus, it is vital to sufficiently evaluate forward-looking climate risks for loaning and investment decisions to align finance with sustainability and protect macro-financial stability. MDBs have committed and taken the initiative to increase their climate finance provision and align their expansion financial flows with the Paris Agreement. Such activities include setting institutional aims and objectives, performing climate susceptibility and risk evaluations, integrating adaptation actions in projects, tracking climate adaptation finance, structuring internal and designing-nation capabilities, and scaling up private sector appointments in adaption.

Developing nations' viewpoints continue to receive limited attention, while they represent a vital feature in MDBs' capacity to align their bankrolling portfolios with the Paris Agreement. Limited is recognised regarding the roles and demands of emerging

economy governments, such as their opinions on the Paris Agreement, the value of dealing with climate influences, and incorporating adaptation by finance and planning departments. Thus, research is necessary to outline policies that these countries can employ to improve their engagement with MDBs in outlining and prioritising the adaptation actions.

MDB actions to scale up private sector engagement in adaptation should be part of a broader tactic that deliberates or considers the priorities and perspectives of developing nations. In the short run, MDBs and emerging economies should collaborate to address climate adaptation in initiatives dealing with achieving a low-carbon economy. Overall, MDBs have launched many bankrolling windows by blending their finances with donor nations' contributions and the private industry's contributions. The present paper overviews different funding approaches and financial instruments for climate change adaption and achieving the low-carbon economy.

## 6.2. Key Recommendations

- They reinforce establishing and adopting a consistent investment classification based on their climate and sustainability influence. This approach would decrease market uncertainty about specific investments, informing investments' tactics in the low-carbon transition and underwriting increasing low-carbon investments.
- Promoting ideals for climate exposure and other sustainable threats within the financial industry. This strategy would enable the growth of dependable methods to investigate forward-looking climate threats.
- Introducing science-based climate-financial threat evaluation in private stakeholders' threat management approaches. Empirical and logical study on climate stress testing encompasses numerous situations linked with various low-carbon shift pathways, such as an unsystematic transition and evaluating the significant losses for monetary foundations to such accustomed circumstances (Campiglio, 2016).
- Scaling up sustainable finance for emerging economies using MDBs. Local resource deployment is vital to funding sustainable growth; however, MDBs can significantly

reinforce bankrolling sustainable and climate-resilient setups. Besides, they can back establish local currency bond markets aligned with sustainable finance values. MDBs can inspire the implementation of sustainable finance practice in local monetary markets as an instrument for deepening the financial market.

- The increase of sustainable finance in emerging economies by MDBs should align with the United Nations' Sustainable Development Goals. This method would be consistent with monetary profits with emerging economies' sustainability and climate pledges and guarantee consistency between investments and sustainability goals.
- Designing sustainable protection solutions and boosting resilience assets to reinforce counties susceptible to climate change. Climate-susceptible emerging nations are unprotected from climate-related financial risks. Therefore, governments and MDBs experience a climate-risk premium on the cost of capital. At the same time, they share a vast insurance gap. Most financial instruments and physical assets are either underinsured or not insured against climate-related threats. MDBs should persist in reinforcing climate-susceptible emerging nations via different programs to establish insurance solutions and climate-risk models with the capacity to guide national adaptation plans.
- Empirical studies focusing on climate stress testing should consider different situations linked with various low-carbon shift pathways, such as disorderly transition, and assess the most significant losses for financial institutions conditioned to such scenarios (NGFS, 2020) (Jun, et al., 2020). Incorporating climate threat into economic threat metrics, such as value at risk and evaluating the most significant losses that an investor can experience (conditioned to various climate shift circumstances through climate stress testing, is vital to informing their risk management approaches (Battiston, et al., 2017). Consequently, it would permit MDBs and other financial stakeholders to incorporate climate threats into their monetary risk assessment, thus enlightening portfolio threat administration approaches in the low-carbon shift (Bolton, et al., 2020). Besides, it would permit financial supervisors to evaluate stakeholders' exposure to losses motivated by possible carbon-stranded resources, accustomed to multiple climate shift circumstances, such as those categorised by a disorderly switch.

Thus, they should design efficient, custom-made procedures to mitigate such threats at the financial institution level coupled with the financial industry at large. Overall, climate-financial risk appraisal could indicate the market and facilitate the constant establishment of sustainable finance tools.

- Climate-susceptible emerging economies are unprotected from climate-related financial threats. Thus, financial institutions and governments face a climate-risk premium on the cost of capital (Buhr, et al., 2018) (Beirne, et al., 2021). At the same time, these nations have a significant insurance gap. With climate-related threats, multiple financial instruments and physical assets are either not insured or under-insured against climate-related threats. In addition, MDBs should expand their reinforcement for climate-susceptible economies via investments in climate adaptation and resilience to assist them in decreasing disaster threats and yield surpluses from the resilience (Tanner, et al., 2015) (Global Commission on Adaptation, 2019)
- Expanding lending in the medium-term demands amending the statutory lending limits in MDBs' agreement articles. These represent the relics of the Bretton Woods<sup>30</sup> period with no bearing on existing financial market reality.
- Reforming MDB financial policy allowing the inclusion of highly rated callable capital as part of capital adequacy calculation in line with the methodology employed for MDBs by S&P.
- The lending expansion should be harmonised among the major MDBs, with clear reinforcement of the G20 and other shareholders. Consequently, it reassures ratings agencies and bond market investors and significantly decreases the possibility of a rating downgrade or investor flight from the MDB bonds (Humphrey, 2020).

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<sup>30</sup> The Bretton Woods Institutions are the World Bank and the International Monetary Fund which were set up at a meeting of 43 countries in Bretton Woods, New Hampshire, USA, in July 1944. They aimed to help rebuild the shattered postwar economy and promote international economic cooperation.

## Executive Summary

Financial markets significantly contribute to the shift to a low-carbon economy. Multilateral Development Banks (MDBs) undertake a valuable part in realising the Paris Agreement's objective of supporting monetary streams with low-emissions, climate-resilient expansion pathways. Most of them have dedicated themselves to bringing into line their investments with the Paris Agreement. To date, efforts to streamline MDBs investments chiefly concentrate on direct venture funding. Nonetheless, most financial institutions channel many investment quotas through financing intermediaries.

The Paris Agreement aims to make financial flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development guide its efforts. Besides, the Paris Agreement underlines the importance of transparency and improved predictability of financial reinforcement. It calls for incorporation reflecting on equity and principles of joint but distinguished accountabilities and individual capabilities in the light of varying national situations. Overall, responding to the climate crisis demands shared action from all nations and financial actors, including MDBs.

Sustainable growth is needed in developed countries and in developing countries where the pattern for economic growth can be set for years to come. In the following decades, the potential for global expansion is in the middle- to lower-middle-income countries, and they will be the engines of growth. That makes the decarbonisation mandate much more central to the mission of the MDBs.

MDBs must parallel these "indirect" investments to be completely affiliated with universal climate objectives. The present study proposes a phased method for bringing indirect investments into a line encompassing subproject-level standards reflecting mitigation and adaption necessities and institutional-level standards connected to climate governance and accountability in monetary intermediaries. Eventually, MDBs ensure that their intermediated investments are allied with climate goals. MDBs work with their client countries to develop plans to integrate the transition to net-zero emissions and climate-resilient economy with development programs in critical sectors, for instance, energy. The study recommends bringing into line these investments using institutional changes within the MDBs and a risk-tailored strategy to choosing investment instruments.

MDBs aggregate climate finance, such as the amount of finance accessible to reinforce adaptation initiatives. They aim to increase the level of private capital mobilised to back risk mitigation adaptation investments, using different platforms, investment vehicles, and blended finance instruments. Besides, MDBs promote natural capital, biodiversity, and nature-based solutions coupled with gender-smart solutions, reinforcing client climate and ecological goals. MDBs target supporting just transition in communities and regions directly affected by the low-carbon energy, transport, and industrial shifts. Additionally, they are developing dedicated approaches to evaluate the Paris Agreement about policy-based lending. They prioritise developing cost-effective and reasonable methods to decommission coal and other high-GHG emission systems, considering socioeconomic trade-offs.

The successful implementation of MDB climate action and the Paris Agreement depends on the quality and depth of engagement with nations of operations and clients. The required speeding up in MDB climate change action to deal with the climate, and ecological emergencies rely on comprehensive shareholder and donor support based on the strategy and resources. While adopting their climate plans, MDBs pursue an active coordination and collaboration approach with organisations and alliances to realise the Paris Agreement targets.

Recently, an increasing community of financial establishments is acting and illustrating headship on climate change. Some MDBs are apportioning capital and directing monetary streams toward low carbon, climate resilient activities. MDBs prioritise the development of cost-effective and equitable approaches to decommissioning high-GHG emission systems. Others are adopting plans to modify corporate conduct, impact policy results, and develop data, instruments, and accountability necessary to embed climate change into how the financial market works. It is extensively recognised that presenting a price on carbon encompasses a vital necessity for meeting the existing gap on low-carbon investment.

Nonetheless, carbon pricing on its own is not adequate mainly due to the presence of market letdowns in creating and allocating credit that can lead to development banks not responding as anticipated to price signals. Under some defined circumstances, development banks elude lending low-carbon actions even in the existence of a carbon price. This option demands the adoption of extra guidelines not based on costs. The

transition to a maintainable financial structure requires monetary resources to flow to low-carbon dynamic areas. The process is inherently systematic that encompasses the whole economy defining three key areas: energy generation from clean and renewable sources, energy efficiency improvement, natural capital conversion, and intelligent use. MDBs support their client countries to design, pilot and implement carbon pricing instruments, including carbon taxes and fossil fuel subsidy reduction.

The COVID-19 has not only devastated the global economy, but the pandemic has also disproportionately damaged the economies of developing countries. Concurrently, the climate crisis is overwhelming and demands urgent attention. The responsibility to reduce GHG emissions is becoming more acute, as is the need to adapt to unavoidable climate change. Of course, the primary GHG emitters among developing countries are MICs, not those with low incomes. The MICs must do most mitigation, but they are also the countries whose debt could threaten global financial stability. Due to the pandemic, National economies have crashed, and national debts are soaring. MICs will need substantial MDB resources to address climate change mitigation as part of economic recovery.

Furthermore, some resources will need to be concessional to stem the risk of debt distress and global systemic financial damage. The MDBs can access concessional multilateral climate funds, and they can provide these funds to developing countries for climate change mitigation investments, blended with non-concessional funds from their own capital. That means the overall terms of the money provided would be significantly cheaper than commercial terms. Nevertheless, to do this, the MDBs will need to have adequate capital of their own to blend with the multilateral climate fund money. Developed countries will need to support and fund new capital injections into the MDBs.

While a critical factor in MDBs' ability to successfully align their financing portfolios with the Paris Agreement, the perspectives of developing countries have received limited attention. Not much is known about the roles and needs of developing country governments, including their views on Paris alignment in MDB portfolios, the value of addressing climate impacts and integrating climate adaptation in national programs, and the private sector in transformation. Research is needed to identify strategies that help developing country governments engage with MDBs to identify and prioritise adaptation



actions and request that adaptation be addressed in projects and programs supported by MDB development finance.

MDBs could also enhance their technical support to developing countries to strengthen their capacities to assess climate vulnerabilities and risks, track domestic and international finance for adaptation, engage the private sector, and develop informed and practical strategies that scale up financing for adaptation. In the near term, MDBs are well-positioned to help countries update the adaptation components of their NDCs under the UNFCCC and address transformation in the health and socioeconomic programs that are responding to the pandemic. These efforts by MDBs and their developing country partners will help ensure that all investments and finance account for adaptation, which will be instrumental in bridging the adaptation finance gap and thus accelerate the transition.

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## List of Abbreviations

ACCF: Africa Climate Change Fund

ADB: Asian Development Bank

AF: Adaptation Fund

AFD: Agence Française de Développement (French development agency)

AfDB: African Development Bank

AFOLU: Agriculture, Forestry and Other Land Use

AIIB: Asian Infrastructure Investment Bank

AREI: African Renewable Energy Initiative

ASA: Advisory Services and Analytics

ASAP: Adaptation for Smallholder Agriculture Programme

BCG: Boston Consultancy Group

BEIS: Department for Business, Energy & Industrial Strategy (UK)

BMZ: Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (federal ministry of economic cooperation and development, Germany)

CAFI: Central African Forest Initiative

CBFF: Congo Basin Forest Fund

CCF: Climate co-finance

CDM: Clean Development Mechanism

CEDB: Council of Europe Development Bank

CF: Climate Finance

CIDA: Canadian International Development Agency

CIF: Climate Investment Funds

COP: Conference of Parties

CPI: Climate Policy Initiative

CTF: Clean Technology Fund



DEFRA: Department for Environment, Food and Rural Affairs (UK)

DFAT: Department of Foreign Affairs and Trade (Australia)

DFC: United States International Development Finance Corporation

DFID: Department for International Development (UK)

DFIs: Development Finance Institutions

DPF: Development Policy Financing

DPO: Development Policy Operation

EBRD: European Bank for Reconstruction and Development

EC: European Commission

ECB: European Central Bank

EFSl: European Fund for Strategic Investments

EIA: Energy Information Administration

EIB Group: EIF and EIB

EIB: European Investment Bank

EIF: European Investment Fund

EM-DAT: Emergency Events Database

ERPA: Emission Reductions Payment Agreements

ESG: Environmental, Social, and Governance

Ex-Im: Export-Import Bank of the United States

FAO: Food and Agriculture Organization of the United Nations

FCPF: Forest Carbon Partnership Facility

FFEM: Fonds Français pour l'Environnement Mondial (French global environment facility)

FIF: Financial Intermediary Funds

FIP: Forest Investment Program

FSB: Financial Stability Board

G20: Group of Twenty

GCCA: Global Climate Change Alliance

GCCI: Global Climate Change Initiative

GCF: Green Climate Fund

GCPF: Global Climate Partnership Fund

GEEREF: Global Energy Efficiency and Renewable Energy Fund

GEF: Global Environment Facility

GET: Green Economy Transition

GFMA: Global Financial Markets Association

GHG: Greenhouse gas

GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German technical cooperation)

HTLS: High-Temperature Low Sag Conductors

IBRD: International Bank for Reconstruction and Development

ICF: International Climate Finance

ICMA: International Capital Market Association

IDBG: Inter-American Development Bank Group, composed of the IDB, IDB Lab, and IDB Invest

IFAD: International Fund for Agricultural Development

IKI: Internationale Klimaschutzinitiative (international climate initiative, Germany)

IMF: International Monetary Fund

IPCC: Intergovernmental Panel on Climate Change

IPF: Investment Project Financing

IsDB: Islamic Development Bank

JBIC: Japan Bank of International Cooperation

Jl: Joint Implementation

JICA: Japan International Cooperation Agency

KfW: Kreditanstalt für Wiederaufbau (German development bank)

LCE: Low Carbon Economy

LDCF: Least Developed Countries Fund

LIC: Low-income Countries

LMICs: Lower middle-income Countries

LTs: Long Term Strategies

MDBs: Multilateral Development Banks

MDG-F: MDG Achievement Fund (implemented by UNDP)

MDG: Millennium Development Goals

MIC: Middle-income Countries

MIES: Mission Interministérielle de l'Effet de Serre (inter-ministerial taskforce on climate change, France)

MOFA: Ministry of Foreign Affairs (Japan)

NAMA Facility: Nationally Appropriate Mitigation Action facility

NDB: New Development Bank

NDC: Nationally Determined Contributions

NGFS: Network for Greening the Financial System

NICFI: Norway's International Climate Forest Initiative

NMFA: Norwegian Ministry of Foreign Affairs

NORAD: Norwegian Agency for Development Cooperation

OECD: Organisation for Economic Co-operation and Development

OeEB: Oesterreichische Entwicklungsbank AG (Development Bank of Austria)

PforR: Program-for-results Financing

PMR: Partnership for Market Readiness

PPCR: Pilot Program on Climate Resilience

REM: REDD+ Early Movers

RSFF: Risk-Sharing Finance Facility

SCCF: Special Climate Change Fund

SCF: Strategic Climate Fund

SDG: Sustainable Development Goal

SREP: Scaling Up Renewable Energy Program for Low-Income Countries

TCFD: Task Force on Climate-Related Financial Disclosures

TCFD: The Financial Stability Board Task Force on Climate-related Financial Disclosure.

UMICs: Upper middle-income Countries

UN-REDD: United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation

UNCTAD: United Nations Conference on Trade and Development

UNDP: United Nations Development Programme

UNEP: United Nations Environment Programme

UNFCCC: United Nations Framework Convention on Climate Change

UNSDGs: The United Nations Sustainable Development Goals (UNSDGs)

USAID: United States Agency for International Development

USD: United States dollar

WBG: World Bank Group, composed of the WB, IFC, and MIGA

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## List of Appendixes

Appendix A: Interview Questions

Appendix B: List of Interviews

## Appendix A

Annex below summarises the interview questions that have guided the study:

1. In your opinion, what is the Role of Financial Institutions, specifically MDBs, in a just and orderly transition to a low carbon economy (LCE)?
2. What has been your institutions' main contribution in bridging the existing financial gap and innovations needed for transition to LCE?
3. What were the critical challenges faced in the past decade?
4. What financial instruments are being primarily used?
5. What barriers need to be addressed to scale these financial instruments and mobilise their full potential?
6. Does your institution work with policymakers in the region to support the development of institutional and regulatory frameworks (Policy Dialogue)? What significant obstacles does your institution face?
7. While lending for projects furthering innovation, what types of risks has your institution experienced?
8. What is your organization's roadmap for assessing and tracking the impact of climate risks?
9. Would your organisation be reviewing climate impact on existing assets as well?
10. Has your organisation developed any tools to mitigate or control climate-related financial risks?
11. Do you see the need for insurance products to de-risk the transition and improve risk modelling?
12. Some green projects, notably renewable electricity, are now competitive even without a carbon price; however, due to the lack of an implicit or explicit carbon price, many green investments have not been commercially viable, making projects nonbankable vis-à-vis the fossil-fuel-based alternatives. Please opine.
13. Would you say MDBs continue to lack a unified approach to greenhouse gas (GHG) accounting and applying scope 3 emissions?
14. In your opinion, which new approaches can accelerate the transition?



## Appendix B

Annex below summarizes the interviews that have guided the study:

ADB : Interview conducted on 10th January 2022, 10.00 hours CET via Video Call

EIB : Interview conducted on 10th January 2022, 16.00 hours CET via Video Call

EBRD: Interview conducted on 14th December 2021, at 10:00 hours CET via Video Call

IsDB: Interview conducted on 8th January 2022, 10.00 hours CET via Telephone Call

OeEB: Interview conducted on 13th January 2022, 10.30 hours CET via Video Call

WBG: Interview response received on 8th January 2022, via email