The Role of National Financial Institutions in the Implementation of NDCs

Global Report

In contribution to

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

NDC PARTNERSHIP

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Abbreviations

ABS ..... Association of Banks in Singapore
AF ..... Adaptation Fund
AFD ..... Agence Française de Développement
BaU ..... Business as usual
BCA ..... Bank Artha Graha and Bank Central Asia
BICE ..... Banco de Inversion y Comercio Exterior
BMUB ..... Federal Ministry for the Environment, Nature Conservation, Construction and Nuclear Safety
BMZ ..... Federal Ministry for Economic Cooperation and Development
C40 ..... Cities Climate Leadership Group Initiative
CAF ..... Development Bank of Latin America
Capex ..... Capital expenditure
CARE ..... Indian Ratings Agency
CBI ..... Climate Bond Initiative
CBP ..... Climate Bond Principles
CDG ..... Caisse de dépôt et de gestion
CDP ..... Carbon Disclosure Project
CFP ..... Corporate Financial Performance
CFU ..... Climate Finance Unit
CIF ..... Climate Investment Funds
CO_2 ..... Carbon dioxide emissions
COFIDE ..... Peruvian national development bank
COP ..... Conference of the Parties
CPI ..... Climate Policy Initiative
CSR ..... Corporate Social Responsibility
DAE ..... Direct Access Entity (DAE)
DBSA ..... Development Bank of Southern Africa
DE ..... Germany
DFI ..... Development Finance Institution
DJSI ..... Dow Jones Sustainability Indices
EADB ..... East African Development Bank
EBRD ..... European Bank for Reconstruction and Development
EE ..... Energy Efficiency
EEA ..... European Environment Agency
EIB ..... European Investment Bank
ESG ..... Environmental, Social and Governance
ESM ..... Environmental and Social Management
ESP ..... Environmental and Social Policy
ESR ..... Environmental and Social Risk
ESS ..... Environmental and Social Standards
ETS ..... EU Emission Trading System
EUR ..... Euro
FGE ..... FACTS Global Energy
FI ..... Financial Institution
FMO ..... Dutch Development Bank
FTSE ..... Financial Times Stock Exchange
G20 ..... Group of 19 most important industrialised and emerging countries and the EU
GABV ..... Global Alliance for Banking on Values
GB ..... Green Bond
GBP ..... Green Bond Principles
GDP ..... Gross Domestic Product
GEF ..... Global Environment Facility
GEMS ..... Green Energy Market Securitisation programme
GCF ..... Green Climate Fund
GGGI ..... Global Green Growth Institute
GHG ..... Greenhouse Gas emissions
GIZ ..... Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GLS ..... Gemeinschaftsbank für Leihen und Schenken
GRI ..... Global Reporting Initiative
HGIA ..... Hawaii Green Infrastructure Authority
IADB ..... Inter-American Development Bank
ICED ..... Indonesia Clean Energy Development
ICMA ..... International Capital Market Association
ID ..... Indonesia
IDB ..... Inter-American Development Bank
IDFC ..... International Development Finance Club
IDR ..... Indonesian Rupiah
IEA ..... International Energy Agency
IFC ..... International Finance Corporation
IFI ..... International Financial Institutions
IIPSA ..... Infrastructure Investment Programme for South Africa
IN ..... India
INDC ..... Intended Nationally Determined Contribution
INR ..... Indian Rupee
IPCC ..... Intergovernmental Panel on Climate Change
IPP ..... Independent Power Producer
IRENA ..... International Renewable Energy Agency
JBIC ..... Japan Bank for International Cooperation
JICA ..... Japanese development agency
KfW ..... Kreditanstalt für Wiederaufbau
KPI ..... Key Performance Indicator
LULUCF ..... Land use, land use change and forestry
M&E ..... Monitoring and Evaluation
MAS ..... Monetary Authority of Singapore
MDB ..... Multilateral Development Bank
ME ..... Mexico
MEWR ..... Ministry of the Environment and Sustainable Resources
MO ..... Morocco
MoF ..... Ministry of Finance
MSCI ..... Morgan Stanley Capital International
MSME ..... Micro, Small and Medium-sized Enterprises
$MtCO_2$-eq ..... Million tonnes of carbon dioxide equivalents
MTN ..... Medium Term Notes
MX ..... Mexico
NABARD ..... India's National Bank for Agriculture and Rural Development
NAPCC ..... National Action Plan on Climate Change
NDB ..... National Development Bank
NDC ..... Nationally Determined Contribution
NGFS ..... Network of Central Banks and Supervisors for Greening the Financial System
NGO ..... Non-Governmental Organisation
NMEEE ..... National Mission for Enhanced Energy Efficiency
ODA ..... Official Development Assistance funds
OECD ..... Organisation for Economic Co-operation and Development
OJK ..... Otoritas Jasa Keuangan/Financial Services Authority
Opex ..... Operational expenditure
PAT ..... Perform Achieve and Trade
PCG ..... Partial Credit Guarantees
PE ..... Peru
PPDF ..... Project Preparation and Development Facility
PPP ..... Public-Private Partnerships
PRG ..... Political Risk Guarantees
PT SMI ..... PT Sarana Multi Infrastruktur Persero

PV ..... Photovoltaics
RDB ..... Regional Development Bank
RE ..... Renewable Energy
REC ..... Renewable Energy Certificate
REI4P ..... Renewable Energy Independent Power Producer Procurement Programme
RMI ..... Rocky Mountain Institute
RPO ..... Renewable Purchase Obligation
SA ..... South Africa
SAPCC ..... State Action Plan on Climate Change
SBN ..... Sustainable Banking Network
SDG ..... Sustainable Development Goals
SeyCCAT ..... Seychelles Conservation and Climate Adaptation Trust
SG ..... Singapore
SGD ..... Singapore Dollar
SGX ..... Singapore Exchange
ShF ..... Sociedad Hiptecario Federal
SME ..... Small and Medium-sized Enterprises
SSB ..... Singapore Savings Bonds
TCX ..... Currency Exchange Fund
TFCD ..... Task Force on Climate-related Financial Disclosure
TLFF ..... Tropical Landscape Finance Facility
UK ..... United Kingdom of Great Britain and Ireland
UN ..... United Nations
UNEP ..... United Nations Environment Programme
UNFCCC ..... United Nations Framework Convention on Climate Change
UOB ..... United Overseas Bank
US ..... United States of America
USAID ..... United States Agency for International Development
USCA ..... US Climate Alliance
USD ..... US Dollar
VN ..... Vietnam
WCED ..... World Commission on Environment and Development
WEF ..... World Economic Forum
WWF ..... World Wide Fund for Nature
ZAR ..... South African Rand

Acknowledgement

This study has been developed to provide new insights and analyses as a contribution to the Nationally Determined Contributions Partnership, or NDC Partnership. Launched at the 22nd Conference of the Parties (COP22) in Marrakesh, the NDC Partnership aims to enhance cooperation so that countries have access to the technical knowledge and financial support they need to achieve large-scale climate and sustainable development targets as quickly and effectively as possible. The NDC Partnership builds in-country capacity and increases knowledge sharing so that climate policies have meaningful and enduring impacts, and drive increasing global ambition over time.

As such, the NDC Partnership is not only designed to bring partners together, but also intended to stimulate the conversation on green and climate finance to find new avenues and ideas for implementation. This global study is, as part of a set of several reports, funded by the German Ministry of Economic Development and Cooperation (BMZ).

With the critical question as to how NDCs can be financed and sufficient investment be mobilised, the NDC Partnership has identified the promotion of "Enhanced Financial Support for NDC Implementation" as a key pillar of its work. While the aspiration to align SDG development finance with NDC-compatible projects is central to this goal, it is equally paramount to answer how the national financial sectors can internalise the green transition challenge and contribute to the financing of climate actions as mainstream activities integrated into their own processes. It is clear that without private capital, the necessary funds cannot be mobilised to fully align economies worldwide with a low-carbon and climate-resilient pathway.

In contribution to this debate, the global study assesses the role of national financial institutions in incentivising, leveraging and accelerating financial flows within a given country to fulfil the targets expressed in its NDC. More concretely, this study identifies National Development Banks (NDBs), or similar entities mandated to support national development, as a unique link, a hinge, between the high political aspirations of the NDCs and their translations into actions or investments in the real economy. Within this nexus, it explores the roles of an NDB as enabler and financier of green finance, and how this role may be altered due to different macro-economic and regulatory circumstances, specific country characteristics and divergence between both the real economies and the priorities defined in the NDC of a given country.

The study explores best-practice or telling examples from emerging as well as developed economies to provide a broad and meaningful analysis on the roles and possibilities of NDBs as key vehicles for the green transition globally. In this report, the role of NDBs in the delivery of green finance has been scrutinised by analysing several case studies in developed and developing countries (see Figure 1). The cases in the global report include: the Development Bank of Southern Africa (DBSA), Hawaii Green Infrastructure Authority (USA), Yes Bank (India), Gemeinschaftsbank für Leihen und Schenken (GLS Bank, Germany), Vietnam's Green Growth programme, and Singapore Stock Exchange reporting. This global report also references the findings from the four associated country studies (Indonesia, Mexico, Morocco, Peru). A full list of interviewees and the methodology are detailed in the annexes at the end of this work. These cases have been chosen as best practice or as representatives of a narrative or development that can be considered to be of global interest and applicability.

The findings and missions reflect the desired impact of the NDC Partnership, which is to bring committed actors together and drive new solutions not only to implement the NDCs, but also raise their ambition further. The insights and knowledge generated from this research will serve the NDC Partnership on its quest to drive the debate as to how to mobilise sufficient financial flows for NDCs.

Figure 1: World map with case studies

Executive summary

Sustainable and environmentally conscious development requires a major shift in the structure of financial flows across all sectors of the economy. The Paris Agreement, the Sustainable Development Goals, and the Agenda 2030 underscore the critical role of financing long-term solutions for sustainable, environmentally and socially conscious development. The Nationally Determined Contributions (NDCs) embody countries' commitments towards the Paris Agreement's targets to reduce emissions and increase adaptation and resilience. Though still falling short in meeting the target of reducing global warming to well below 2°C compared to pre-industrial levels, they reflect a positive shift towards bringing the accountability of climate action at country level and enhancing country ownership. Political drive and the availability of finance are central elements for reaching those targets and increasing ambition within each country.

While support from bilateral and multilateral sources plays an important role for many countries, climate targets cannot be reached without greening national economies; beyond blending international and national public and private finance, a much more general redirection of investments flows to more sustainable investments is needed[1].

NDBs play an important role as implementing partners for bilateral or multilateral financial institutions, owing this special position to their long-term presence in the local and national contexts, which grants them contextual knowledge and access to the local markets in local currency. While this role of NDBs has been much discussed, there is less literature on the role of NDBs as instruments for the implementation of NDCs and as promoters of the 'greening' of the respective finance sector of their country.

This study analyses the specific function and role of NDBs in seizing the opportunity to act as a tool to implement aspects of NDCs. If properly mandated and capitalised, and acting within a favourable regulatory and policy environment, NDBs can contribute to achieving the NDC targets in two ways: by acting as a direct financier, which sees the NDB assuming a primary due diligence role, developing a pipeline of projects and working directly with the 'real' sector; and by assuming the role of 'enabler', encompassing financial intermediation and underpinning the role of the institution as a catalyst of green finance and as a knowledge hub in national climate action. In either role, there are examples of NDBs that have the function of market openers or market accelerators for green investments.

In addition, there are also examples of private banks which have assumed the role of first movers in developing green and climate relevant products. These 'champions' thrive best when operating in mature markets: on the demand side, a significant number of customers aware of climate change and its implications are providing the commercial base and drive towards environmentally and socially conscious products. On the supply side, a mature economy has to be able to provide new technologies and services, while the finance sector responds to this demand by investing in the new ('green') sectors. This context underscores the role of the 'real' sector or businesses on the ground, associations, think tanks, and other non-state actors, as determinants of those positive shifts in demand for environmentally and socially conscious investments, which can in turn drive changes in financial institutions.

Furthermore, countries whose governments offers clear guidelines and mandatory regulation, directing public and private investments decisively towards green products, provide an important part of the supporting framework conditions for NDBs and other finance institutions to scale up green investments. Indeed, a stable regulatory environment and consistent policy framework are undisputedly the basis for long-lasting success in green growth and the delivery of specific climate commitments by countries. Where those commitments are accompanied by detailed action plans, with clear boundaries of responsibilities across ministries and a financial mechanism to deliver them, potential for higher impacts on the ground increases.

This study supports the finding that it is crucial to have an institution with a strong and relevant mandate, as well as a dedicated financial mechanism, to facilitate implementation of the NDCs. Overall, this global study and the four associated country studies (Indonesia, Mexico, Morocco, Peru) show that if 'green' products need to move beyond niche markets, it is crucial to have high-capacity institutions in the driving seat that can take the initial risk to develop viable green business models and that champion the development of these models to the market. NDBs are well positioned to play this role, in particular in those cases where their public mandate is extended to cover the development and deployment of green and green finance products. Conversely, in those countries without a formalised NDB, one or more national financial institutions could assume the 'traditional' functions of a NDB.

1 This study will more comprehensively use the term green finance in the following sections to describe all NDC-relevant investments as these go beyond the more restricted definition of climate finance, e.g. by also including environmental and conservation finance (see section 2.1.1.).

Main findings

'NDC' is not a term most banks relate to. If it is known at all, the finance sector tends to attribute it to a policy sphere which is not perceived to be of relevance for daily business. Contrary to this, 'green finance' is used, yet without being clearly defined. The difference between climate finance and green finance is often blurry. This unclear delimitation between the terms is reflected in the study: Since interview partners do not clearly distinguish between both terms, this study only uses climate finance when the topic clearly is climate – otherwise it uses the term 'green finance'.

An increasing number of NDBs are working in green finance, undertaking different functions. In the cases analysed, NDBs can assume both the role of enabler/intermediary of green finance (as second-tier institutions) and the role of direct financier (first-tier institutions), or a combination of the two functions. Despite their potential to scale up investments through co-financing and blended finance, some often pursue direct financing of green investments rather than supporting the local banking system to do so. This may be the result of insufficient capitalisation, capacity constraints or mandate restrictions. Nonetheless, a direct financier role may also lead to pipeline development, a stronger and more diversified portfolio, and increased institutional capacity to cover primary due diligence functions. In many cases, this can facilitate a 'first mover' role for the NDB, with a specific function to open markets by removing barriers.

The report outlines some of the traditional capitalisation approaches for an NDB, which can include national budgets, access to bilateral and multilateral financing, or bonds. In addition, NDBs can traditionally extend a wide range of financing instruments. It is important to ensure that in its lending, the NDB strikes the right balance between offering incentives and promoting market activities. This will foster further private sector participation while avoiding crowding out private actors.

Access to green finance, the cost and suitability of current financial products, and reduced capacity to enact low-carbon and climate-resilient projects remain the key barriers to green finance growth. Blending public/private resources and raising capital through green bonds has been an effective way to support projects that are aligned with green principles. The most prevalent instruments and solutions identified include structured finance vehicles through concessional finance; de-risking instruments such as guarantees or insurance; the provision of data and tools to manage uncertain risks; and policy support and technical assistance to reduce or manage political risks. Those national and regional development banks that are accredited to multilateral or global funds (e.g. Global Environment Facility, Green Climate Fund), such as DBSA, may have an advantage as they can exercise a defined financial intermediary role and diversify their sources of capitalisation.

The private sector plays a crucial role in mobilising green finance and in presenting new solutions. One of the major obstacles in private sector financing is the perception of high-risk in transactions. Often, the business cases for intervention are not sufficiently explored, resulting in higher prices or low availability of finance. The financial systems are dominated by banks that have short-term lending outlooks and limited knowledge of green finance, which results in poor lending practices. There are successful stories in private sector financial intermediation that can offer guidance and solutions for other financial institutions, such as for NDBs, namely on the use of innovative capital-raising structures (crowdfunding, green deposits, digital banking) in addition to green bonds, and the organisation of stronger technical, institutional and organisational capacities that can underpin an organisation's success to champion sustainable principles.

Climate change is a threat to the stability of financial flows, with potential social and economic consequences arising from global warming. In this context, disclosure of risks in assets and portfolio can provide information to markets, which in turn can support the right pricing of risk, debt and equity products. Consistent and standardised reporting along agreed and recognised reporting standards can drive the quality of tracking, monitoring and verification in NDBs as well as in those private financial institutions that participate in transactions alongside them.

In many countries, the financial sector is still unclear on the risks of climate change for investments and the overall portfolio, with the perception of risks related to 'new' green technologies being fairly high, even for proven technologies like solar energy. In more mature markets, there is growing awareness that 'green' products can also provide new market opportunities, yet demand for these products can be hampered by high upfront costs.

In the policy and regulatory space, it has been observed that clear directions towards green investments are reached when the formulation of NDCs has been followed up with specific sectoral roadmaps, such as in Vietnam with its top-down reforms in the green growth macroeconomic space. In addition, when a policy is accompanied by a dedicated financial mechanism, whether through governmental backing (e.g. budgetary contribution) or capital markets (green bonds), then successful policy implementation is more likely, while also achieving multiple co-benefits.

Main recommendations

In their efforts to deliver green finance and the country targets set out in the NDCs, the NDBs could make greater use of non-traditional ways to raise capital, such as green and blue bonds, while also supporting innovative transactions in partner banks nationally, by incentivising green deposits, crowdfunding, and local currency funds. NDBs can increase their own capital through bonds, which can support a level of financial independence from central budgets for NDBs, but can also directly support the local private sector in structuring corporate bonds that are aligned with environmental and sustainability principles. Through stringent guidelines, for example on the use of proceeds from bonds, NDBs can acquire capital that is de-facto earmarked for environmentally sustainable and green projects.

Countries could support the strengthening of the financial intermediary role of the NDBs by supporting their access to further capitalisation at national and international levels. Where relevant and feasible, NDBs could seek accreditation by multilateral funds or could also seek to raise concessional loans and other cheaper capital which in turn could boost the lending capabilities of NDBs by providing targeted technical assistance. Similarly to the role of NDBs, the local private financial sector could also participate in blended structures to support the deployment of intermediated finance (e.g. credit lines) that can reach local Micro, Small and Medium-sized Enterprises (MSMEs) for the development of smaller projects in key green sectors.

In their role as enablers and financiers of green finance, NDBs can support further portfolio diversification in their partner banks and/or directly with project developers by enhancing the technical capacity (of banks, developers) in areas such as water management, resource efficiency, land management, e.g. through dedicated pre-investment technical and financial programmes or ex-post incentive (or result-based) payments. Intermediation will also foster long-term institutional and human capital capacity. NDBs could also seek to co-finance projects alongside the local private banks by offering the right incentives through blended finance, aimed at lowering the cost of borrowing.

The digitalisation of banking needs to be scaled across institutions worldwide as the basis for opening up new capitalisation possibilities, with proceeds being specifically earmarked for green finance. This could also lead to the launch of new financial products, e.g. green mortgages and green investment funds.

In addition, institutions need to improve capacity for human capital development through dedicated technical and financial training, which can support long-term sustainability in institutional growth. This could be done in-house and/or through partnerships, by supporting the development of in-house expert teams (engineers, green finance experts, financial analysts).

It is crucial for countries and NDBs to work with the regulators and supervisors (central banks, relevant line ministries, the stock exchanges) to strengthen the capital and financial markets infrastructure around the green economy, by ensuring that reporting and disclosure standards are in place. Reporting on environmental, social and governance (ESG) can be made mandatory for listed companies. Such requirements should be imposed in an effort to clearly define what constitutes green and climate finance, through a comprehensive taxonomy. In addition, countries could support the establishment of specific training and policy dialogue between ministries and relevant stakeholders (e.g. think tanks, or non-governmental organisations) working on policy and regulation, as well as for other regulatory bodies such as central banks, stock exchanges and clearing houses, to establish clear guidance as to what and how to report on ESG, on the basis of existing international best practices.

In their role as providers of earmarked finance, NDBs can play a crucial role in setting standards for reporting and disclosure practices for green finance. In this context, close cooperation with other national regulators is important to ensure the best possible implementation of countries' NDCs and to ensure that only genuine climate-friendly investments benefit from subsidies and special financial support.

Countries and their institutions should seek to improve the overall alignment and coordination across policies and regulations that are critical to the implementation of climate action. Government actions and spending should be aligned with national green goals, support best practices, and 'crowd in' private capital by increasing the demand for green products and services. It is crucial for countries and their institutions to address the specific gaps in the policy and regulatory framework. Countries can make use of existing toolkits to test the coherence of internal policy and regulation. In those cases, where it does not exist, additional effort should be put on the alignment of policies and regulation with the stated targets and goals. Examples of this can include the removal of fossil fuel subsidies, and/or the introduction of cost-reflective pricing. In addition, countries can introduce regulations and legislation that stimulate demand for higher-performance technologies, e.g. through more ambitious energy efficiency standards.

Development partners could provide targeted capacity building both to governments as well as to the finance sector itself to fill capacity gaps. The NDC Partnership can play a crucial role in coordinating this support by:

- Assisting governments to make more effective and efficient use of NDBs or similar national structures to green their financial sector
- Supporting NDBs to develop green financial products
- Advocating the development of an enabling legal, regulatory environment which sets coherent incentives to green the economy
- Fostering the development of business models and finance instruments for sectors such as energy efficiency, water management, sustainable transport and agriculture
- Providing expertise on how to improve technical and human resources and financial screening capacities of the finance sector (and real sector) in general
- Working with the financial sector to align environmental and social standards with best practices (for example, Environmental and Social Standards, Environmental, Social and Corporate Governance).

1. Introduction

Greening the global economy is a critical imperative that encompasses the preservation of the natural environment, sustainable resources management and action in climate change mitigation and adaptation. However, the underlying challenge is multifaceted and requires the alignment of all actors (public, private, corporate, individuals) and a stable political and regulatory framework in order to unlock the necessary financial flows.

The urgency of the climate challenge is more pressing than ever. The latest report by the Intergovernmental Panel on Climate Change (IPCC), released in October 2018, restated that current models are leading to critical temperature rises in the next decades. Warming from anthropogenic emissions will persist for centuries and will continue to cause substantial changes to weather patterns. To reverse this situation, sustained zero-emissions pathways are needed (IPCC, 2018).

Key international agreements and agendas such as the 2030 Agenda and the Sustainable Development Goals (SDGs) as well as the Paris Agreement have underscored the need to find ways of supporting but also financing long-term solutions to this development and environmental challenge. In this regard, the agendas present an opportunity to promote new instruments and innovative mechanisms for green finance, provided concerted efforts are made in triggering changes in common financial practices. The NDCs, which are at the heart of the Paris Agreement, embody efforts to reduce national greenhouse gas (GHG) emissions and adapt to the impacts of climate change. Corresponding mitigation and adaptation projects often contribute to SDG objectives, such as SDG Goal 13 on combating climate change and its impacts or Goal 17 on the delivery of sustainable development impacts as set forth in the Agenda 2030. Although these contributions are of increasing relevance, they have not yet been explicitly quantified.

A total of 176 parties have submitted their first NDCs (UNFCCC, 2018a). As part of a five-year revision cycle ending in 2020, these NDCs will be updated and re-submitted. Most NDCs reflect the respective country's targets for reducing GHG emissions and increase resilience to the negative impacts of climate change, taking into account the country's local circumstances and capabilities. However, most countries' NDCs are not sufficiently ambitious and concrete enough to be transposed into national legislation and development planning to deliver the specific programmes and projects that are consistent with outcomes that will keep global average temperatures rise within a 2°C or rather within a 1.5°C limit relative to pre-industrial levels. National and sectoral operational strategies and roadmaps must continue to be designed, while the relevant policy and regulation must be consistent and coherent with stated targets.

Accordingly, new financing mechanisms and instruments from governments as well as from the private sector should be consistent with the targets of the NDCs, or contribute to increased ambition and – by the same token – must be part of the respective NDC implementation plan or sectoral roadmaps.

Article 2.1c of the Paris Agreement states that financial flows need to be in line with the global development towards lower greenhouse gas emissions and higher climate resilience (UNFCCC, 2015). The latest UN Environment Emissions Gap Report 2017 asserts that there is an urgent need for accelerated short-term action and enhanced longer-term ambition if the emission reduction goals of the Paris Agreement are to remain achievable (UNEP, 2017a). The amounts necessary to achieve these goals cannot be provided solely by the public sector and complementary action by the private sector, but require a fundamental shift in financial flows that can underpin sustained transformational change in the real economy.

Green finance mobilisation through the private financial sector, including green bonds, is estimated to be in the region of USD 1 trillion annually, in order to close the emissions gap and to avoid further delaying of the global peak of GHG emissions (Figueres, et al., 2017). Moreover, substantial financing is needed to help vulnerable nations adapt to climate change (WEF, 2014). This is a complex undertaking that is highly context specific and where many actors are needed, both from the public and the private sector, in order to ensure that the countries reach their emission reduction and resiliency targets.

Against this backdrop, there can be an explicit role for NDBs and other public financial intermediaries to act as catalysts in the green finance transformation. Provided that they receive a clear mandate from their government and are sufficiently capitalised, NDBs can take on the role of market enablers and maximise the leverage of public funds by encouraging an increased use of private resources. As NDBs often work in tandem with central banks and regulators, stock exchanges and dedicated associations, they can also act as drivers for the redirection of financial flows by steering regulations and supervision in a direction that is conducive to the implementation of the NDCs.

Box 1: Definition of NDBs

National development banks (NDBs)[2] are financial institutions that are at least 30% state-owned with an explicit legal mandate to provide long-term financing to – or facilitating the financing of – projects that contribute to achieving socio-economic goals in a region, country or a particular sector of an economy (UN-DESA, 2005; World Bank, 2012).

To date, many regulatory systems and finance mechanisms in place are not sufficiently modelled to close the financial gap needed to implement the NDCs and other climate and environmental policies set at the national or regional level. The structural changes in financial sectors and capital markets to achieve a clear and sustainable market transformation through the mobilisation of private and public finance, are often not adequately supported by a stable, consistent and coherent regulatory environment. A number of challenges need to be overcome in order to accelerate the process of greening national economies.

In this context, the study explores the potential of NDBs to support the transformational process of mainstreaming the 'greening' of global economies. The global report provides recommendations around the question of how climate-friendly private investments can be mobilised in an effective and efficient manner through the hinge function of NDBs and similar public intermediaries.[3]

In the following section, the study will present the major challenges encountered in greening the economy, and definitions of the terminology used in the study are also provided. Section 3 is dedicated to a detailed discussion on the evolution, functions and practice of NDBs worldwide and contains a summary of capitalisation approaches and financing instruments used in this context. Case studies of NDBs operating in various countries form Section 4. The subsequent sections describe the environment NDBs are operating in and discuss the roles of the private financial sector champions (Section 5) and the policy and regulatory environment (Section 7). For both sections, case studies are provided in Sections 6 and 8 respectively. The study closes with concluding remarks in Section 9.

2 Throughout the study, the term NDB is used for public banks and other public financial institutions that punctually take a financial intermediation role provided they match the definition in Box 1.

3 Please refer to the Annex 3 for a detailed description of the study methodology.

2. Greening the economy – a major challenge

2.1. The financing challenge

Achieving the objectives of the overarching climate change strategies will require the mobilisation of major financial resources. In many countries, the opportunities in the real economy are underdeveloped and the business cases of investing in green finance is not always obvious. On the other side of the spectrum, global green and climate finance set ambitious goals for countries. NDBs as well as private financial institutions and other public or private institutions with similar mandates have the potential to bridge this gap between high-level policy commitments and delivery of investments on the ground. In so doing, NDBs can scale up climate actions and support the financing of countries' national climate commitments. However, translating this potential into action requires the financial sector to perceive the benefits of investing into climate-friendly projects, while also fully understanding the risks and implications of those risks in their portfolio.

In order to increase awareness, build capacity and deliver financial assistance to national stakeholders, NDBs can be key in assuming a very specific hinge function between, national policies and regulation, and their translation into concrete financial mechanisms and instruments. Through this, they can support the implementation of programmes and projects that are grounded in green principles and the shift of financial flows from carbon-intensive, unsustainable assets towards a green economy.

Defining green and climate finance

The efforts to finance projects that aim at greening the economy are commonly referred to as green finance. However, there is no universal definition of green finance and the term is understood differently in the literature and practice. According to the G20[4], green finance is considered an umbrella term to describe the major shift in financial flows that is needed to promote climate-protecting and pollution-preventing projects (Heinrich Böll Stiftung, 2016). In (GEF, 2017; IDFC, 2012; UNEP, 2017b), green finance is defined in more concrete terms as the financing of investments that provide broad environmental benefits, such as:

- reductions in greenhouse gas emissions
- reduced energy/carbon intensity through energy efficiency (EE) and renewable energy (RE) investments
- reductions in water, air and land pollution
- promotion of sustainable water management practices
- reductions in land, ocean and forest degradation
- investments in biodiversity
- investments in increased climate resilience in all sectors

Green finance can also be extended to the financing of *"policies that encourage the development of a more sustainable economy"* (IDFC, 2012). The terms green finance and climate finance are often used interchangeably, but green finance can be regarded as the more comprehensive concept. This study will more consistently use the term green finance in the following sections to describe all NDC-relevant investments as these go beyond the more restricted definition of climate finance.

4 G20: Group of the 19 most important industrialised and emerging countries and the European Union

Box 2: Green finance

Green finance is commonly defined as the *"financing of investments that provide environmental benefits in the broader context of environmentally sustainable development"* (UNEP, 2017b). Subsets of green finance include climate finance, environmental finance and conservation finance.

A '**green' product or a 'green' lifestyle** would be characterised by their reduced environmental impacts or hazards to health. Both concepts are of increasing importance in retail banking and impact investment.

The term **'green investments'** is often used interchangeably with the term green finance whereby the latter concept is interpreted more broadly to include also operational costs such as project preparation and land acquisition costs (Lindenberg, 2014).

In Europe, the European Commission is working on a unified classification system (taxonomy) to define sustainable economic activities, to create standards for an EU green bond, to establish methodologies for a low-carbon and a positive-carbon index and to further refine metrics on climate risk disclosure. The current working definition used by the European Commission sees **sustainable finance** as the provision of finance to investments taking into account environmental, social and governance considerations. **Sustainable activities** are defined as encompassing increasing awareness of and transparency on the risks which may have an impact on the sustainability of the financial system, and the need for financial and corporate actors to mitigate those risks through appropriate governance (European Commission, 2018a).

These definitions have a practical underpinning that goes back to earlier attempts at understanding critical environmental and developmental issues with the establishment of the World Commission on Environment and Development (WCED) and the subsequent Brundtland Report (Brundtland Commission, 1987).

Climate finance aims at the mobilisation of enough financial resources to master the challenges of climate change and comprises local, national and transnational financing from various public and private sources (UNFCCC, 2018b). One recognised definition states: *"Climate finance aims at reducing emissions, and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts"* (UNFCCC, 2014).

In the original document of the United Nations Framework Convention on Climate Change (UNFCCC) it is set out that the participation of countries in combating climate change should be *"in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions"* (UNFCCC, 1992). With the Paris Agreement, signed in December 2015 at the 21st meeting of the Conference of the Parties (COP21), the greatest responsibility remains with the developed countries to reduce emissions (Annex I countries[5]) and to provide financial and technical support to developing countries (Annex II countries[6]). Developing countries (Non-Annex I countries) were encouraged to contribute voluntarily to the successful implementation of the UNFCCC's objectives. Moreover, a balance should be aspired between the level of financial resources spent on mitigation and on adaptation (UNFCCC, 2015).

In 2010, developed country parties to the UNFCCC jointly committed through the Cancun Agreements to mobilise USD 100 billion per year by 2020 from different public and private finance sources to the benefit of the developing countries (UNFCCC, 2010). Later at COP21, it was agreed to put this goal into more tangible terms by establishing a concrete road map to achieve the 2020 target. Furthermore, the commitment was extended to the year 2025 prior to which a new collective quantified goal will be formulated (OECD, 2016).

Green and climate finance is driven by an interlinking system of international and national commitments that continues to evolve. At the supranational level, the Paris Agreement and its forthcoming Rulebook, to be negotiated at COP24 in Katowice, guide government actions and, at the national level, the NDCs determine how the objectives of the Paris Agreement are to be implemented in a country, and in some cases what kind of support is required for the implementation. Meeting the climate commitments made through the NDCs will require substantial global investments which are estimated at USD 16.8 trillion by 2030 (GGGI, 2016). Making this volume of finance available demands concerted efforts to align global and national financial flows with a low-carbon and climate-

5 Annex I countries: OECD countries (EU, USA, Canada) and economies in transition (Russia, Eastern Europe)
6 Annex II countries: Annex I countries without economies in transition

resilient development as outlined in Article 2.1c of the Paris Agreement (UNFCCC, 2015). Ultimately, the challenge is not only to foster additional efforts in climate finance but to redirect existing public and private financial flows from climate-damaging to climate-friendly investments.

Box 3: Climate finance trends and facts[7]

Mitigation finance in the energy sector at an average amount of **USD 382 billion** per year represented 93% of climate investments in 2015/2016. Almost 75% of these public and private investments have been directed at **renewable energy generation**, the remainder into energy efficiency, transport and other mitigation-relevant sectors (CPI, 2017). According to the International Energy Agency (IEA), investments in electricity generation and networks surpassed investments in oil and gas supply in 2017 for the second consecutive year; a total of USD 298 billion was spent on renewable energy for electricity generation, compared with only USD 149 billion for fossil fuels (IEA, 2018).

The increasing importance of climate-compatible investments over traditional fossil fuel investments led to a continuously positive trend of global climate finance in recent years. In fact, there has been a substantial increase of the yearly global climate investments **from USD 359 billion in 2012 to USD 437 billion in 2015**, which later decreased to USD 383 billion in 2016 due to lower technology costs and less generation capacity additions in some countries (CPI, 2017).

In 2016, **private actors provided 63% and public actors 37%** of the financing. While public financing remained relatively constant over the period 2012/2016 with an average of EUR 141 billion, the private contribution increased from an average of EUR 211 billion in 2012/2013 to an average of EUR 270 billion in 2015/2016. Within private sources of finance, **project developers were the most important source** of climate financing – particularly in China, the UK, and the US – with a total contribution of EUR 125 billion in 2016 (i.e. 52% of the total private finance and 33% of the total finance). Households and corporations contributed EUR 59 billion (i.e. 24% of the total private finance) mainly because U.S. households and Japanese corporations were particularly active in rooftop solar photovoltaic investments in 2015 and 2016. The rest of the private contribution relied on commercial financial institutions with EUR 55 billion (i.e. 23% of the total private finance) (CPI, 2017).

Among public sources, the most relevant actors were the development finance institutions **(DFIs) accounting for 89% of total public flows.** Economic instability in some emerging economies, however, induced a **decrease of national climate finance** from EUR 69 billion in 2012 to EUR 56 billion in 2016, while **multilateral and bilateral DFIs increased their commitments** from EUR 53 billion in 2012 to EUR 69 billion in 2016. Six multilateral DFIs committed to increase their climate finance to 25-40% of the total business by 2020. In 2016, the multilateral DFIs together have already achieved more than 75% of their internal and institutional targets (CPI, 2017; MDBs, 2016).

Adaptation finance with average investments of **USD 22 billion** per year in 2015/2016 is still underrepresented in the climate finance landscape, in part due to the fact that adaptation finance is more complex to track. Main investments from public institutions went into water and wastewater management, land use and resource management, risk management and infrastructure reinforcement. However, it is expected that this amount does not fully reflect the actual situation as the adaptation finance flows are by nature complex and therefore difficult to measure (CPI, 2017).

Challenges and opportunities

Despite positive trends, a number of gaps and market failures continue to impede true transformational change in the economy:

- **Information asymmetries** leading to imbalances between potential project developers and investors or private and public sectors
- **Insufficient capacities** to assess the technological and environmental aspects of green measures, such as the

7 Since many institutions do not carry out systematic and regular data collection on climate financing, especially when it comes to investments outside clearly identifiable sectors such as renewable energies, it must be noted that the following figures also include assumptions about the past development.

effectiveness of energy efficiency audits or the vulnerability of ecosystems affected by human interventions

- **Weak or non-existent energy markets** in countries where liberalisation is not or not fully implemented and exaggerated state intervention prevents free competition
- **Perception of excessive risks** inherent to green finance (e.g. physical risks concerning material assets; transition risks related with increasing transfer costs; opportunity risks due to lost revenues) and the incapability to manage those risks
- **Lack of adequate finance** with regard to maturity (longer-term), strength of the local currency, and the specific local demand (e.g. cheaper financing with concessional loans, junior equity)
- **Insufficient or lack of guarantee schemes** to buffer inevitable risks associated with green finance
- **Lack of experience with instruments** suited to leverage limited public funds by encouraging increased use of private resources

At the global level, there is growing recognition that investments in climate change mitigation and adaptation represent a significant economic opportunity for businesses, potentially leading to innovation, technological development and overall growth. Also, as customers become more sensitive to the issue of climate change, environmental sustainability and conservation, they become more assertive in seeking appropriate solutions through the markets.

The financial sector, including governmental and supranational institutions in the broadest sense and to a lesser extent also the private sector, have to some degree started to recognise this new opportunity through the provision of new financing mechanisms, instruments and products, including some of the following activities:

- Preparation of **investment pipelines** with the private sector
- Offering technical advisory support geared towards **blended finance** and the greater use of **leverage instruments**
- Strengthening financing mechanisms such as credit lines that can reach small and medium-sized enterprises **(SMEs)** (for projects below EUR 10 million) for investments in off-grid, energy storage, additional renewable energy generation, energy efficiency, water management, resource efficiency, circular economy, etc.
- Strengthening **capital market infrastructure** around the green economy, through working with stock exchanges to support enhanced/mandatory reporting on environmental, ESG criteria for listed companies, development of green bond standards, support for climate risk (both mitigation and adaptation) disclosure
- **Minimising risks** to first entrants and investments, so that financial products in this area will become financially viable
- Provision of **long-term and local currency finance**, also through private equity funds, pension funds/ institutional investors
- Stepping up **green financial product development** with financial institutions in these areas: solar and wind energy, efficient appliances and efficient passenger cars, through dedicated retail products such as 'green' mortgages; loans; dedicated corporate and investment banking products (commercial loans)
- Supporting the deployment of **non-traditional banking and non-banking financial products** (e.g. green online banking; cooperation FI/CSO; forex platforms)
- Mobilising liquidity through **green bonds** – issuers rely on standards to define green investments, particularly the Green Bond Principles (GBP), which give evidence of the strong governance and reporting of green bond proceeds, as do Climate Bond Principles (CBP) for climate bond proceeds

Alternative financial instruments such as green bonds are becoming increasingly relevant in the light of an annual issuance of USD 95 billion in 2016. Yet, despite the impressive growth of more than 3,000% in the green bond market between 2011 and 2016, the amount of green bonds that banks are currently issuing is small compared to the amounts of USD 620-720 billion estimated by the Organisation for Economic Cooperation and Development (OECD) that are required annually to adhere to the 2°C scenario and to the overall bond issuance (OECD, 2017).

This is partially due to the fact that the case of green finance remains difficult for the private financial sector. In many relevant sectors within green finance, the 'business case' is not immediately obvious. There is the perception that the incremental costs of additional environmental or low-carbon components increase the cost of borrowing. This is indeed often true for new technologies, or in those cases where there is no stable regulatory environment or where regulations change too often.

Therefore, there is a strong case for asserting the NDB' role as central players in catalysing these processes to leverage and accelerate national and international finance, including from capital markets and institutional investors (such as pension funds or insurance companies).

2.2. The regulatory and policy challenge

So far, the drive towards the mainstreaming of green finance has been supported by two underlying forces:

- **The political and regulatory environment:** The international policy debate on climate change has led to the Paris Agreement and the setting of NDCs, establishing an internationally recognised framework for climate and environmental commitments, upon which country or sectoral operational strategies for climate mitigation and adaptation can be based. Regulatory instruments such as environmental laws and regulations (e.g. EU directive on greenhouse gas emission allowance trading, procurement directive), taxes (e.g. vehicle tax or energy taxes based on carbon dioxide (CO_2) emissions) or standards (e.g. for energy consumption of buildings, household appliances, transparent ESG reporting), can steer public and private investments into a low-carbon and climate-resilient pathway.

- **Market tendencies:** As clean technologies mature and the costs of installing solar and wind energy come down, the financial appeal of green investments increases while the need for subsidies decreases. Also, in developed economies, consumers are becoming increasingly more aware of 'green products'. Globally, the business cases for renewable energy generation and for energy efficiency measures are becoming better understood, with agencies such as the IEA and International Renewable Energy Agency (IRENA) providing country assessments that detail the savings that those measures would bring in the long term.

However, in many instances there is still a weak understanding as to how commitments made globally can translate directly or indirectly into enhanced private sector participation. Studies have suggested that there are cases where market forces do in fact drive innovative mechanisms and products to support green and sustainable development, yet they alone are not sufficient to maintain a level of sustainability and liquidity over time. They need to be supported by a stable and coherent regulatory and policy framework within which the private sector can thrive. This is where the role of regulators, such as central banks and stock exchanges, and policy setters, such as ministries, becomes relevant, in particular in emerging countries with weaker institutions in the private sector, or in sub-sectors with nascent or insufficient regulation.

Regulation can realign market failures, in particular as they pertain to environmental externalities. To this end, in many countries, numerous structural changes need to be made in order to achieve a clear and sustainable market transformation that is conducive to long-term sustainable investment in a range of sectors through the mobilisation of private and public finance, and supported by a stable, consistent and coherent regulatory environment. The ultimate objective of the regulatory and legislative efforts is to incentivise and foster the participation of the private sector both as a provider and recipient of finance that is aligned with government and international policy objectives.

A study (GRI, 2017) identified more than 1,200 climate change or climate change-relevant laws in 164 countries, of which 44% are legislative acts of parliaments, and the remaining 56% are executive policies. As the need for new frameworks is met in many countries and the rate at which new laws are passed is declining, future efforts should be focused on strengthening existing laws, filling gaps and complementing the existing legal basis for climate change actions. With regard to scarce financial resources, the individual needs of a country should always be taken into account, e.g. climate adaptation measures play a major role for many developing countries. Moreover, aspects of climate change need to be much better integrated into other national development strategies in order to take full advantage of synergies (GRI, 2017).

An overview of different international regulations, guidance and initiatives in green and climate finance is given in Table 1 and Annex 2. However, these are just examples of existing regulations and initiatives to present the range of international efforts.

Table 1: Examples of international regulations, guidance and initiatives directly and indirectly linked to green and climate finance

Type	Examples
International Regulation	Basel Standards (Basel III) on capital ratios requirements
International Guidance	Equator Principles, Principles of Responsible Investment, Green Bond Principles, UN Global Compact
(Supra-) National Regulation and Guidance	EU Action Plan on Sustainable Finance, China Green Credit Guidelines, Netherlands Green Fund Scheme
International Initiatives	Financial Stability Board's Task Force on Climate-related Financial Disclosure (TFCD), G20 working groups, UNEP Inquiry, UNEP Finance Initiative, C40 Initiatives[8] , Carbon Disclosure Project (CDP)
FI Initiatives	International Development Finance Club (IDFC), Network of Central Banks and Supervisors for Greening the Financial System (NGFS), Global Alliance for Banking on Values (GABV), Sustainable Banking Network (SBN)

If the required enabling conditions are not present or are insufficient, it is likely that further governmental interventions or injections of concessional finance through NDBs[9] will be needed to bridge the existing gap towards strengthening the private sector supply and demand for green finance products. Conversely, once the enabling conditions are present and the market has reached maturity through market transformation, the private sector should take the lead with little public intervention. This can ensure that any form of subsidies and concessionality are deployed where really needed, thus crowding-in the private sector while simultaneously reducing or eliminating the risk of crowding our private actors.

2.3. The reporting challenge

Reporting on green finance and, in particular on climate finance, has become increasingly important as a way to determine a company's alignment with climate policies and their implementation on the ground as well as to monitor the national progress in implementing the NDCs. In the cases analysed in this report, there are multiple levels of inconsistency in the reporting and disclosure practices of organisations, including NDBs, of what constitutes a green (climate relevant) investment, or in the assessment of the financial implications of climate risks in their portfolio (see Section 2.1.1). Consistent reporting and monitoring and evaluation (M&E) frameworks represent an ongoing concern in this regard, since there is no unified tracking system for green finance, or indeed climate finance.

For example, it is estimated that the private sector contribution to the reduction of greenhouse gases is substantial. The construction of specific indexes such as the Dow Jones Sustainability Indices (DJSI, 2018), FTSE4Good series (FTSE, 2018) and Morgan Stanley Capital International (MSCI, 2018) have become key reference points for sustainability investments in the markets, aimed at building trust and credibility in the institutions. They are based on an analysis of corporate economic, environmental and social performance (e.g. by means of carbon footprints or socio-economic life cycle assessments), assessing issues such as corporate governance, (climate) risk management, branding, climate change mitigation, supply chain standards and labour practices.

A set of arguments as to why it is important to disclose information is presented in Box 4.

In their role as providers of earmarked finance, NDBs can play a crucial role in setting standards for reporting and disclosure practices for green finance. In this context, close cooperation with other national regulators is important to ensure the best possible implementation of countries' NDCs and to ensure that only genuine climate-friendly investments benefit from subsidies and special financial support.

8 C40: Cities Climate Leadership Group Initiative
9 In addition to international and multilateral interventions, which are beyond the scope of this study.

Box 4: ESG – Why it is important to disclose

ESG criteria are standards of reporting for **three main risk factors** related to a company's operations that socially and environmental conscious investors (i.e. ESG investors) use to screen potential investments.

- **Environmental** criteria look at how a company performs as a steward of the natural environment.
- **Social** criteria examine how a company manages relationships with its employees, suppliers, customers and the communities where it operates.
- **Governance** deals with a company's leadership, executive pay, audits, internal controls and shareholder rights.

In the **green finance space**, ESG reporting for listed companies has become increasingly important as a way to determine a company's alignment with policies and their implementation on the ground. In particular, ESG standards (SGX, 2011):

- **Raise corporate transparency.** Sustainability reporting is a made-to-measure account of how environmental, social and economic considerations are embedded in the governance structure. It broadens organisational disclosure beyond traditional financial metrics and raises corporate transparency on environmental and social metrics. Sustainability reporting allows a balanced and understandable assessment of the company's performance by stakeholders to facilitate corporate accountability. This increased transparency can enhance the quality of the portfolio. Indirectly, it can also support further access to international finance.
- **Strengthen risk management.** By looking beyond economic, strategic and operational factors to include social and environmental considerations, sustainability reporting allows listed companies to consider emerging risk areas and to identify opportunities presented by risks that are overlooked by other analytical and systems-driven approaches. A risk management approach that incorporates sustainability provides management with useful data for identifying emerging issues and developing appropriate responses that help protect corporate reputation and improve shareholder value.
- **Promote stakeholder engagement.** Identification of and engagement with stakeholders are fundamental to sustainability reporting and are cited as critical steps by various international sustainability frameworks. Listed companies need to identify their stakeholders to effectively engage those that are interested in and affected by the company's sustainability performance. Given the varied nature and interests of stakeholders such as shareholders, employees, customers, suppliers and communities, stakeholder engagement enables the company to take into account the needs of various stakeholders with regard to the disclosure of sustainability-related information.

In a recent comprehensive literature research (Friede, Busch, and Bassen, 2015), a **positive relationship** between investments based on ESG criteria and corporate financial performance (CFP) was proved for the majority of studies investigated across various methodological approaches, regions, dates and asset classes. The positive correlation has even been demonstrated more frequently for emerging markets than for developed markets. Increasing standardised reporting on ESG related aspects led to the proliferation of **ESG rankings and indices** such as MSCI, FTSE4Good, and DJSI which are used by institutional investors (pension funds, reinsurers etc.) to evaluate the ESG performance and related risks of companies worldwide.

2.4. The 'real' sector challenge

The climate challenges that will need to be overcome in the following years will touch upon every level of society, hence there is strong need for complementarity in the role played by several actors on the ground, including the 'real' sector, associations, and other non-state actors. The cases analysed in the global reports as well as in the four country studies (Indonesia, Mexico, Morocco and Peru) show that the maturity of the financial markets is a strong indicator of the extent of the private 'real' sector in the country, and the access of businesses on the ground to adequate green finance and targeted technical/capacity building. Several different patterns or scenarios have been noted:

- Demand for green products (i.e. products that can be defined as having been produced in a sustainable, environmentally and socially conscious manner) has increased in more mature economies. This also accompanied

by an increasingly open-minded and informed civic community, which may, however, also be fragmented in its beliefs and societal engagement.

- In developing countries, the role of demand has been much weaker. The limited availability of bankable projects on the ground is also due to the fact that the business case for green finance is not always obvious, and in many cases green investment may still be more costly than traditional investments. In addition, another significant barrier is the lack of seed finance for small but innovative companies in the green/climate sector, and incubation centres to help them develop business ideas into bankable projects.

- The mismatch between long-term impacts and short-term benefits is felt in a similar mismatch that can be found between the provision of finance, which is often provided with short tenors, thus leaving larger investments or investments needing long-term finance unfunded.

- In those markets, there is a potential opportunity to stimulate demand through the role of financial markets, for governments and regulators to provide guidelines and standards that can guide companies towards green finance/green production. In turn, this opportunity can support the growth of investment assets that can be defined as green, with a growing number of ESG and long-term investors interested in knowing the green credentials as well as the climate risk profiles of projects in those portfolios.

The interaction between NDBs, the private sector, associations on the ground and governments is key to influencing legislation and regulation in a way that the principles above can be upheld while moving the economy forward and towards achieving the NDCs targets. These interactions are also important in determining the extent of information about and access to finance that is available to businesses. In intermediated structures, such as credit lines, or in small-scale guarantee facilities, the financial resources are ideally paired with technical assistance. This is of great value to the real sector, as it can ensure that specific gaps in technical or financial knowledge are addressed and supported appropriately.

2.5. NDBs to face the green finance challenges

The current global climate architecture ensuing from the Paris Agreement and the targets outlined in the NDCs puts a much stronger emphasis on national actions and commitments made – and delivered – at ground level. This is a significant development which empowers countries both at the political level (through negotiations) and as a direct vehicle of green finance.

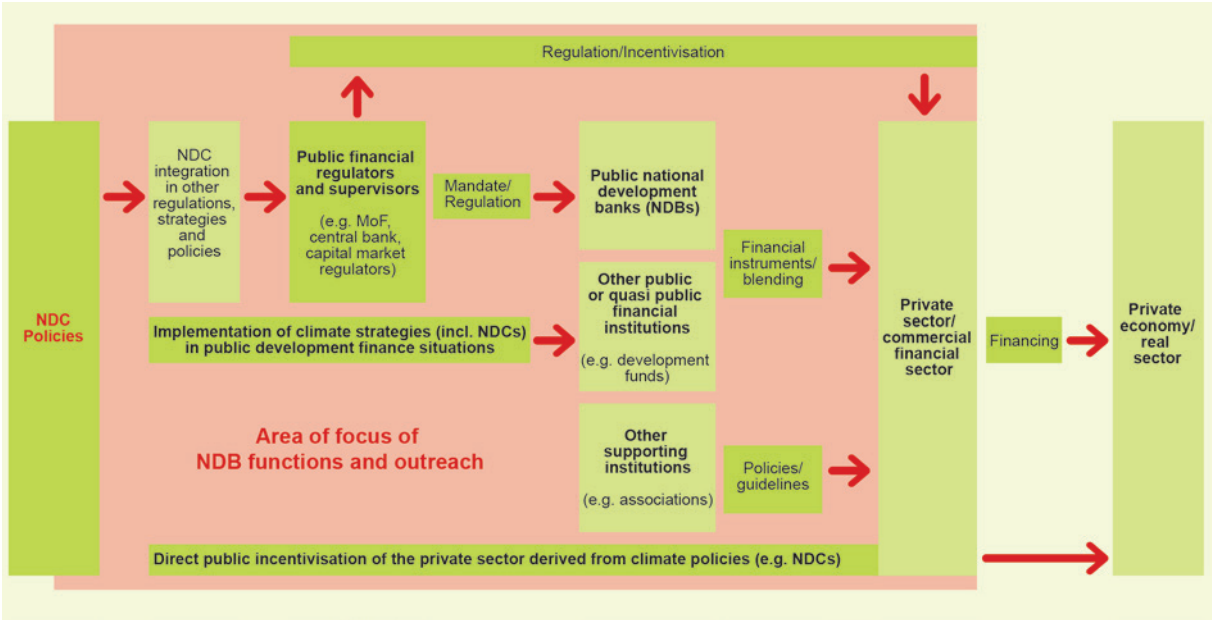
Capitalisation for green and climate finance at national level can occur in different ways, including through national and subnational budgets, capital markets and in some cases through an enhanced direct access across several global and multilateral funds, in particular those acting as formal financial vehicles of the UNFCCC, such as the Global Environment Facility (GEF), the Green Climate Fund (GCF) and the Adaptation Fund (AF).

NDBs' current contributions to green finance are substantial, with commitments of USD 173 billion in 2016[10] (IDFC, 2017), but this commitment is not yet fully perceived by the public, nor is their particular role in climate finance (IDB, 2013).

Figure 2 below illustrates that NDBs and similar national financial institutions are well positioned to leverage knowledge and operationalise strategies in the local markets, with strong know-how and closer relationships with the private financial sector as well as the real sector on the ground. They can also facilitate better understanding of barriers, risks, and overall knowledge of the opportunities that can be generated locally. NDBs additionally hold a central position with key outreach to the international and multilateral context, to global as well as national climate strategies, national policy setters, regulators, the national financial system and ultimately to the local, 'real' or on-the-ground private sector. This underscores the hinge function of NDBs in the overall policy, economic and financial space of a country.

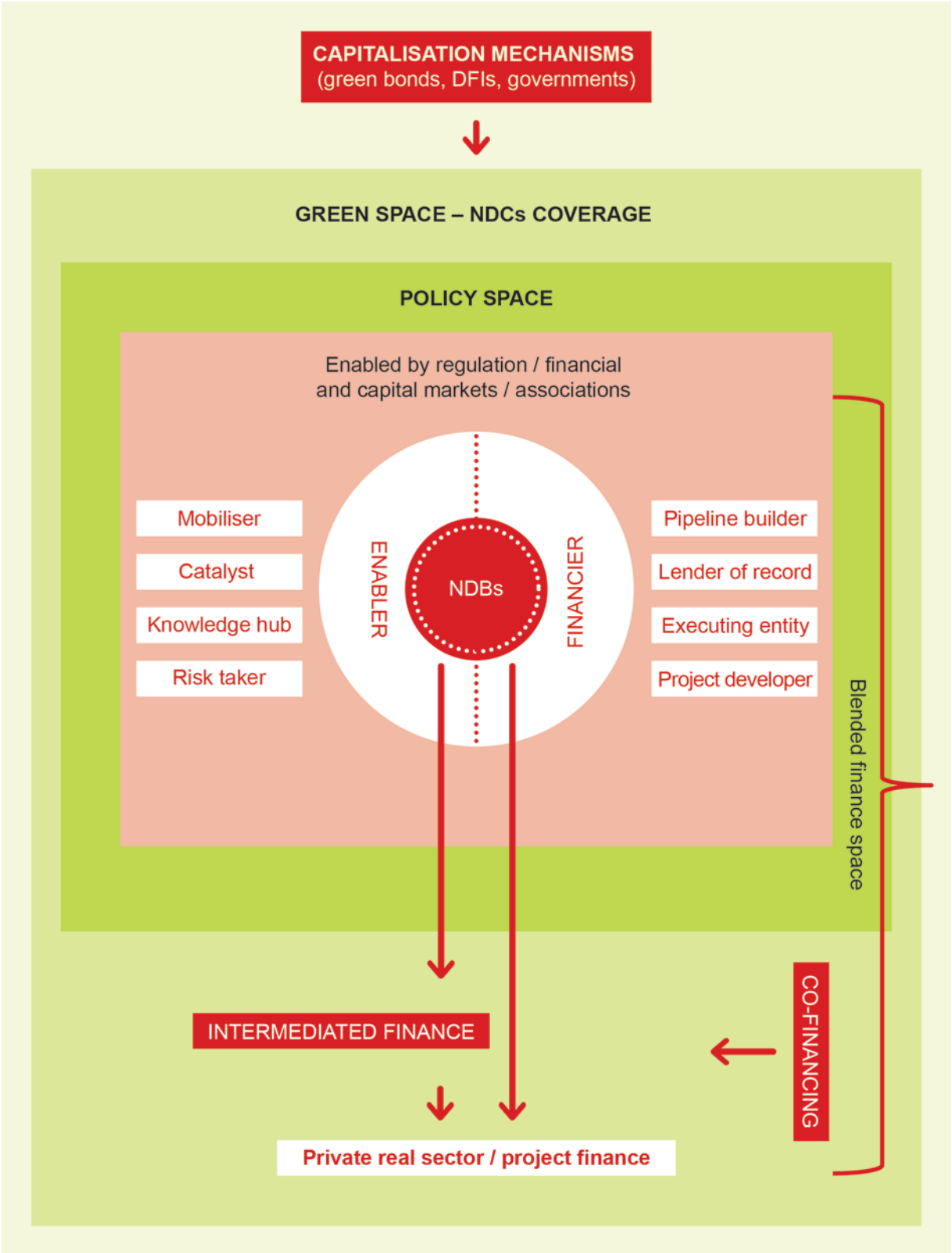
10 Based on a survey among IDFC members and the feedback from 20 members

Figure 2: The NDBs hinge position in the economic, financial and policy space



Figures 3 below further zooms in to detail the specific functions covered by NDCs and illustrate how those institutions interact with the ecosystem they are in. The mandates and positioning of NDBs in the wider climate finance architecture not only complement existing financial flows, but can further support the operationalisation of national and regional policies, thanks to the deeper understanding of local dynamics and local needs. As further analysed in Section 3, the two main functions of NDBs (as enabler and as direct financier of green finance), while they may cover different ground, are both testament to the need of those institutions to cover very specific functions in order to acquire and/or scale up the technical and financial capabilities that are needed to have sustainable impacts in green finance.

Figure 3: The central role of NDBs in green finance



3. The role of NDBs and public financial institutions

This section briefly elaborates on the history of NDBs, before turning towards their current role in general and their potential role in green finance.

3.1. A short history of NDBs

In the middle of the 19th century, the developing industrial sector required large investments to support the growing economies and financial needs arising from the Industrial Revolution. While the United Kingdom was making use of its regional stock market to sustain industrialisation, France, Germany and Italy created their own state-owned financial institutions to promote the process. Later in the 19th century, the United States established state-owned financial institutions to support the industrial sector. Some cases can also be found in Latin America, with Mexico establishing a development bank named Banco de Avío in 1830, only ten years after proclaiming its independence. The NDB was created to encourage the domestic industry and funds were mainly used for the purchase of agricultural machinery and equipment for the nascent cotton, wool, silk, iron and paper industries, as well as for the construction of a railway system to connect north and south (UN-DESA, 2005).

During the 1930s, the Great Depression caused a significant lack of funds worldwide. This major event led to rethinking the role of NDBs in a country's development. Some countries opted to close these institutions while others built new NDBs in order to develop capital markets. In the period following World War II, many countries decided to establish development finance institutions with public funds in order to achieve a certain growth rate. In the same period, as many developing countries were gaining their independence, they were also creating development banks such as the Banque Gabonaise de Développement in 1960 or the Botswana Development Corporation Limited in 1970. It is also important to mention that most of the NDBs at this time were usually associated with bilateral donors, regional development banks (RDBs) and global finance institutions such as the World Bank (UN-DESA, 2005).

In the following three decades, the creation of national and multilateral development banks (MDBs) expanded throughout Asia and Latin America (Bread for the World, 2016). While economic policies were focusing on industrialisation and import substitution, many development banks were created to provide funds to specific sectors of the economy, such as the agricultural sector, but also to SMEs. In that period, however, many development banks were subject to financial crises, corruption and management problems, which resulted in either closure or privatisation of many NDBs. Through the 1990s, some NDBs in Latin America and Asia successfully adapted to a new context. This transformation was made possible by a wider supply of financial products, such as working capital, advisory services, leasing, insurance, entrepreneurial development and the provision of technical assistance. Some turned into large, diversified, nation-wide banks. Through the use of new products such as syndication, equity and quasi-equity, which were often turned into more complex financing tools (guarantees, synthetic securitisation, etc.), some banks steadily increased their loan portfolio in the economy (UN-DESA, 2005).

Today, there are about 750 NDBs[11] (UN-DESA, 2005), located in virtually all countries, regardless of the country's stage of economic or financial sector development. While the banks are highly diverse in terms of ownership, their size, financial performance, development objectives, business models, funding arrangements, and governance practices, SMEs remain their primary target group. They differ substantially in their mandates and in the extent to which their activities are commercial or development oriented. It must also be recognised that the double bottom line of NDBs has oftentimes represented a trade-off situation between financial soundness, e.g. risk reduction, and the much-needed support for developmental sectors such as agriculture, international trade, infrastructure, tourism, housing, SMEs, energy and environment. The degree to which NDBs can take such risks and interpret their role as developing economic sectors, is also dependent on the political mandate and guidance with which they are equipped.

3.2. Characteristics and roles of NDBs

According to a survey among 64 NDBs worldwide (World Bank, 2018), NDBs can be divided into three groups based on their business model:

- 40% of NDBs solely act as first-tier financial institutions (retail), or direct lenders utilising earmarked funds, e.g. from a donor. They act as executing entity (or project developer, or legally as 'lender of record'), with the ability to develop and determine their pipeline in many branches and directly carry out a primary due diligence function. NDBs interact directly with end-customers and can offer them lower interest rates. However, the credit risk remains with the NDB and operating costs can be comparatively high.

11 This number is not expected to have changed significantly over the last years. However, the exact number largely depends on the scope of the analysis and the definition used for NDBs, both were not stated in the cited report.

- 10% of NDBs are second-tier financial institutions, acting as wholesale finance providers to local financial institutions. They assume an intermediation role, but can also target the building of human capacity or institutional capacity with partner financial institutions. With this business model, NDBs can address more customers at lower operating costs.

- 50% of NDBs apply a combination of wholesale and retail lending models.

Consistent with their mandate, most NDBs play an important role in creating new channels to mobilise private sector resources, providing technical assistance, and building capacity in private sector firms and public institutions. However, many NDBs, especially those in developing countries, face challenges in terms of financial viability and institutional sustainability due to weak governance structures and low technical capacities.

The different roles of NDBs and the various instruments applied by them are categorised and described in more detail in the following sub-sections.

3.2.1. Improving the business climate

Building inclusive financial sectors

An 'inclusive financial sector' means that the vast majority of the population is offered sustainable access to a range of financial services suited to their needs. If the poor are to benefit from development, they too will need access to financial services. Many NDBs play a significant role in this context by providing:

- access to credit for SMEs

- access to credit for rural development and agriculture

- 'apex' (second-tier) lending facilities for the local financial sector

- funding for microfinance institutions

Promoting and supporting SME development

As SMEs form the backbone of most economies but are not always adequately served by either the financial sector or other public institutions mandated to improve the business climate for SMEs, many NDBs have taken on this role by offering:

- **Financial mechanisms:** from working capital loans to leasing or foreign currency loans and equity assistance. This can also include the provision of indirect financing, through funding for banks.

- **Guarantee mechanisms:** loan guarantee schemes for SMEs can contribute significantly to securing loans by participating institutions, if intelligently designed and implemented.

- **Technical assistance:** non-lending services or the expansion of existing training and consultancy services has been characteristic of a number NDBs over the last two decades – mostly conducted through partnerships with business associations, and networks of entrepreneurs or business development service providers.

Reducing volatility

The private financial system tends to have a pro-cyclical behaviour characterised by over-lending in periods of expansion but restricting credit during crisis times. In fact, when the system is in crisis, information asymmetries between borrowers and lenders makes it difficult to obtain credit even for sound borrowers. NDBs play an important role here in terms of reducing volatility and smoothing the business cycle. Countercyclical financing not only contributes to system stability, but also helps maintain certain levels of investment.

3.2.2. Instruments to filling gaps in financial sector development

Providing long-term financing

Long-term credit lines are widely used, fairly flexible loan instruments in green finance and common in the case studies in this report (see the offers by the Development Bank of Southern Africa below, for example). They are financial intermediation tools with several successful outcomes when extended for green projects:

- they scale up the supply of projects with specific environmental benefits, thus building market share on the ground (in the 'real' economy)
- a wider base of customers in the private sector can be reached when a national development bank or equivalent institution works in an intermediated role through local private or public banking intermediaries
- the uptake of loans can be increased by reducing costs through a concessional co-lending structure
- they can also improve lending practices at financial institutions, when supported by a dedicated capacity-building grant

Long-term financing is mostly needed for infrastructure projects. But market failures (lack of information, excessive collateral requests, lack of credit guarantees, mismatches between assets and liabilities maturities in firms, legal inefficiencies, costs of contracting, etc.) make the provision of long-term funding challenging. Historically, about 70% of infrastructure investment in developing countries was funded through the public sector, in part only through NDBs. Only about 22% of infrastructure investment in developing countries has been financed by the private sector and 8% by official development assistance (Oxford Analytica, 2004).

Providing short-term financing

Although short-term loans by NDBs are not favoured by policy makers as this kind of lending is more readily available from private commercial banks, there are several good reasons for NDBs to this kind of loans:

- For infrastructure development, there is a need for several short-term products that are not readily available from the banking sector in certain developing countries. This includes trade finance, working capital, personal loans, and treasury services
- Private commercial banks' interest rates are often very high, in particular for MSMEs
- As exporting firms face particular challenges, some NDBs provide short-term financing for shipping purposes and other short-term loans to provide collateral and working capital, in particular for SMEs

Providing other financial products

Securitisation and structured finance: Securitisation can be a key instrument in developing domestic medium- to long-term debt markets by offering credit-enhanced securities to domestic investors. It consists of issuing debt against income-generating assets. It is a way to access capital markets, improve a bank's liquidity and lend more money, and to better manage risk. In particular, it can be a way to finance infrastructure projects and public-private partnerships (PPPs): an NDB can sell securities backed by its assets to private investors, and then use the proceeds to finance the PPP.

Syndication: Syndicated loans are credits granted by a group of banks to a borrower. They are hybrid instruments covering aspects of relationship lending and publicly traded debt. They enable the distribution of bank loans and securities across institutions, so that the lenders can share the risk and future returns. Syndication accounts for a growing share of NDB activity. With the support of private commercial banks, they leverage important resources for domestic projects. By facilitating financing for healthy and growing companies, in particular through long-term engagements, partnering institutions also reduce the perception of political risk and facilitate future syndications with private commercial banks. Syndicated loans have thus become a significant source of financing for emerging economies.

Equity and quasi-equity financing: In this case, instead of lending money for a development project, NDBs become a business partner. Equity financing includes long-term subordinated securities with stock options and/

or warrants. Once profits have paid back the return on investment, the financial institution can sell its share of the business. Quasi-equity includes convertible debt and subordinated loan investments, with a fixed repayment schedule, and preferred stock requiring less rigid repayments. More specifically, NDBs can provide funds for capital or operations in exchange for capital stock, stock purchase warrants or options – without guaranteed returns but with shared profits.

Risk mitigation tools

A guarantee fund or facility provides some form of guarantee to scheme members. The guarantee resources can be further invested in short, medium and long-term products to generate the revenue to cover potential draw-downs. The guarantor (a fund, a fund manager, an asset management company) usually charges a guarantee fee or reserve charge for providing such a guarantee. The use of guarantee facilities can significantly enhance risk-taking capacity of commercial banks or businesses. NDBs could further capitalise on acting as vehicles for the provision of guarantee facilities. Such tools include:

- **Partial Credit Guarantees (PCG)**, or partial credit/financial guarantees, which can foster capital market operations, increase supply of subordinated loans and mezzanine capital, and increase the tenor of instruments to better fit the development projects

- **Political Risk Guarantees (PRG)**, which are usually set up by international institutions and aid agencies. This makes particular sense in the context of PPPs for which the risk of the government not respecting its commitments is not negligible

- **Co-guarantee mechanisms** with private sector guarantee providers look for ways to suppress the currency mismatch

- **Find alternates to a sovereign guarantee** for projects by municipal investors. NDBs contribute to efforts to offer other guarantees than those of the sovereign. In this regard, NDBs are a channel for larger mechanisms developed by multilateral institutions

The capacity to offer similar ways of supporting complex or unusual deal structures is only developed by certain large NDBs with sufficient available expertise on derivatives, a capacity to take risks over the long run, an excellent rating, and good relationships with financial markets.

Box 5: Local currency lending facilities

Lending and borrowing in local currency in emerging economies is paramount to mitigate the exposure of borrowers (in particular micro and small-sized enterprises) to exchange rate volatility.

A dedicated **local currency facility or programme** can act as a backstop or as a guarantor to cover foreign exchange losses. When an institution is raising capital through multilateral funds (such as the GEF, Climate Investment Funds (CIFs) or GCF), the GEF/CIFs/ GCF Trust Fund cannot bear the currency risk, ultimately passing on the risk to the end-borrower. In the absence of a local currency facility or a strong treasury function that has the capacity and financial resources to implement derivatives (see below), any concessionality or favourable blending that may have been provided in the financing structure is eroded by foreign exchange fluctuations.

In the countries studied in this report, there are **platforms for local currency lending**, mainly through the Inter-American Development Bank for Mexico and Peru and through the European Bank for Reconstruction and Development for Morocco. In Indonesia, despite the size of the market and significant potential to reach beneficiaries on the ground, the limited availability of intermediated finance, e.g. through credit lines, is also limiting the extent of platforms in which local currency lending could be extended.

The instruments below are aimed at providing both a platform for more sustainable development in emerging markets through local capital markets, while also protecting the underlying resources.

- **Single currency revolving fund** can be structured with an initial capitalisation, which could be provided by bilateral or multilateral donors, for example. The fund can in turn be invested in short-term and long-term products that will keep generating revenue, thus providing the cash flow that can be used to cover potential currency shortfalls due to foreign exchange risk. Such a fund can be established within an institution (the NDB), or at country level.

- **Specialised funds**, such as the Currency Exchange Fund (TCX), work by hedging currency risk, mainly using derivatives. TCX was founded in 2007 by a group of DFIs, specialised microfinance investment vehicles, and donors to offer solutions to manage currency risk in developing markets.

- **A Hedge** is a derivative (e.g. a financial instrument that derives its value from other underlying assets) used to minimise or eliminate foreign exchange risk. Two common hedges are forward contracts and options. A forward contract locks in an exchange rate on the day the contract is concluded; however, the currency transaction occurs at a later date. An option sets an exchange rate at which the company may choose to exchange currencies. If the current exchange rate is more favourable, then the company does not need to exercise this option.

- A **currency swap** is a derivative contract that involves the exchange of interest and sometimes of principal in one currency for the same in another currency. Interest payments are exchanged at fixed dates through the life of the contract. It is considered a foreign exchange transaction and by law is not required to be shown on a company's balance sheet.

If mandated accordingly, **NDBs can play an important role** in developing mechanisms to take on and mitigate the exchange risk such that a) foreign funds can be attracted and b) the end-borrower is not charged with this sometimes prohibitively high risk.

3.3. Financing and capitalising NDBs

3.3.1. Sources of Funding

85% of NDBs as surveyed by the (World Bank, 2018) are owned, administered, and controlled by national governments, with 10% having a minority private sector participation of between 1% and 49%. In some cases, international financial institutions, mostly DFIs, partly own NDBs.

Notwithstanding the clear ownership and equity contribution, the funding structures of NDBs are far more diversified (see Table 2). In the case studies presented later in this report, the NDBs (or equivalent public financial

institution) were given a specific capitalisation through a combination of:

- governmental backing, via dedicated budget allocations
- official development assistance (ODA) funds provided by official agencies or multilateral institutions
- financing via MDBs, such as the World Bank
- financing via global funds such as the Green Climate Fund, the Global Environment Facility or the Climate Investment Funds
- local market capitalisation, e.g. corporate bonds
- financial sectors (other FIs, interbank market)
- international capital markets, in particular through the issuance of green/blue bonds and climate bonds, with specific guidelines for the utilisation of the proceeds
- deposits from the general public and government agencies

Table 2: NDBs Sources of Funding (World Bank, 2018)

Question	Yes (%)	No (%)
Does your institution take deposits from the general public?	21	67
Does your institution take deposits from government agencies?	46	54
Can your institution borrow from other financial institutions?	84	16
Is your institution a participant in the local interbank market?	56	44
Can your institution issue debt in local debt markets?	75	25
Can your institution borrow from international capital markets or institutional investors?	85	15
Is your institution allowed to obtain official development assistance funds provided by official agencies or multilateral institutions?	77	23
Does your institution receive regular direct budget transfers from the government?	29	71
Has your institution been recapitalised, that is, received government funds, subsidies, or transfers to cover losses or to strengthen its financial situation in the past four years?	31	68

Regardless of the type of instrument or product that is deployed, the case studies analysed in this report show that that the capitalisation of the NDBs and of the other public and private financial institutions explicitly responded to a direct policy intervention. While this finding may not be representative of all situations globally, it is important to note that a targeted goal may better serve NDBs' intervention to tackle a specific gap in the market.

3.3.2. Green and blue bonds

Green bonds are fixed income securities that are dedicated to raising capital for projects or activities with specific climate or environmental objectives (IFC, 2016). 'Use of proceeds' in green bond issuance can include a broad range of categories such as climate change, natural resource depletion, loss of biodiversity and/or pollution control. In practice, green bonds can also be classified as climate bonds whose proceeds go to climate protection projects (CBI, 2018a). Green bonds support governments, public institutions as well as the private sector in achieving their climate commitments by raising capital through the local or international capital markets. In this context, the growth of the green bond market has been remarkable in the past few years; for example, in 2017, the issuance of global green bonds hit a record USD 155.5 billion. Forecasts estimate this figure could reach up to USD 300 billion in 2018 (CBI, 2018b).

Market demand has successfully triggered the standardisation and definition of green bond issuances as demonstrated by the emergence of the Green Bond Principles[12], the Climate Bond Standards, and other principles and guidelines

12 Green Bond Principles arose from a self-regulatory initiative of a consortium of investment banks designed to promote transparency and disclosure in the market (ICMA, 2018).

recognised and backed by the official sector, including public financial institutions and development banks. These standards are voluntary process guidelines that recommend transparency, regularly disclosure, and integrity in the development of the green bond market.

The examples of the bond issuance by the Hawaii Green Infrastructure Authority in 2014 (see Section 4.2) and the three bond issuances by Yes Bank in 2015/2016 (see Section 6.1) represent successful instances of how capital raised through capital markets has helped provide the liquidity necessary to deliver specific outcomes, in these cases to increase the generation of renewable and clean energy. The issuance of the first Indonesian green bond for sustainable infrastructure development, renewable energy etc. by PT Sarana Multi Infrastruktur (Persero) in 2018 (see Section 4.3) is also a response to clear policy statements in support of commitments to the implementation of the Paris Agreement and the Sustainable Development Goals.

Blue bonds. Geared towards ocean-related environmental and sustainability products, blue blonds are considered innovative instruments, and indeed so far their deployment has been quite limited. An example is the Seychelles Debt Swap for Conservation and Climate Adaptation, a blue bond to be administered through the Seychelles Conservation and Climate Adaptation Trust (SeyCCAT), a local independent trust established under Seychelles law, bringing financial efficiency, transparency and accountability, while at the same time building synergies between fishery management, marine conservation and climate resilience. Part of the proceeds will also be used as loans through the Development Bank of Seychelles for activities aimed at encouraging value adding and diversification of the sector consistent with conservation and fishery management plan milestones.

Blue bonds are important as the issue of maritime pollution and waste and water management become more prominent in urban infrastructure development.

A number of lessons can be learned from the development of the green and blue bond market so far:

- **Insufficient development of domestic capital markets:** Almost all of the local and international issuances of green bonds (GB) to date have been placed by larger economies, established corporations or MDBs (GIZ, 2017). Especially for smaller economies, the role of NDBs can be of vital importance in providing direct financing to projects, or in assisting local institutions in issuing their own bonds by providing relevant underwriting support.

- **Risk-sharing mechanisms:** The bonds issued enjoyed high capital market participation because they also benefit partly from guarantees or partial guarantees from the government and/or regional/multilateral banks. Some issuances have been structured through the creation of a special purpose vehicle.

- **Market stimulation and development:** The most active countries have launched targeted initiatives, such as the creation of funds, investment promotion agencies and project models to finance green investment initiatives. Local and international guidelines for issuers were developed. Local market players were connected with private and institutional investors to increase green financing awareness.

- **The role of non-traditional investors:** So far, public sector capital has been insufficient to match demand. However, the willingness of local pension funds to invest in sustainable development projects has been a vital factor. Therefore, national institutional investors, particularly pension and private funds, should be mobilised – potentially by NDBs – to play a more significant role. In all of the major markets in question, pension funds have an interest in becoming more sustainable and are highly liquid.

- **Sector concentration and potential:** Green bond issuances have mostly been focused on energy, transport, and agriculture and forestry, with several multi-sector issuances driven by DFIs also covering pollution control, biodiversity conservation, wastewater management and other strategic sectors. However, lagging infrastructure in many countries presents a sizeable opportunity across other sectors as well.

- **Investment pipeline:** Not only are the capital markets new to GBs, but the market for eligible projects is also young. NDBs can play an important role in helping mobilise relevant parties to implement and operate sustainable projects by offering technical cooperation, advisory services, co-financing, innovative financing mechanisms and/or incentives to investors willing to invest in green bond initiatives. They can also assist in diversifying the potential types of investments (re)financed with green bonds across markets.

By and large, considering that neither the public nor the private sector alone can guarantee on its own that the resources needed are mobilised or indeed sufficient to cover increasing energy needs globally while remaining within NDC targets, it has become critical that low-carbon, environmental and socially conscious solutions are supported through sustained public-private efforts and national/international sources of financing. Especially given the large

volumes needed, NDBs, DFIs, International Financial Institutions (IFIs), specialised companies or supranational organisations are needed to accelerate and refine the establishment of international best practices. In this regard, NDBs can be assigned a key-role, as a hinge between the local economies' capital needs to finance low-carbon development and the expertise from international actors in structuring and issuing green bonds.

3.3.3. Blended finance

Blended finance can be defined as a strategic use of catalytic capital originating from development finance and philanthropic funds to mobilise private sector investment (Convergence, 2018; OECD/WEF, 2015). With the blended finance approach, different types of capital can be invested side by side without losing their own goals, be it financial, social/ecological, or a blend (Convergence, 2018).

All NDBs included in this study have utilised blended finance structures as an instrument to channel a scale up public green finance alongside the private sector. Some structures were direct, where the NDB provided public capital directly to the private sector, whereas others were indirect, with the NDB providing public capital to a public financial institution, which in turn provides on-lending to the private sector. Typical structures include the provision of technical assistance and other pre-investment grants, the extension of concessional debt, the provision of equity, investment grants for capital expenditure (Capex) or operational expenditure (Opex), concessional equity, ex-post grants, and risk-sharing guarantees to enable lending.

Leveraging their own capital basis against third parties' resources for maximal impact can be achieved through participation in syndicated loans as well as in other pooled financing structures, or indirectly through a demonstration effect.

For most NDBs, in particular those members of the International Development Finance Club (IDFC, 2018), there are clear guidelines on attribution, monitoring, and verification when reporting on achieved leverage. The IDFC is a network of 23 national and regional development banks from 69 countries with total assets of more than USD 3.5 trillion. Its members are committed to global development and join forces and know-how to realise their vision and strategies on sustainable improvements in economic, environmental, social and human development.

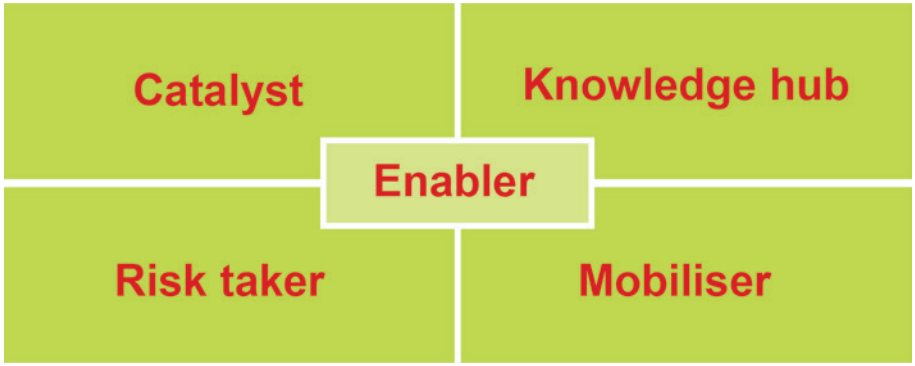
3.4. NDBs as enablers and financiers

In order to better categorise the activities that various NDBs undertake and the roles they cover, it is useful to distinguish two main sets of functions that allow NDBs to fulfil the desired hinge role to deliver the NDCs and green finance.

NDBs as enablers

Some NDBs cover a specific mandate to increase financing via intermediation on the basis of capital raised through capitalisation from their government or through local financial markets, through multilateral and bilateral funding, or through international capital markets. The following figure shows that the NDBs can play this role across four dimensions.

Figure 4: The NDB's enabling and intermediary role



Catalyst: NDBs can develop linkages and facilitate investment acting as intermediaries by channelling external and central government funds, and funds raised in local markets, into different sectors of the economy. In fact, NDBs play an important role in PPP by facilitating the coordination between public and private parties in order to finance development investments[13]. Private companies can invest through concession agreements, in which financial commitments are shared and financial risks are transferred to private investors. The banks' catalytic role can take the form of diverse facilitation processes for making business:

- **Increasing linkages:** Successful infrastructure projects are made possible when they are not conceived as stand-alone projects but are part of development plans. To do that, it is necessary to look at sectoral linkages and to develop the potential for synergies, for optimum economic and social returns.

- **Facilitating investment:** Local investors need to be in a relationship with foreign sources of capital and technologies, and foreign private investors require credit, political and foreign exchange risks to be addressed before they join in the projects.

Risk-taker and finance provider: NDBs may act as first mover to promote a specific sector or a specific product, with the long-term view that the initial investment will subsequently lead to a gradual replacement of public finance through commercial finance, thus achieving market transformation. This role is strong in intermediated finance structures, in structures where subsidies have been provided by a specific mandate (a policy) or after having raised co-financing through multilateral funds. Successful market transformation and development depends on a close coordination between public policy schemes and NDB investment.

Knowledge hub: With a two-way relationship between policy and markets, NDBs are in a favourable position to translate policy and regulation into instruments and products. At the same time, they know the private sector and how to support it to further mainstream green finance in response to policy and regulation. This dimension is also linked to human capital development, which in our case studies can happen both formally (through dedicated training, capacity building and other enabling activities) and informally, such as learning on the job. A strong NDB can have a demonstration function for others, for example in providing best standards for reporting, visibility, transparency and commitment to its mandate.

Mobiliser: Thanks to the role as a financial intermediary, NDBs can mobilise further financing from other public and private sources. This is possible because their presence in a given financing structure can minimise the costs of borrowing for the client, or reduce particular technical or financial risks.

In addition, they can also enable non-financial activities, for example by supporting governments in their realignment of policies and economic priorities around a long-term vision, such as that provided by the NDCs.

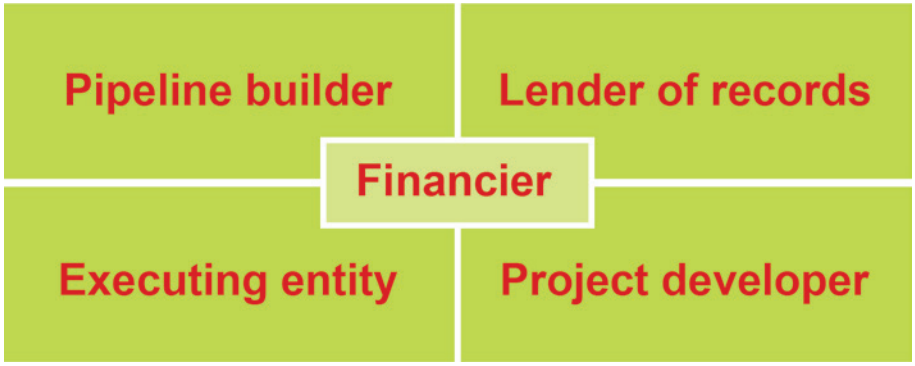
NDBs as financiers

While the enabler role is perhaps a more traditional function for an NDB, in recent years many NDBs have acquired the ability to lend directly to public and private sector clients (e.g. developers, end-beneficiaries), using both their own resources (from budgetary contributions) as well as co-financing from external (bilateral, multilateral) funds.

13 PPPs are "arrangements where the private sector supplies infrastructure assets and services that traditionally have been provided by the government" (IMF, 2006).

While this is in itself positive, it also means that intermediated structures such as credit lines are often not fully utilised. Examples of this trend include India's National Bank for Agriculture and Rural Development (NABARD), the Development Bank of Southern Africa (DBSA), Banco de Inversion y Comercio Exterior (BICE) in Argentina, the East African Development Bank (EADB), or the Mexican Sociedad Hipotecaria Federal (ShF). Other NDBs have been intended to be direct lenders for large-scale infrastructure projects, such as PT Sarana Multi Infrastruktur Persero (PT SMI) in Indonesia, or Caisse de dépôt et de gestion (CDG) Capital in Morocco. The function of financiers can also be depicted through four dimensions as shown in the next figure.

Figure 5: The NDB's financing and executing role



Pipeline builder: With an extensive reach in the local market and with dedicated institutional, operational and governance structures for primary due diligence, NDBs can function as a direct lender, or 'lender of record'. This role can also facilitate the crowding-in of private sector actors interested in the specific pipeline being built by the NDB. They can also be seen as a risk mitigation option in private-public co-financing, with a rebalancing of risk-return analyses.

Executing entity: The executing entity function includes managing, administering, supervising and directly reporting on activities deployed on the ground. It needs to be noted that this is a specific function that gives contractual and operational responsibilities to the NDB. This role is strengthened by the local knowledge that a NDB has, which includes direct links to end borrowers, as well as knowledge of processes, local limitations and the enabling context they operate in.

Lenders of record: In their role as lenders of record, the NDBs assume legal ownership of the resources and take on the accountability role for the delivery of the project, as well as monitoring and evaluation of financial returns and impacts on the ground.

Project developers: The role of direct financier (see DBSA, PT SMI for example) also sees these public national institutions assuming the role of project developers, working directly with end borrowers and entities on the ground. This also entails that there is increasing, although in our judgement still insufficient, technical, legal and financial capacity. Those elements underpin a strong primary or direct due diligence.

3.5. Theory of change for the role of NDBs

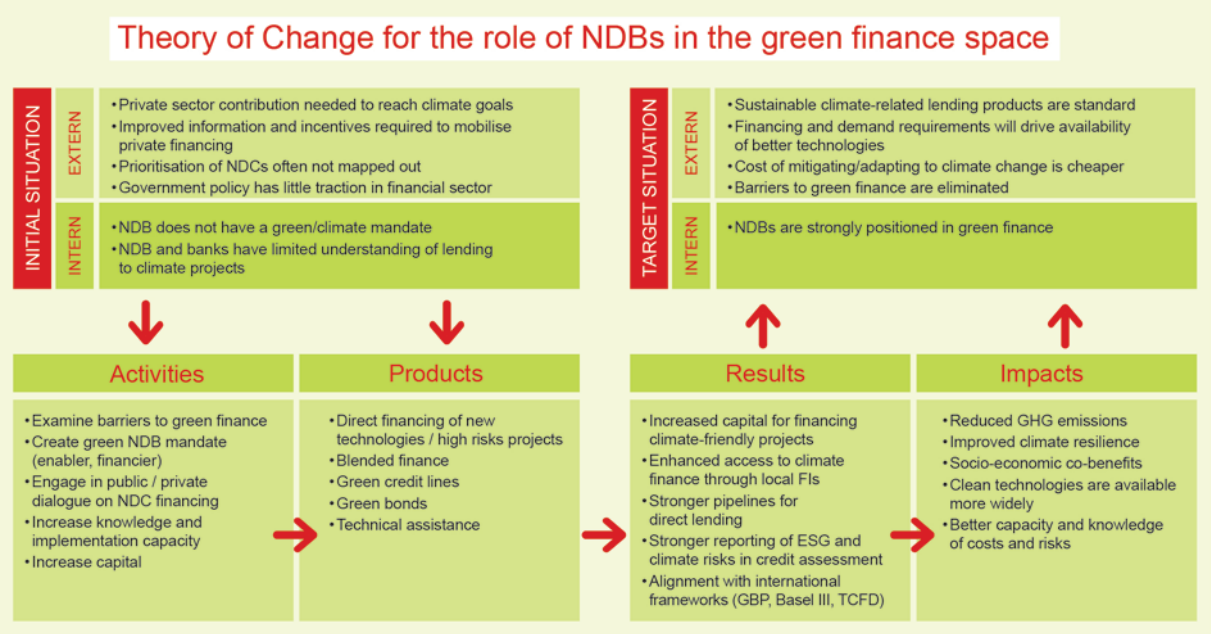
Given their developmental mandate, national public sector institutions – whether formalised NDBs such as the Development Bank of Southern Africa or public institutions assuming a role such as that played by the Hawaii Green Infrastructure Authority – are well placed to support sustainable, low-carbon investments through direct and intermediated finance.

From their unique position in the financial sector, thanks to their knowledge of the local markets, they can facilitate the allocation of resources for climate mitigation, adaptation and conservation finance. In doing so, they can also leverage private and international capital for these public assets. By providing long-term finance and risk mitigation instruments, NDBs can contribute significantly to the scaling of financing for sustainability sectors and the respective reduction in the cost of lending. Their public mandate also allows them to focus on research and development, as well as on demonstration projects, enabling the mobilisation of private sector financing when new technologies have reached the investment phase.

Based on this, a theory of change around the functions of NDBs in green finance can be built with the aspired main outcome being the provision of significantly more capital for financing climate-friendly projects (see Figure 6).

This has to come along with an enhanced access to climate finance through local financial institutions (FIs). Other targeted results include an increase in transparency of ESG issues and a better understanding of climate-related risks in credit assessment. But most importantly, these efforts must finally lead to a reduction in greenhouse gas emissions and an improved climate resilience of organisations and ecosystems, even though these results are difficult to quantify.

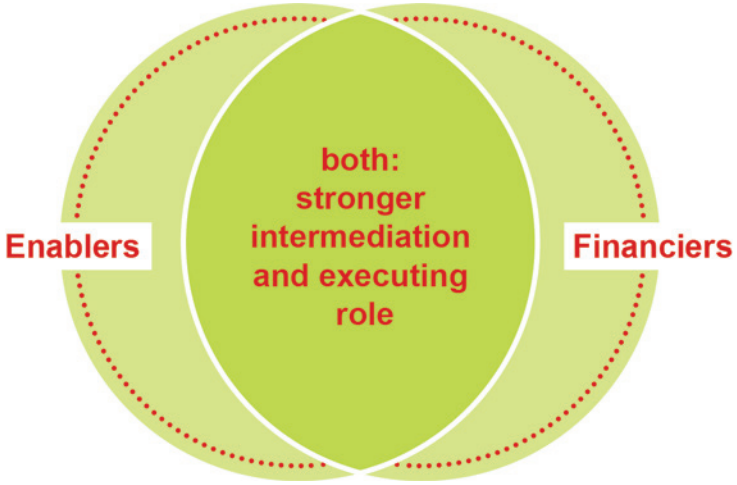
Figure 6: Theory of change



Research shows that in line with the strong trend of NDBs to act mostly as a direct financier (see Section 3.4), NDBs' activities in green finance are also more likely to pursue direct financing of green investments than to support the local banking system to do so. This may be because of insufficient capitalisation, capacity constraints or mandate restrictions. The dominant focus on the role as financier can in turn prevent a sustainable transformation of the commercial finance sector towards green investment practices, or even lead to a crowding out of private green investment.

However, it is notable that there is often much overlap between the two functions of NDBs as enablers and financiers of green finance. The vast majority of NDBs combine both functions (see Figure 7) and are evolving from direct financer to increasingly playing the enabler role.

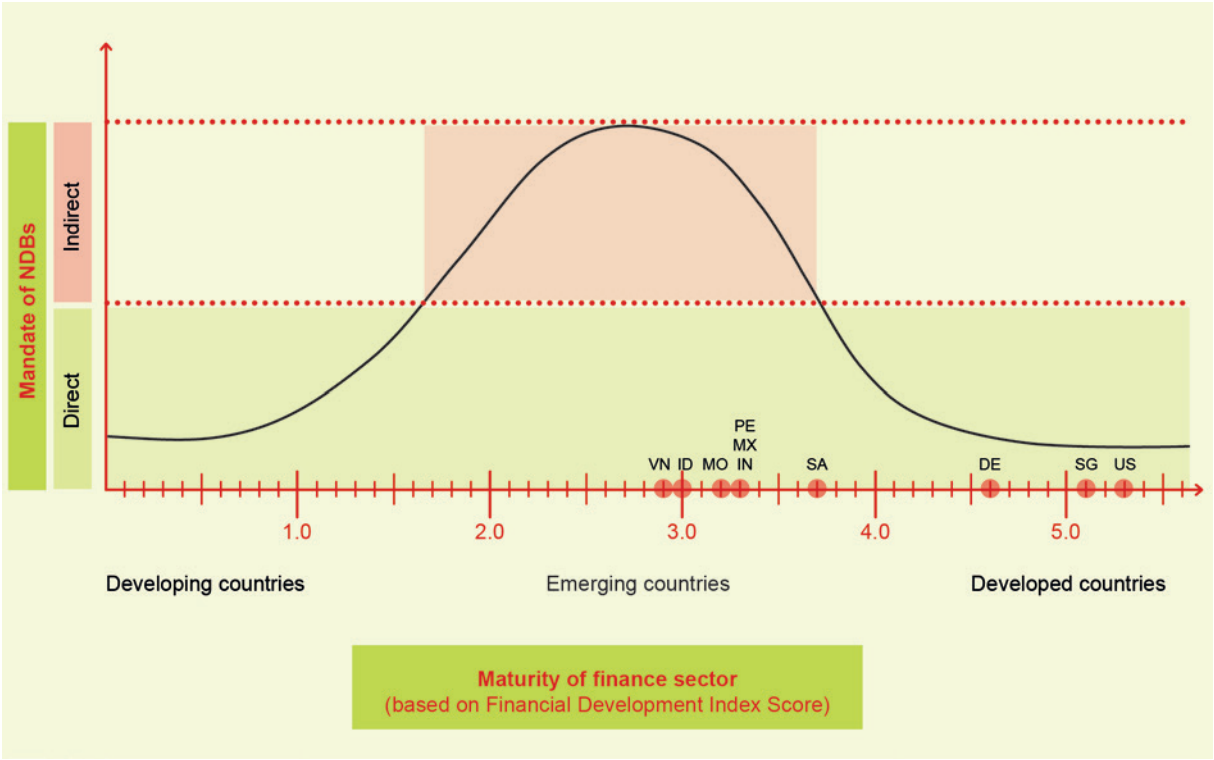
Figure 7: Schematic representation of the different functions of NDBs



Furthermore, the study of various cases of NDBs suggest that their mandate in a given country is not static, but evolves around the development of its role. In this evolution, the maturity of the financial sector is a strong factor as in most cases it is a proxy for the capacity and motivation of the private financial sector to participate in financing low-risk, mainstream targets (see Figure 8). The relative maturity of the financial systems is a key determinant in whether adequate levels of green and climate finance can be unlocked (CPI, 2018).

- In countries where financial systems are at an early stage of development, as is the case in many least-developed countries, NDBs tend to have a clear role as direct financier as system weaknesses cannot be overcome by the private financial sector and NDBs are the only FIs taking on the risk of 'new' sectors.
- As financial systems deepen and mature, as for example in emerging economies, the need for indirect financing also increases, because private FIs might start to approach the sectors previously assessed as being too risky and therefore only served by NDBs. In such a situation, the role of leveraging and blending public funds becomes especially interesting for NDBs.
- When financial systems and the enabling regulatory environments are mature, NDBs can concentrate on serving niche markets in which private financial institutions tend to be hesitant.

Figure 8: Mandate of NDBs depending on the maturity of finance sector[14]



The illustration above gives a simplified snapshot of the extent of the functions of NDBs by market maturity, based on the Financial Development Index Score of the World Economic Forum (WEF, 2012). As detailed in the sections below, many other factors also play a role in determining market tendencies and maturity, such as the macroeconomic environment, the country's dedication to its NDCs, or the stage of technological development in the NDCs' fields of engagement.

14 DE = Germany (rank 11, score 4.6), ID = Indonesia (rank 50, score 3.0), IN = India (rank 40, score 3.3), MO = Morocco (rank 45, score 3.2), MX = Mexico (rank 43, score 3.3), PE = Peru (rank 41, score 3.3), SA = South Africa (rank 28, score 3.7), SG = Singapore (rank 4, score 5.1), US = United States (rank 2, score 5.3), VN = Vietnam (rank 52, score 2.9), ranks and scores for the examples were taken from the Financial Development Index Score (WEF, 2012).

3.6. Capacity of NDBs

Having analysed the two functions that NDBs are playing in the green finance space, it appears plausible that specific additional capacities need to be built up to enable an NDB to fulfil either – or both – of the functions efficiently.

Various studies indicate that many NDBs still have far-reaching weaknesses in their capacities, with limitations in their operational capacity taking many forms. In the context of green finance, these limitations can be linked to:

- **Financial capacity:** NDBs can be constrained by their own capital and liquidity assets, and in turn by their own ability to borrow. This is in part compensated by their public mandate and the related budgetary contributions that they receive. NDBs accredited by multilateral funds can also supplement their funding from those resources. Lack of long-term financing at cheaper rates and/or with more favourable conditions and limited access to local currency lending can also present a financial capacity constraint as the costs of borrowing (for the NDB as well as for the end-borrower) will be more expensive, ultimately limiting the uptake of green finance measures (which are mostly perceived to be more costly).

- **Environmental and social risk management capacities:** NDBs can be limited in the size and complexities of a transaction as a result of inadequate environmental and social management frameworks. Most NDBs (with perhaps the exclusion of the DBSA) do not have the capacity to develop and implement complex environmental and social risk (ESR) management systems for high-risk projects such as large-scale power generation (e.g. hydropower).

- **Technical capacity:** All NDBs have shown that there is scope for additional assistance at the financial and technical levels. This applies throughout the transaction cycle, but is most pressing in pre-investment activities. Such assistance can ensure the long-term sustainability of the impacts achieved on the ground, including financial impacts, emission reductions, and increased job creation.

In order to raise capital more efficiently, diversify portfolios and play the hinge function in supporting the financing and execution of NDCs, NDBs need to strengthen their own internal capacities across a range of areas. External support by donor agencies or international organisations might accelerate the capacity building process considerably.

A number of conditions need to be met if NDBs are to play the role properly as summarised in Table 3. This refers to internal conditions but as NDBs do not function in isolation, it goes without saying that their 'enabling environment' also requires attention. In most cases, it will be a combination of many conditions for the NDBs to fulfil their role; in other cases, NDBs might be efficient even if only some of the conditions are met. Optimally, however, all the conditions should be met in order to unlock the full potential of NDBs.

Table 3: Conditions for a successful hinge function of NDBs

Internal conditions	External conditions
Mandate • Formalised, government-backed mandate • Extension of mandate to green finance (in addition to development) **Management capacity** • Sound governance structure • Efficient decision-making capacity and processes **Financial capacity** • Readiness to manage international funds (policies, environmental and social management (ESM), accreditation to global funds) • Financial sector integration • Financial instruments availability to cover both direct and intermediated finance **Environmental and social risk management capacities** • Robust environmental and social standards (ESS) framework in place **Technical capacity** • HR capacity • Technical capacity and expertise (green) • Financial sector expertise	**Policy level**[15] • Political understanding & motivation • NDCs in place • Implementation strategy of NDCs in place **Regulatory framework** • Regulatory target setting in place, general as well as specific to energy, climate, water, forestry • Regulatory and framework conditions for the private sector introduced • Reporting & disclosure standards in place • Bespoke support exists (incentive schemes) through relevant regulator **Liquidity / funding** • Access to funds (international) provided • Relevant maturities for funds available • Local currency funds available • Existence of bond markets **Project development** • Eligible projects existent • Technical knowledge among market players existent

NDBs can have a strong position in the green financial market if they commit to the transformation process. In general, there are three important factors supporting the realisation of a strong position:

- NDBs must have or obtain an explicit mandate to participate in the process of greening the economy
- The external environment in terms of policy and regulation must be appropriate
- The institution itself must be ready in terms of required capacities

3.7. Conclusions for the role of NDBs in financing NDCs

NDBs with a public mandate have an important role as enablers and financiers of green projects supporting the NDCs' emissions-reduction and sustainability targets. The challenges associated with the transition to a low-carbon and climate-resilient economy are multi-faceted (financial, regulatory, policy, reporting, real sector), and often cannot be overcome by the private sector on the ground. The private sector by itself is unlikely to have the financial resources, the technical knowledge and overall capacity to assume the risk that is entailed in taking responsibility as the market opener for new, in some cases untested products.

In this context, NDBs can position themselves as a linking element in the green finance space by providing specific financial instruments that are bespoke and geared towards addressing the gaps in the market.

In public sector national institutions, the most widely available instruments are loans. Concessionality and dedicated pre-investment assistance are also available but only in cases where there has been co-financing via external multilateral/bilateral funds, or through a dedicated securitisation mechanism, generally backed by an external source rather than through own capital.

Below are key recommendations on ways forward to further scale up green finance through national development banks:

15 For more details, please refer to the section 7 on policy and regulation

- Make greater use of green bonds and new innovative ways to raise capital. NDBs can increase their own capital through bonds, but can also directly support the local private sector in structuring corporate bonds that are aligned with environmental and sustainability principles. Through stringent guidelines, for example on the use of proceeds from bonds, the NDBs can acquire capital that is de-facto earmarked for environmentally sustainable and green projects, thereby supporting the mainstreaming of green finance across their portfolio.

- Support portfolio diversification. Our case studies make it clear that investments in renewable energy generation and, to a lesser extent, energy efficiency, are more advanced than in other sectors such as transport, or water management. In their role as enablers and financiers, NDBs can and should support further portfolio diversification in their partner banks and/or directly with developers by:

    - Enhancing the technical capacity (of banks, developers) in other areas such as water management, resource efficiency, land management, etc. in order to develop a more diverse pipeline of projects. This could be done through the provision of dedicated pre-investment technical and financial programmes, as well as through ex-post incentive (or result-based) payments.

    - Seeking to co-finance these projects alongside the local private sector by offering the right incentives through blended finance, aimed at lowering the cost of borrowing.

- Strengthen the financial intermediation role of the NDBs by:

    - Supporting improvements in their technical, human resources and financial screening capacities.

    - Supporting their accreditation by global climate funds, where relevant and feasible.

    - Working with the NDBs to align their environmental and social standards with best practices (for example, ESS, ESG).

4. Case studies: NDBs and public intermediaries

4.1. The case of South Africa

4.1.1. The green finance context in South Arica

South Africa's NDC aims to limit its GHG emissions to between 398 and 614 $MtCO_2$-eq over the period 2025–2030 including land use, land use change and forestry (LULUCF). These figures correspond to emission reductions of 34% in 2020 and 42% in 2025 below the business-as-usual (BaU) scenario. Although, South Africa's NDC contains absolute emission reduction targets, these are rated by experts as highly insufficient to keep the global average temperature increase below 1.5°C. In fact, compared to 1990 levels, these targets represent an increase in emissions of 19–73% by 2020 excl. LULUCF and 19–82% in 2025 (Climate Action Tracker, 2018a; Republic of South Africa, 2016).

The NDC states that South Africa has already made significant investments in mitigation, in particular through the Renewable Energy Independent Power Producer Procurement Programme (REI4P), which has approved 79 independent power producer (IPP) projects in the renewable energy sector totalling 5,243 MW, with expected private investment amounting to ZAR 192 billion[16]. A substantial number of these projects have already been realised. The programme attracted support from bilateral donors, such as the Kreditanstalt für Wierderaufbau (KfW) and Agence Française de Développement (AFD). A further 6,300 MW of renewables capacity is now also under consideration. Investment in public transport infrastructure was USD 500 million in 2012 and is expected to continue growing at 5% per year. These are significant steps for a country that is still heavily reliant on coal, with approximately 89-91% of electricity generation being produced through conventional thermal power sources (coal and oil). The remainder of energy generation is through nuclear, renewables and biomass.

South Africa established the South African Green Fund, which allocated USD 110 million in its budgets from 2011 to 2013 to support catalytic and demonstration green economy initiatives. Resources for the fund will have to be increased in the future to enable and support the scaling up of viable and successful initiatives, including contributions from domestic, private sector and international sources.

Some further technologies identified that could help South Africa reduce emissions include:

- energy-efficient lighting
- variable speed drives and efficient motors
- energy-efficient appliances
- solar water heaters
- electric and hybrid electric vehicles
- solar photovoltaic (PV) systems
- wind power
- carbon capture and sequestration
- advanced bio-energy

South Africa plans to introduce a carbon tax of about ZAR 120/tCO_2 (approx. USD 8.40) in 2019 (The Carbon Report, 2018). The effective tax rate will be lower as several thresholds for exceptions have been allowed. Moreover, the carbon tax will be phased in gradually over a period of four years to give businesses time to adjust. Under these circumstances, the tax is likely to increase the demand for low-carbon technologies by a number of companies, but the leverage effect over all sectors is expected to be small.

In October 2017, the government published the second draft of its National Climate Change Adaptation Strategy (Republic of South Africa, 2017). Although the focus is on financing adaptation measures in the public sector, Strategic Intervention 5 recognises the role of the private sector, including financial institutions, and foresees a

16 South African Rand (ZAR) 1 = USD 0.07, thus approx. USD 13.5 billion

specific role for DBSA as a coordinator between the public and private sectors. It also recognises the role that concessional and non-concessional loans can play in financing adaptation and the role that the Green Fund, administered by DBSA, could play in this. The draft strategy does not identify specific sectors for investment. There is a clear scope and opportunity for DBSA to step in here and work alongside the government to refine the adaptation plans and translate them into action specific investments. While a list of high-level sector exists (water, agriculture, settlements, biodiversity, disaster risk reduction) in the adaptation strategy, what is missing is a list of technologies and of concrete measures, similar to those in the mitigation strategy.

In the following sub-sections, a number of NDBs or equivalent national financial institutions are presented. To ease comparisons of their internal capacities and enabling environments, a traffic light system (green: good, yellow: average, red: poor) is used as a scoring and rating tool based on the individual analyses of the institutions considered in this study. Since the internal and external conditions of NDBs are subject to more or less dynamic change processes, the assessment can only be a snapshot.

4.1.2. Development Bank of Southern Africa (DBSA)

Table 4: Internal and External conditions analysis for the DBSA

	Internal conditions		External conditions
🟡	Mandate	🟡	Policy level
🟢	Management capacity	🟡	Regulatory framework
🟡	Financial capacity	🟢	Liquidity / funding
🟡	E&S risk management capacities	🟡	Project development
🟡	Technical capacity		

Operations and institutional set-up

Fully owned by the government of South Africa, the DBSA has been given a specific mandate to accelerate socio-economic development and the quality of life in South Africa as well as to support the economies of other African countries in the region. The development bank has over half a decade of experience in providing project finance and concessional resources, and work in close alignment with governmental policy.

The DBSA is managing a number of funds that are either dedicated to or largely aimed at green investments (DBSA, 2018):

- Most prominent among these is the **Green Fund** established in 2012 by the Ministry of Environment with an initial USD 1.2 million for investments in green initiatives that support e.g. green cities and towns, low-carbon economy and environmental and natural resource management.
- The **DBSA Project Preparation Fund** primarily aims to create a project pipeline by supporting feasibility studies.
- The **Infrastructure Investment Programme for South Africa (IIPSA)** provides EUR 100 million for funding of infrastructure projects. It is co-financed by a consortium that includes the European Union, AFD, KfW and the European Investment Bank (EIB).
- Another programme to finance the preparation of infrastructure projects is the regional **Project Preparation and Development Facility (PPDF)** funded by the European Union and KfW. Technical assistance for infrastructure project identification, preparation and feasibility studies are particularly supported.
- Broadening its work with renewable IPPs, the DBSA has also received **approval from GEF** for a USD 15 million equity fund to support small-scale renewable energy generation (GEF, 2018). This will bring together KfW as core funding provider and the GEF as multilateral donor to combine concessional and market finance with grant support.
- Since 2010, DBSA has played a critical role in the implementation of **the Independent Power Producer Procurement Programme** (Republic of South Africa, 2018), which strongly focused on the **provision of large and small-scale renewable energy** (alongside fossil fuels) to overcome an electricity supply crisis in South Africa.

- DBSA is also working on a **Climate Finance Facility** with co-financing provided by the **Green Climate Fund**, which would enable financing in local currency to be brought into the renewable energy sector in South Africa. Approved in October 2018 during the 21st meeting of the Board, this facility is set to enable the DBSA to finance a wide range of climate-related projects in South Africa, Lesotho, and Swaziland. The facility design recognises the need for a strong central green finance unit at the DBSA and sets out how this would be created and operated.

The DBSA has been accredited by the GEF and the GCF. It can also access bilateral donor finance from e.g. KfW and receives grant support from other bilateral donors, such as the German and French governments. It is using its access to these multilateral and bilateral funds to support the continued greening of its operations, utilising concessional loans and grants, as well as the fees received from these donors, to invest in environmental projects, such as the 138 MW Jeffrey's Bay wind power plant (Globeleq, 2018). Access to this support, combined with its role in government programmes such as the IPP programme, has enabled the DBSA to develop a pipeline of green projects and green finance instruments that are closely aligned with government objectives in mitigation and adaptation to climate change and serve to finance some advancements in the energy transition in South Africa.

The way forward

In terms of instruments, the DBSA appears to focus strongly on being an administrator of funds and a programme manager. Rather than seeing itself as a provider of dedicated green finance to the private financial sector in an intermediary role, the DBSA seems to be aiming more at using its access and central role to support its own pipeline and develop this area of business for itself. The creation of the Climate Finance Unit (CFU) in its Project Preparation Department is indicative of this approach (Coalition for Green Capital, 2017). In the long run, this strategy may leave the market undersupplied and not stimulate competition or provide the drive that is needed to expand the market further, in line with the needs that have been identified in South Africa's government policies and strategies. The consequence could be a strong crowding out of private investment in mature markets, such as renewable energy.

The DBSA is aiming to become a major player in the green finance space in the southern African region. It is developing a wider product range for its clients as well as a wider range of vehicles to access finance. Despite setbacks along the way, it is showing that it has learned from the example of multilateral banks and is working closely with DFIs to put these operations together. It also provides a clear and critical conduit between government policy and budget and the private sector. While these are important steps on the way to greening the financial sector in South Africa, what appears to be absent from the product line and engagement at present are instruments that would bring private banks into the green finance space in South Africa and the wider region.

What appears to be missing is a range of financial products or instruments to support private banks, such as the green credit lines of the Inter-American Development Bank (IDB) or European Bank for Reconstruction and Development (EBRD) that are provided in the markets served by these two regional development banks. Therefore, the DBSA could consider moving into the provision of dedicated wholesale finance instruments, such as green lines of credit, funding, and securitisation instruments aimed at underwriting green products by private sector banks. In this way, the DBSA could enhance its enabling role and avoid any possibility of crowding out the private sector, which might happen if it were to take the role of a strong financier.

While the DBSA has been very strong in supporting renewable energy and in bringing multilateral and bilateral climate finance into South Africa, gaps remain in its product line-up. Its clear focus appears to be on supporting either the generation of renewable energy or the dedicated provision of green services and products or on manufacturing environmentally friendly products. It has not been possible to identify instruments or products that are aimed at reducing the energy and resource intensity of existing processes through dedicated energy efficiency measures, for example. In terms of pricing, despite the clear link to government objectives, it appears that the DBSA is not offering concessional or grant products from its own resources, but relies on access to donor or government funds to extend blended finance. The government could consider enhancing the impact of the DBSA's activities by making funds available from DBSA reserves, e.g. to provide concessionality.

An increased demand for energy efficiency products in the industrial and commercial sector, driven by the Carbon Tax, could become a driver for lending to support investments in low-emissions, energy-saving equipment in a range of sectors. Furthermore, it opens the possibility for the government, the DBSA, and private financial institutions to establish dedicated financial products and instruments to respond to this demand and enable early action by the entities subject to the tax.

4.2. The case of Hawaii

4.2.1. The Green finance context in Hawaii

A mature and stable macroeconomic environment, guided by state-level policies on the decarbonisation of the economy, has contributed to a strong response by local financial institutions. The Hawaii Green Infrastructure Authority (HGIA), a government-sponsored non-traditional lender, and the local utilities have designed and implemented targeted programmes for energy efficiency and renewable energy supply (HGIA, 2017). Overarching green energy initiatives have provided ambitious clean energy goals for Hawaii, with a state-level commitment to achieve 100% renewable energy generation by 2045 (CleanTechnica, 2015). As an archipelago of islands dependent on imports, the state of Hawaii is striving to reduce its reliance on fossil fuels. This is also a response to the fact that Hawaii has the highest electricity prices in the USA due to its reliance on diesel generation (RMI, 2008).

In 2017, the Legislature of Hawaii passed the Sustainable Hawaii Initiative, a policy platform which introduced additional goals targeted at supporting the sustainable use of the local natural environment and resources for local communities. The initiative plans to double local food production by 2020, implement an interagency biosecurity plan by 2027, protect 30% of priority watersheds by 2030, effectively manage 30% of nearshore ocean waters by 2030, and achieve 100% renewable electricity by 2045 (State of Hawaii, 2017). This supply-side policy and financial intervention is also a response to customer preferences, which demonstrate a steady and growing demand for solar power generation at retail and corporate level.

Hawaii is also part of the US Climate Alliance (USCA), a bipartisan coalition of governors of 17 states (including Washington, New York, California, Massachusetts), committed to reducing greenhouse gas emissions consistent with the goals of the Paris Agreement. Their aim is to continue to implement policies that advance the goal of the Paris Agreement to reduce greenhouse gas emission by at least 26-28% below 2005 levels by 2025 (these targets correspond to the USA's initial NDC) (USCA, 2018).

4.2.2. Hawaii Green Infrastructure Authority (HGIA)

Table 5: Internal and External conditions analysis for HGIA

	Internal conditions		External conditions
🟢	Mandate	🟡	Policy level
🟢	Management capacity	🟡	Regulatory framework
🟢	Financial capacity	🟢	Liquidity / funding
🔴	E&S risk management capacities	🟡	Project development
🟡	Technical capacity		

Operations and institutional set-up

The HGIA is officially a government-backed non-traditional lender with a clear mandate from the Hawaii state government to support the growth of clean energy and energy efficiency and to make it more accessible to the underserved communities that can most benefit from energy savings. As the de-facto 'green bank' of the State of Hawaii, HGIA was established in 2014 with the specific mandate to oversee the implementation of the Green Energy Market Securitisation (GEMS) programme which focuses on financing PV systems, highly efficient residential water heaters and commercial energy efficiency retrofits (HGIA, 2018) (see Box 6). The HGIA ensures a proper project selection, financial due diligence and reports regularly to the governor, the legislator of the State of Hawaii and the Public Utilities Commission.

Capital for GEMS was raised through the issuance of a dedicated bond in November 2014 (CBI, 2014). The issuance was rated Aaa/AAA/AAA (Moody's Investors Services, Standard and Poor's and Fitch Ratings) and was priced at a yield of 2.99% (HGIA, 2014). The issuance closed at USD 150 million of which USD 73 million had been committed to end borrowers between the launch of the initiative and August 2018. This was despite the closing of the popular net energy metering interconnection option in October 2015, which resulted in a dramatic downturn of the solar industry in Hawaii (Greentechmedia, 2018).

According to HGIA internal assessments, the expansion of approved technologies from an initial singular focus on solar PV has provided increased financing opportunities enabling the programme to remain steadfast on its journey towards achieving its objectives and impacts. The transformational character of the programme is aimed at moving the state away from its dependency on imported energy sources, and transitioning towards renewable, indigenous resources for power generation. It is estimated that Hawaii, before the beginning of the GEMS, was spending approximately USD 4-5 billion a year on foreign oil imports (FGE, 2012). GEMS is therefore creating not only a greater level of energy security and a strong business case, but also allowing the state to channel public budgets from energy savings towards the economy and the environment. In addition, with its focus on underserved communities, GEMS is also seen as a way to promote the democratisation of access to clean energy (HGIA, 2014).

HGIA typically covers 50% of the project costs, with the remainder being covered by private capital, as a way to catalyse the uptake of the technology through GEMS loans, but also for the purpose of leveraging private capital with public funds. The success of GEMS stems from the fact that there has been a clear policy prioritisation based on the stated goals for Hawaii. This clear mandate has also been accompanied by a dedicated financial mechanism to deliver the projects. Public funds raised on the back of the rating of the state of Hawaii have facilitated the initial adoption of technologies, in this case PV and their wider take-up across the state, thereby using the leverage effect of public financial power to act as a first mover in this market. The need to reduce dependency on imported energy, as well as the drive to switch to cleaner forms of energy generation, can substantiate the argument for the development of renewable energy infrastructure on a corporate as well as residential level, as in Hawaii. Hence, this case may be of relevance for other island states.

Box 6: HGIA's Green Energy Market Securitisation (GEMS) Programme (HGIA, 2018)

HGIA's GEMS Programme offers consumer and commercial financing to install solar PV, highly efficient residential water heaters and commercial energy efficiency measures. **Commercial loans** are limited to small businesses, non-profits, multifamily rental projects and state agencies. GEMS loans have a number of unique features to make them more accessible, especially to lower-income customers and those generally underserved by commercial lenders:

- GEMS offers **loans of up to 20-years at a fixed interest rate**. This is a much longer tenor than loans offered by most banks, allowing for lower monthly payments.
- GEMS has no **pre-payment penalty** and will consider **customers with lower credit scores**.
- Additionally, while most banks would consider a customer's debt-to-income ratio when determining whether to approve a customer's loan, GESMS does not. Instead, GEMS requires that projects result in a **minimum percentage of savings for the customer** (post-solar utility bills and loan payments must be x% lower than the customer's pre-solar utility bills). This provides more assurance that loans will be repaid, while making it possible to approve more customers.
- GEMS also offer a financing option for the utility bill, which does not require any conventional credit underwriting and enables renters to participate in clean energy.

GEMS residential solar loans are directly financed by HGIA, while GEMS commercial loans are offered in partnership with conventional banks. For these commercial loans, HGIA co-lends alongside the customer's bank of choice and its loan is subordinate to the bank loan. This mitigates risk for private lenders, allowing them to offer better rates than they normally might.

GEMS commercial solar loans may be made directly to building owners to install and own a PV system. Alternatively, for non-profits or other organisations that cannot take advantage of solar energy tax credits, the loan can be made to a project sponsor. In this case an investor purchases and owns the PV system with a GEMS loan and sells the energy to the non-profit via a long-term power purchase agreement.

A unique feature of this solar financing structure is that HGIA offers non-profits the option to eventually take over the loan from the project sponsor, which is typically after year seven when the project sponsor has utilised tax credits and depreciation benefits. This provides non-profits with a mechanism to own their own PV systems and benefit from free solar energy after the loan is repaid.

The Green Energy Market Securitisation programme provides effective and highly targeted products. It is believed that there is scope for increasing investments to include additional renewable energy sources and resource-efficiency

measures as well as water management.

"Significant investment in clean energy technology and infrastructure will be required to achieve the state's aggressive clean energy goals. Leveraging limited public funds in a sustainable loan program to support and complement the private capital markets with flexible financing and low-cost capital, will help accelerate Hawaii's clean energy adoption and facilitate goal achievement."

Gwen Yamamoto Lau, Executive Director, Hawaii Green Infrastructure Authority

The way forward

While the first phase of the programme has been narrowly focused on solar PV, it is expected that a second bond issuance will further scale up the penetration of clean technologies into the Hawaiian market. The aim of the second phase of the HGIA is to continue to provide additional financing to cover an even wider range of clean energy technologies. The institution likes to see itself as playing both the role of enabler, as it facilitates the adoption of new technologies for the general population through public funds and in particular as a late adopter in the low-income bracket, as well as the role of the executing entity with the management of their portfolio of projects. In this manner, the HGIA is covering a crucial function in supporting Hawaii's energy market transition. As technologies become more available in the market, the HGIA expects to move away from what is more easily and cheaply available and continue to cover the gaps to provide cover for first entrants. In this way, it can provide needed incentives without crowding out the private sector.

4.3. The case of Indonesia

4.3.1. The green finance context in Indonesia

Indonesia is a country with a huge growth potential in the area of green finance. This is reflected in significant investment needs in the critical infrastructure for energy efficiency and renewable energy as well as in environmentally sensitive areas such as agriculture, forestry, energy, mining and waste (UNEP, 2015). The country is moving ahead to develop its infrastructure, and the government recognises the potential for green finance to attract much-needed capital investments while ensuring that environmental harm from these projects is avoided or at least minimised. Indeed, in order to lead Indonesia onto a path of sustainable, low-carbon development, it will be crucial that environmental and social risk screening becomes an integral part of lending and investment decisions in the Indonesian financial sector (Volz, et al., 2015). While reliance on domestic coal and imported fossil fuels has grown, Indonesia has started adding more renewables into its energy mix and today the share is 6% (IRENA, 2017). The country plans to achieve 23% renewable energy use by 2025, and 31% by 2050 (Republic of Indonesia, 2016).

In this context, the Financial Services Authority (Otoritas Jasa Keuangan, OJK) issued a Sustainable Finance Roadmap for the period 2015-2019 (OJK, 2014) and the Indonesian Financial Services Sector Master Plan 2015-2019 to adequately meet the current and future economic challenges (OJK, 2016). There is also a long-term implementation plan from 2015 to 2024 to increase demand for and supply of sustainable financing, targeting specific priority sectors – industry, energy, agriculture, infrastructure and micro, small and medium enterprises. Furthermore, OJK's Board of Commissioners has agreed to issue regulations on sustainable finance for banking, capital markets and non-bank financial institutions (OJK, 2017).

Indonesia published its NDC on 6 November 2016, which included (Republic of Indonesia, 2016):

- To reduce unconditionally 29% of its greenhouse gas emissions against the BaU scenario, inclusive of LULUCF, through internal resources (public budgets at national and provincial levels)
- Up to 41% reduction in emissions, inclusive of LULUCF, subject to international support for finance, technology transfer, capacity building and development

4.3.2. PT Sarana Multi Infrastruktur Persero (PT SMI)

Table 6: Internal and External conditions analysis for PT SMI

	Internal conditions		External conditions
🔴	Mandate	🟡	Policy level
🟢	Management capacity	🟡	Regulatory framework
🟡	Financial capacity	🟡	Liquidity / funding
🟢	E&S risk management capacities	🔴	Project development
🟡	Technical capacity		

Operations and institutional set-up

Indonesia lacks a formalised development bank, however, at least part of that role is covered by PT SMI, a state-owned company established in 2009 with a specific mandate to finance infrastructural development. In 2016, PT SMI created a sustainable finance division to expand its engagement in the RE/EE sector by supporting projects in the renewable energy, water, transportation, waste management and energy efficiency sectors. PT SMI became an accredited direct access entity (DAE) to the GCF in December 2016 and has been approved to deliver fiduciary functions such as project management, as well as to grant awards and loans for projects with moderate environmental and social risk by the GCF. The creation of a sustainable division has been driven by governmental policy in the aftermath of the Paris Agreement in order to scale up sustainable infrastructural development. It is seen as a relatively narrow mandate, currently geared towards commercial lending, in particular vis-à-vis the rest of the portfolio, which includes fossil fuels (e.g. coal).

The institution plays a valuable role in increasing the creditworthiness of the infrastructure projects that are financially supported by provincial/regional governments. PT SMI offers several financial schemes and also works with international bilateral and multilateral financial institutions. The institution has also incorporated E&S risk evaluation into its financing procedures, including continuous monitoring of clients' E&S performance.

PT SMI has three business pillars:

- Financing and Investment – to finance infrastructure projects
- Project Development – assistance in investment planning, capacity building and technical assistance
- Advisory services – financial and investment advice

Although, PT SMI receives funds from various bilateral and multilateral institutions at attractive rates and conditions, it is somehow unable to pass on the full benefits to the private sector. This may stem from the fact that PT SMI has to meet its set Key Performance Indicators (KPIs) which prompts it to apply commercial lending rates, just like other banks, to finance projects in the private sector. When financing regional governments, municipal corporations and state-owned companies, however, financing can be long-term (25 years) and without collateral. If the mandate of PT SMI is extended to include development cooperation and investments, it is believed that this change may bring the institution towards being a more 'traditional' NDB, with a stronger intermediary role.

Box 7: Green sukuk and green bonds in Indonesia

From a sovereign perspective, Indonesia launched its first green sukuk for USD 1.25 billion in 2018, alongside an overall framework for **green bonds and green sukuk**. Green sukuk are Shariah-compliant investment vehicles that fund environmentally friendly projects. The main objective behind the development of green sukuk is to address Shariah concerns for protecting the environment. For Shariah-compliant investors, notably in Southeast Asia and the Gulf Cooperation Council region, green sukuk represent an ideal investment that benefits the environment and promotes Corporate Social Responsibility (CSR) (Alam, Duygun, and Ariss, 2016). The Indonesian framework includes:

- **Use of proceeds:** Proceeds are to be used exclusively for spending in the form of budget allocations, subsidies for new financing or refinancing of eligible green projects.
- **Process for evaluation and selection:** The National Development Planning Agency and the Ministry of Finance will review and approve projects and allocations from their state budgets.
- **Management of proceeds:** Made by the government general account of the Ministry of Finance.
- **Reporting:** The Ministry of Finance will prepare and publish annual reports.
- **Inclusion of nine eligible sectors:** Renewable energy; clean technology for power plants; resilience to climate change; sustainable transport; waste to energy and waste management; sustainable management of natural resources; green tourism; green buildings; sustainable agriculture.

The Indonesian government issues sukuk through a special purpose vehicle, Perusahaan Penerbit SBSN (PP SBSN), which acts as both the issuer and trustee. PP SBSN is wholly owned by the government but operates as a separate entity. It acts as the issuer of sukuk on behalf of the government, while the government serves as the obligor to the issue and is responsible for the payment of the coupon and the principal of the sukuk at maturity (IslamicFinance, 2015).

The way forward

PT SMI is an example of an informal NDB with a strong executing/financing role but a weaker enabling/intermediation function. In order to attain sustainable growth in the green financing sector in Indonesia, PT SMI could seek to differentiate itself from commercial banks and act as a financial intermediary to channel green finance to renewable energy and climate change projects, in both the public and private sectors. This could be possible and there are ongoing discussions in Indonesia to realign the regulation in a way that would enable PT SMI to cover a wider mandate and to support financial intermediation. This could allow PT SMI to work within the remit of a wider developmental and environmental mandate, which could be positive for the inclusion of subsidies loan structures and other financial incentives. This product diversification in terms of loan rates, tenor and other incentives should be below the prevailing market conditions by passing the benefit of credit lines secured from multilateral institutions all the way to the end-beneficiaries. This type of incentivisation will be crucial to ensure a faster market transformation in Indonesia.

In the coming years it is widely expected that PT SMI will become a formalised national development bank in the country. However, it might take a number years considering the bureaucratic approval process for the pertinent regulations needed to achieve this.

Availability of funds does not seem to be an issue for PT SMI but rather the lack of bankable renewable energy projects that it can provide support to. Most of the financing in the renewable energy projects in the country is in hydropower generation and geothermal explorations, due to the familiarity of the lenders with these technologies, which are perceived as easier to understand, and to mitigate their risks. While solar energy generation is gaining momentum on the project development side, it is still not favoured by the banks due to the pricing structure of offtake agreements. Moreover, due to its profit oriented KPIs, PT SMI has not yet financed any energy efficiency projects, as they also appear to lack solid business models. In this regard, the bank will need to develop its first mover role, based on an adjusted mandate that can include impact social and environmental indicators. Solar power generation (solar thermal and PV) as well as energy efficiency could be therefore promising business cases in the near future.

4.4. The case of Peru

4.4.1. The green finance context in Peru

Peru is a country with low per capita and total emissions, with approximately half being generated through LULUCF activities (Republic of Peru, 2015). However, the country is also included among the ten countries in the world that are most vulnerable to climate change as it displays four out of the five vulnerability characteristics recognised by the UNFCCC, namely: low coastal zones; arid and semiarid zones; zones exposed to floods, drought and desertification; and fragile mountainous ecosystems (UNFCCC, 1992). Moreover, the country's local economies are heavily based on climate dependent activities (e.g. mining, agriculture, fishing and forestry).

The Peruvian NDC envisages a reduction of emissions equivalent to 30% compared to the GHG emissions of the projected BaU scenario in 2030. The Peruvian state considers that a 20% reduction will be implemented through domestic investment and expenses, from public and private resources (non-conditional proposal), and the remaining 10% is subject to the availability of international financing and the existence of favourable conditions (conditional proposal) (Republic of Peru, 2015).

4.4.2. Peruvian national development bank (COFIDE)

Table 7: Internal and External conditions analysis for COFIDE

	Internal conditions		External conditions
🔴	Mandate	🟡	Policy level
🔴	Management capacity	🟢	Regulatory framework
🟢	Financial capacity	🟢	Liquidity / funding
🟡	E&S risk management capacities	🟡	Project development
🟢	Technical capacity		

Operations and institutional set-up

The Peruvian national development bank (COFIDE) has a designated mission to promote investments in Peru. It has been able to engage in this role as a logical channel for special purpose credit lines (energy efficiency, fuel switch for transport and industry, renewable energy and the incorporation of energy efficiency in SMEs) with entities such as KfW, AFD, Japan Bank for International Cooperation (JBIC), the Inter-American Development Bank (IADB) and the Development Bank of Latin America (CAF) among others. That said, despite the above initiatives, related projects, and being an applicant for GCF accreditation, COFIDE continues to struggle as it seeks to consolidate its leadership role.

As national development bank, COFIDE is also building an evidence base for innovative financing instruments addressing energy efficiency and renewable energy. The COFIGAS programme, which is the signature climate change project in the country and which is led by COFIDE, has the objective of strengthening the fuel switch transition of industry and transport to natural gas. However, there has been much criticism as its use of natural gas can be seen as a less environmentally friendly option in energy transition than the country's NDC calls for, in addition to difficulties in the implementation of the programme itself.

COFIDE manages credit lines from international technical cooperation entities such as JBIC, JICA (the Japanese development agency) and KfW for renewable energy and energy efficiency programmes, projects and related green or 'organic' initiatives. The bank's product and service lines can be broadly described as including investment financing, financial intermediation and trust management. Examples are listed below:

- Infrastructure financing (traditional and renewable energy, infrastructure and public transport)
- Environmental project financing (renewable energy & energy efficiency for SMEs; fuel switch in transport and industry programmes, and public sector water and sanitation projects, as well as financing for initiatives to

improve productivity in green business)

- Trusts – management and structuring of trusts to reduce risk for all manner of projects
- Financial structuring, advisory and consulting services

COFIDE also works with the agricultural sector but does not offer the type of specialised product line beyond the broad area of direct investments/financing nor the financial intermediation services described, nor does it interact with this clientele directly since it is a second-tier financial institution (works with financial intermediaries not directly with clients).

The way forward

It appears that internal matters have limited COFIDE's role as the national leader and articulator in the climate finance space. Therefore, it is struggling to develop its own approach towards green finance and is dependent on multilateral credit lines for this purpose.

Peruvian NDBs could become central institutions for the financial intermediation of instruments that lead to lower emissions and increased resilience through:

- Bespoke programmes that can enhance governance and coordination between the relevant ministries, national banks and the real economy
- Technical assistance and technical audits, preferably accompanies by dedicated credit lines and ex-post result-based payment systems that can incentivise the uptake of green loans

5. The role of private financial sector champions

5.1. Opportunities and challenges

Financial systems are often dominated by banks that have short-term lending outlooks. While this is a concern globally, it is a critical situation in developing and emerging countries that are prone to volatile capital flows that can destabilise currencies and negatively affect overall growth prospects. Moreover, in less mature financial systems, financial institutions may have weak institutional capacity and limited technical knowledge of what constitutes green lending.

Yet, despite those significant obstacles, the private sector plays a crucial role in accelerating and mainstreaming the growth of green finance across the globe. It is widely recognised that the availability of public sector resources will not be sufficient to cover the entire costs of mitigation and adaptation measures. In this context, the private sector is expected to play a significant and growing role to deliver on transactions, goods and services that are aligned with environmental and sustainability principles.

With a proliferation of clean technologies, many opportunities arise for countries to support their socio-economic conditions in a sustainable manner as costs for climate mitigation and adaptation become cheaper. In the long term, considerable additional cost benefits can be achieved if future environmental costs caused by a carbon-intensive economy are avoided.

In order to drive lasting positive environmental and societal change, private sector engagement approaches need to promote sound business models for all-encompassing environmental protection, i.e. approaches that deliver environmental outcomes and are bankable, as well as creating jobs and good quality employment.

The opportunity

Increasingly, financial institutions realise that besides an ethical drive to support environmentally and socially conscious investments, engaging in 'green finance' can provide a financial opportunity. This can be the result of a need to respond to a shift in customer preferences, or because they are acting in advance of forthcoming policies and regulations and in so doing expect to have a market-share advantage over competitors. These commercial and reputational opportunities and benefits in being seen as a green business, include:

- Enhancing customer loyalty to the brand or the business, and being a catalyst for acquiring new clients
- Differentiating themselves and positioning themselves as a green finance market leader in increasingly competitive markets, with a chance to innovate, finance and adopt new low-carbon technologies
- Being part of a global network of institutions that are pioneering green lending and exchanging best practices
- Capitalising on the opportunity to learn new skills and develop new partnerships with members of the growing green lending community (suppliers, vendors, energy and environmental experts, business associations, government agencies, etc.)
- Accessing international financing, given the strong support for green lending from international lenders

The challenge

However, in many markets, in particular in developing and emerging economies, this business case is not immediately obvious. There may be strong perceptions that the incremental costs of additional environmental or low-carbon components can increase the cost of borrowing. This is often true for new technologies, or in those cases where there is no stable regulatory environment or where, such as in Indonesia, the regulations change so often that small businesses find it difficult to keep abreast of new rules.

In general, private green investment is hampered by:

- Lack of adequate finance with regard to maturity (longer-term), strength of the local currency, and the specific local demand (e.g. cheaper financing with concessional loans, junior equity)
- Weak institutional capacity and knowledge of green lending and investments, as complying with eligibility criteria or carrying out technical audits often requires additional resources and new skills

- Lack of or insufficient access to data and relevant case studies that demonstrate the positive financial impact of green investments, as well as the other non-financial benefits of developing a green loan portfolio
- A lack of government start-up incentives or subsidies for green projects/technologies
- Achieving senior management buy-in and commitment to designing and executing a green lending strategy
- Mainstreaming or integrating green loans into financial institutions' product ranges
- Rapid pace of change in technology makes financing investments challenging (e.g. standardising smaller investments of ≤USD 150,000 each done at scale; and assessing larger, more complex projects (≥USD 500,000) that require greater technical expertise and sometimes very specific know-how, etc.)
- Effectively and efficiently financing the SME sector of typically non-standard, 'mid-range' investment sizes, with its diverse range of technologies/investment plans and often limited information – which is typically more resource-intensive and time-consuming than standardised investments and without the volume

In order to incentivise the private sector, dedicated instruments such as discounted or concessional credit lines and technical assistance, incentive grants, tax credits for domestic and commercial green activities, need to be scaled up across several sectors of the economy. This needs to be accompanied also by grassroots-level campaigns that can raise the awareness of the population towards sustainability.

In this context, NDBs can position themselves vis-à-vis certain areas or gaps in relation to working alongside the private sector, for example:

- By entering the transaction at the right level, i.e. by providing co-financing which is structured to balance risk-returns, or with the appropriate level of concessionality that supports private sector crowding-in
- By providing dedicated technical assistance, capacity building and other pre-project support activities that tend not to be covered in most lending operations.

Where obstacles or delays have been noted in private sector participation, these tend to be linked to risk-return considerations on covering the incremental costs of green finance. Those barriers and opportunities refer also to the policy framework and regulatory contexts as explored in detail in Section 7.

The business case

In the private sector cases analysed in this report, that of Yes Bank in India and of GLS Bank in Germany, there has been an acute sense of seizing the business opportunity presented by a specific gap in the market, namely the need to rapidly boost investment in clean energy generation (for Yes Bank) and to create the financial basis for supporting environmentally conscious and socially oriented projects (GLS Bank) based on a strong ethically-oriented business strategy.

The next sections are explorations of private sector engagement approaches in green finance, based on the specific cases of Yes Bank in India and GLS Bank in Germany. Those cases show that investments do rely on a strong enabling environment where regulation is stable and risks are known. Those risks can include financial risks, technological risks, and climate vulnerabilities. In addition, where there are clear high-level policy statements accompanied by a sectoral roadmap, or sectoral implementation plans, the private sector has shown to be able to capitalise swiftly on the opportunity and design and deliver instruments and products in a short timeframe.

Most importantly, the private sector can also provide best practices for the NDBs to undertake. There are successful stories in private sector financial intermediation that can offer guidance for NDBs, namely on the use of innovative capital-raising structures (crowdfunding, green deposits, digital banking) in addition to green bonds, and the organisation of stronger technical, institutional and organisational capacities that underpin an organisation's success in order to champion sustainable principles.

5.2. Conclusions and recommendations

While the private financial sector shows initial signs of interest in green finance, much more support at various levels is needed to unlock its potential:

- Improving capacity for human capital development through dedicated technical and financial training, which can support long-term sustainability in institutional growth. This could be done in-house and/or through partnerships, by supporting the development of in-house expert teams (engineers, green finance experts, financial analysts)
- Including tailored financing and highly innovative solutions, supported by blended finance, that also take advance of the digitalisation of the banking industry
- In order to strengthen the business case and incentivise the financing of new markets, financial institutions should be able to tap long-term funding, particularly in local currency
- In order to strengthen the deployment of intermediated finance (e.g. credit lines) that can reach MSMEs for the development of projects e.g. <EUR 10 million in key sectors (off-grid, energy storage; additional renewable energy generation; energy efficiency; water management; resource efficiency; circular economy)
- Stepping up green financial product development with partner financial institutions through a mix of commercial loans or equity, concessional loans or equity or initially subsidised revolving funds (involving the areas of solar and wind energy, efficient appliances, efficient passenger cars) through:
    - Dedicated retail products such as 'green' deposits, mortgages and loans
    - Dedicated corporate and investment banking products (commercial loans)
- Strengthen the capital market infrastructure around the green economy, by:
    - Working with stock exchanges and central banks to support enhanced/mandatory reporting on ESG for listed companies and potentially develop specific green/ sustainable indices
    - Establishing a training and policy dialogue for ministries working on policies and regulations, as well as for other regulatory bodies such as central banks, stock exchanges and clearing houses, in order to establish clear guidance as to what and how to report on ESG, on the basis of existing best international practices
    - Ensuring capacity building and training for staff between NDBs and borrowers, for example as part of readiness programmes that also cover the establishment of ESG and climate risk management systems at corporate level in order to support the business case for green finance.

6. Case studies: private, commercial financial sector players

6.1. The case of India

6.1.1. The green finance context in India

India is the world's largest democracy. Its path to development and economic growth remains strongly dependent on growing energy needs and steady reliance on fossil fuels. In this context, the Indian government has shown serious commitment towards tackling the country's drivers of climate change and other vulnerabilities by putting a strong regulatory and policy environment in place, as described in the box below.

India's first NDC includes the following commitments, which should be achieved by 2030 (Republic of India, 2016):

- to reduce the emissions intensity of its GDP by 33-35% from 2005 levels
- to achieve about 40% cumulative electric power installed capacity from non-fossil fuel energy sources with the help of technology transfer and low-cost international finance, including from the GCF
- to create an additional carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent through additional forest and tree cover
- to better adapt to climate change by encouraging investments in development programmes in sectors vulnerable to climate change, particularly agriculture, water resources in the Himalayan and coastal regions, as well as health and disaster management

India's NDC also includes clear commitments on energy efficiency, such as through the National Mission for Enhanced Energy Efficiency (NMEEE), and for priority areas in lending operations: agriculture/agribusiness; SMEs; microfinance; and education. In these areas, significant links exist between climate and sustainability investment and the delivery of the country's NDCs and SDGs.

As a direct response to its international commitments, India has passed (or is committed to passing) dedicated legislation, including the National Energy Policy (2018) and the National Electricity Plan (2017).

Box 8: India's Policy Framework beyond Climate (Republic of India, 2016)

The broad policy framework on environment and climate change was initially laid down by the **National Environment Policy 2006**, which promotes sustainable development along with respect for ecological constraints and key principles of social justice. India's contribution takes into account its commitment to the conservation of nature as well as the imperatives of meeting the competing demands of resources for addressing the challenges of poverty eradication, food security and nutrition, universal access to education and health, gender equality, water and sanitation, energy, employment, and sustainable urbanisation.

The current development paradigm reiterates the focus on sustainable growth and aims to exploit the joint benefits of addressing climate change along with promoting economic growth. The **National Action Plan on Climate Change (NAPCC)** outlines priorities for mitigation and adaptation to combat climate change. The broad policy initiatives of the government are supplemented with actions by the state governments and Non-Governmental Organisations (NGOs), as well as private sector and other stakeholder initiatives. In addition, 32 States and Union Territories have put in place the **State Action Plan on Climate Change (SAPCC)** with the clear vision of mainstreaming climate change into their planning processes. The **Energy Conservation Act** has been enacted to encourage the conservation and efficient use of energy. **The National Policy for Farmers** focuses on sustainable development of agriculture. The **National Electricity Policy** underscores the focus on universal access to electricity and promoting renewable sources of energy, as does the Integrated Energy Policy (IEP). Policies to promote actions that address climate concerns also include fiscal instruments such as cuts in subsidies, increases in taxes on petrol and diesel, market mechanisms including Perform Achieve and Trade (PAT), Renewable Energy Certificates (REC) and a regulatory regime of Renewable Purchase Obligation (RPO).

6.1.2. Yes Bank

Operations and institutional set-up

With a balance sheet of USD 40 billion, Yes Bank is India's fourth largest commercial bank and the leading bank for green finance and sustainable investments in Asia Pacific (Yes Bank, 2018a). It provides a complete range of products at individual and corporate level. The private institution has been active in the green finance space for several years and was one of the founders of the Mainstreaming Climate Finance in Financial Institutions initiative, together with all MDBs and a range of DFIs.

Yes Bank considers responsible banking to be a priority in its growth strategy, with clear stages towards becoming the "Benchmark Financial Institution for Inclusivity and Sustainability" (Yes Bank, 2017a). Yes Bank has been particularly strong in voluntary ESG reporting for a number of years and is now listed on the Dow Jones Sustainability Index - Emerging Markets (DJSI, 2018), which has created trust in its sustainability and green finance credentials. This in turn has supported the institution in strengthening its mission by shaping a stronger and demonstrable link between CSR and stakeholder value creation through innovation and mainstreaming sustainability principles into its core business strategy and processes. Here, sustainability is not only about managing risks, it is also viewed by the financial sector as a means to increase business opportunities.

Yes Bank has confirmed that it acted as a first mover on the clear direction given by the government, following India's commitments under the Paris Agreements and, as stated in the country's NDC, to increase renewable energy capacity by 175 GW by 2022 (Republic of India, 2016), which was seen by them as a strong policy enabler to seek innovative ways to boost investments in green energy generation.

Within this favourable policy and regulatory context, Yes Bank has designed some unique products with clear green credentials, and marketed these heavily. Yes Bank issued the very first green bond in India in February 2015, raising INR 10 billion (EUR 124 million[17]) for financing green investments. It then issued an INR 3.15 billion (EUR 39 million) green bond in August 2015 and an INR 3.3 billion (EUR 40.7 million) green bond in September 2016 (Yes Bank, 2017b). More recently, on World Environment Day in June 2018, Yes Bank announced the launch of its green deposit product (Yes Bank, 2018b). This also included the earmarking of proceeds raised through these deposits for sectors aligned to SDGs, as well as a contribution by Yes Bank to cover the cost of planting a tree for each account opened.

Box 9: Yes Bank's green bonds (Yes Bank, 2017b)

1st Issuance – February 2015: Yes Bank issued India's first ever green bonds (AA+ by the Indian Ratings Agency CARE), in accordance with green bond principles. The bond was originally intended to be INR 5 billion (EUR 62 million) and was oversubscribed twice, closing at INR 10 billion (EUR 124 million). Significantly, there was strong demand from leading investors including insurance companies, pension funds and foreign investors.

2nd issuance – August 2015: The bank's second bond raised INR 3.15 billion on a private placement basis with the International Finance Corporation (IFC). This was Yes Bank's first investment with IFC in a green bond issuance in emerging markets. The innovative aspect of the transaction was that IFC paid for the placement using the proceeds from a Green Masala Bond raised in the offshore rupee market. The bond was awarded the 'most innovative bond structure' by Environmental Finance in May 2016.

3rd Issuance – September 2016: Yes Bank raised INR 3.30 billion in September 2016 for a Green Infrastructure Bond issued to the Dutch Development Bank (FMO) on a private placement basis. This is FMO's first investment in a Green Bond issued by a bank in India. FMO paid for placement using the proceeds from their sustainability bonds issued in 2015.

The proceeds from these bonds are exclusively used for renewable and clean energy projects.

17 Exchange as at 22 August 2018: Indian Rupee (INR) 1 = EUR 0.0123522

The way forward

Yes Bank has put in place a process for identifying projects based on eligibility criteria and evaluating them for allocation of bond proceeds through mapping by relevant teams with process-specific roles and responsibilities.

- **Management of Proceeds:** The proceeds are managed by an internal MIS, which also tags the projects to which the proceeds are channelled and monitors them throughout the tenor. The unallocated proceeds, if any, are placed in temporary market instruments on a quarterly basis.

- **Reporting:** An annual communication update is made available to the stakeholders, primarily investors. This includes information on allocation of proceeds, a list and brief description of the funded projects, a summary of the impacts associated with these projects and the type of temporary investment instruments for the balance of unallocated proceeds.

For Yes Bank, disclosure along standard environmental ESG indicators and consistent performance in ESG ratings, such as DJSI (DJSI, 2018), FTSE4Good (FTSE, 2018) and MSCI (MSCI, 2018), have proved to be crucial to its efforts to build trust and credibility for its performance. Improved ESG performance leads to an enhanced reputation as these ratings are an endorsement of the bank's 360° sustainability framework. This in turn leads to improved investor confidence, profitability for the institution and substantiates the business case for adopting a voluntary Environmental and Social Policy (ESP). Yes Bank believes that this transparency and consistency has also paved the way for corporate bonds to become a much more standardised capital-raising instruments in the local (Indian) capital market.

In terms of technical capacity and human capital, Yes Bank prides itself in leading human capital development initiatives that aim to attract and retain the best talent in the industry, including in the green lending and retail operations. Despite being a late entrant into the Indian banking industry, Yes Bank's unique 'knowledge banking' approach and its emphasis on human capital have helped institutionalise a performance culture and entrepreneurial spirit among its workforce.

Similar to the case of Hawaii and DBSA, there are currently significant product line gaps in the provision of instruments that can foster the design and uptake of banking products that can generate additional capital to target projects that are not solar energy generation. It is part of the strategic direction of both Yes Bank and the government of India to a) work together to ensure that upcoming policy and regulations are conducive to the development of financing offerings in adaptation and conservation; and b) to work alongside other financial institutions (for example, the Green Climate Fund) for the provision or larger-scale capital to boost blended products.

6.2. The case of Germany

6.2.1. The green finance context in Germany

With its Climate Action Plan 2050 of November 2016, the German government has set ambitious national GHG reduction targets of at least 55% by 2030, 70% by 2040 and 100% by 2050 compared to 1990 levels. It has also specified climate targets for individual sectors such as the energy sector, industry, buildings, transport, forestry and agriculture including the necessary development paths, implementation, monitoring and further development measures (BMUB, 2016). The agreements of the UNFCCC and its additional protocols, the Kyoto Protocol and the Paris Agreement, are the underlying guiding principles for the climate policy of the German government.

Germany is included in the EU-wide NDC under the Paris Agreement, which has now been ratified by all member states. The EU has put forward a binding, economy-wide target of at least a 40% domestic GHG emissions reduction below 1990 levels by 2030 (European Commission, 2015). It is regarded positive that the EU's NDC includes economy-wide emission reduction goals and is defined as a domestic target rather than relying on international credits. However, it is regarded negative that the target includes emissions/ removals from LULUCF, which were not included in the 2020 target and may weaken the 2030 target by 0.8%.

According to the experts from Climate Action Tracker, the 40% emissions reduction target is rated 'insufficient' and thus is significantly behind what is necessary to remain below the 1.5°C target (Climate Action Tracker, 2018b).

Between 1990 and 2015 the EU's emissions decreased by 23.6%, or slightly above 0.9% per year (EEA, 2017). EU-wide, renewable energy generation also decreased in the years 2014–2016. As a result, the average rate of emissions reductions between 1990 and 2017 slowed to 0.8%. The EU is working on a long-term greenhouse gas emission

strategy to reach climate neutrality by 2050, thus raising ambitions over the previous 2020 and 2030 targets (Climate Action Tracker, 2018b).

In Germany, the EU's largest emitter of CO_2 from coal, a newly created commission will address this issue and determine the date for a coal phase-out in that country. Analyses suggest that an EU-wide phasing out of coal needs to be achieved by 2030 (Climate Analytics, 2017), yet only a small number of countries (Austria, Denmark, France, Finland, Italy, Portugal, Sweden, the Netherlands and United Kingdom) have set out a phasing out plan to achieve this goal.

There are two important factors at work in the EU that may render coal uncompetitive (Climate Action Tracker, 2018b):

- Firstly, **reforms to the EU Emission Trading System (ETS)** may result in higher prices for emissions allowances, thus reducing the competitiveness of coal in countries which did not set a coal phase-out date. The new legislative framework (phase 4) includes, among other things, support to industry and the power sector to meet the challenge of innovation and investment in low-carbon transition via several low-carbon funding mechanisms (European Commission, 2018b).

- Secondly, the role of coal in the European power sector may also decrease due to the adoption of the **new air pollution regulations**, which all coal-fired power plants in the EU need to meet by 2021 (European Commission, 2018c). The high costs of compliance and increasing competition from renewables, may lead to many operators shutting down their plants instead of upgrading them.

Specific to Germany, the country's Climate Action Plan 2050 (Klimaschutzplan 2050) is a climate protection policy document approved by the German government in 2016 and developed under the guidance of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB, 2016). The plan outlines measures by which Germany can meet its various national greenhouse gas emissions reduction goals through to 2050 while also servicing its international commitments under the 2016 Paris Climate Agreement.

Box 10: An ecosystem of support for green finance – Germany

Germany has arguably one of the **most complex support systems** for green finance, built in reaction to strong concerns about environmental degradation. It utilises a mix of policy targets, tax policy, and its own national development Bank, KfW, to encourage borrowing and lending for green purposes.

In particular, **KfW, a 100% publicly owned bilateral DFI**, has a range of dedicated green lending programmes that are available to local banks, finance and insurance brokers, and building societies in Germany. The programmes are well defined, respond to government policy developments and priorities, and are often implemented in tandem with government policies. Ongoing lending programmes target energy efficiency in buildings, small-scale renewables, and industrial/MSME energy efficiency. Interest rates are very low, from 1%.

A good example in this regard is the 1**00,000 roof programme** for solar roof installations, which was operational from 1999 to 2003. The programme benefited from a combination of a clear target, guaranteed revenue through a feed-in tariff supported by central government funds, and concessional loans advanced by KfW through local public, cooperative, and private banks. It generated substantial interest and in turn stimulated a rapid growth of solar manufacturing in Germany.

6.2.2. GLS Bank

Operations and institutional set-up

GLS Bank, a private bank founded in 1974, offers an interesting perspective for this study, as an institution that was moved by a strong civic sense to offer a very different way of doing banking in support of environmentally and socially conscious investments. The raison d'être is deeply embedded as a civil society initiative. The full name of the first German ethical and ecological bank is 'Gemeinschaftsbank für Leihen und Schenken', which translates as community bank for lending and giving. Its beginnings do not stem from a specific policy initiative by the federal

government or the state, nor from any specific guideline or regulation in the environmental and societal context of the time. Instead, the bank is built on an idea to cultivate the environment, clean energy, housing, education, culture and health as basic and invaluable gifts for society to cover human needs. This is in line with the principles of the Global Alliance for Banking on Value (GABV, 2018), of which GLS Bank is an active member and whose primary focus is on financial flows for activities that deliver economic resiliency, environmental regeneration and social empowerment for the communities and people they serve.

Box 11: Global banking networks

Global Alliance for Banking on Values (GABV, 2018) is an independent network of banks, banking cooperatives and credit unions, microfinance institutions and community development banks that work together with the aim of increasing transparency in ESG reporting in banking systems. The Alliance totals 54 financial institutions around the world and has up to USD 163.4 billion in combined assets. Their common objective is to advance positive change in the banking sector. The future banking system is seen as a transparent system that supports sustainable economic, social and environmental development, and successfully serves the real economy.

The bank has always had an environmental and social perspective in mind and has financed renewable energy projects (wind power) from the very beginning. This was considered, from an energy generation viewpoint, as the only option with a viable future. GLS Bank admitted that, at the beginning, this model was very risky and barely viable. However, by the end of 2017, more than 40 years after its establishment, the bank counted over 48,398 members, with EUR 5 billion in assets under management (GLS Bank, 2018a). This makes it one of the fastest growing financial institutions in Germany. Despite the membership fees, the bank considers itself to be in the middle range in terms of costs for the customer. The balance sheet, as it is true for all green banks in Germany, is so low that GLS Bank is not listed among the top 100 banks in Germany (die Bank, 2017). As a cooperative bank, and relatively young in comparison to the older banking establishment, it relies very much on membership, so customers can buy shares as a source of equity capital. It also relies on deposits for liquidity.

With regard to reporting and disclosure, GLS has its own definition for green, which comprises publicly available guidelines that are stricter than the traditional ESGs, such as not supporting nuclear (GLS Bank, 2017). This narrowing of the scope of what can generally be financed by GLS, as well as the strong ideological push for full transparency, has been a successful model on which to build a brand that relies on trust. They recognise that the green segment has become more crowded with traditional banks now offering green products, so their answer is to raise the bar even higher, for instance, by applying very stringent impact assessments. GLS Bank is closely following the taxonomy discussion at European level, with EU proposals to introduce clear definitions of what constitute green and sustainable investments, as well as metrics and guidelines on reporting and on climate risks.

GLS Bank has training programmes on sustainable investment for all credit and investment advisers. In addition to financial training, they are also experts in their field (e.g. agriculture, energy, etc.), which gives them a much more thorough understanding of the urgency of the issue being tackled by the investments. Furthermore, there is a wider element of human capacity development in the work and operations of the bank, which is based on the belief that the general public can be empowered to really understand what sustainability means. Ultimately, with this knowledge, they are enabled to make better informed decisions as to where they would like to invest their money.

Loans are GLS Bank's central activity and where the highest impact is achieved. For savers, GLS offers savings facilities that are earmarked for particular sectors, e.g. renewables, sustainable investment, education and culture. On the investment side, GLS offers investors a range of dedicated green funds in which they can invest relatively small sums, starting from EUR 250. These funds are earmarked for climate, microfinance, fair trade, and ecological investments.

In addition to their traditional products, GLS Bank has a number of innovative solutions on the market. For example, following up on the heavy digitalisation processes in the banking industry, they have introduced a crowdfunding platform where customers can deposit their money and earmark exactly what type of projects they would like their investment to go to through the GLS Crowd brand (GLS Bank, 2018b). This innovative method of funding is the result of cooperation between GLS Bank and the independent company Crowddesk GmbH. So far, GLS Crowd has made ten investments for a total of EUR 4.7 million, with the average deposit being EUR 4,273. GLS Crowd handles investments of up to EUR 10,000 through its standard web-based platform, where investors sign

up and can select a project to invest in. Investments are channelled to the investee as subordinated loans.

In addition, through the share-based GLS Beteiligungs AG, GLS is also able to offer equity investments, either direct or through closed funds. These have higher risks and are aimed at institutional investors, while still targeting a range of renewable and ecological businesses. GLS Bank is also collaboratively involved in microfinance.

The way forward

For GLS Bank, innovative solutions are to be understood not only in terms of products (such as crowdfunding) but also as upholding ethical criteria in customers' choices.

"Our understanding of money is as not an end in itself, but as a means to bring about transformation and development"
Oskar von Homeyer, Assistant / Adviser to CEO, GLS Bank

For example, as outcomes in the area of climate change tend to be long-term, an area for possible further development in the banking industry is to realign ambitions and to make long-term finance more readily available. There are some questions that are very important to ask at the time of providing each investment loan that go beyond financial returns and allow a lender to understand the social and environmental impacts of their investments:

- What is the investment targeting?
- Which section of the population will benefit?
- What is the purpose or the intent of the investment?

In fact, the essence of the investment represents a fourth dimension in addition to traditional investment decisions, which are guided by the weighing of risk, return and liquidity. Thus, the bank incorporates in each of its investment decisions the notion of intent. This interesting conclusion can support considerations on the role of cooperation between the private financial sector and the NDBs, and help in understanding what co-financing could achieve. These are best practices that could be replicated and include transparency and clear monitoring and reporting of activities, helping to build a stronger customer base built on trust. Banking and financial institutions are uniquely positioned to provide the financial products and services that are critically needed in order to support enterprises and individuals in initiatives that put people before profit.

6.3. The private sector in Indonesia

Private sector participation is still very small in the Indonesian green finance space. Despite the high liquidity in the economy, there is a mismatch between the need for cheaper, long-term financing and the availability of specific instruments for green lending in absence of a formalised NDB. The pipeline of bankable green infrastructure projects also remains quite small. Nevertheless, the participation of Bank Artha Graha and Bank Central Asia (BCA) in the 'First movers on sustainable banking' initiative is a welcome start by the private sector financial institutions in understanding the intricacies of green lending that could lead to an increase in their green finance portfolios and active participation by peer financial institutions.

The Tropical Landscape Finance Facility (TLFF) is one of the few private sector initiatives that is utilising green bonds to promote sustainable development in Indonesia. TLFF's USD 95 million corporate sustainability bond not only provides finance to private sector rubber plantations, but also works together with communities on aspects such as reforestation, wildlife conservation and renewable energy (see Box 12).

Box 12: Tropical Landscape Finance Facility (TLFF, 2018)

The TLFF aims to source sustainable initiatives that contribute to environmental sustainability, transforming local communities, and securitising the project loans into bonds and selling them to investors through the medium term notes (MTN) markets. TLFF is a partnership between the United Nations Environment Programme (UNEP), World Agroforestry Centre, ADM Capital and BNP Paribas. Its objective is to utilise private finance for public good and stimulate green growth and create jobs by supporting projects in sustainable agriculture and the renewable energy sector.

TLFF is driven by impacts and announced its first sustainability bond in February 2018, a USD 95 Million world-first corporate sustainability bond to fund PT Royal Lestari Utama, an Indonesian joint venture between France's Michelin (49%) and Indonesia's Barito Pacific Group (51%), for a natural rubber plantation in degraded land in two provinces in Indonesia. The proceeds of the issuance were put towards a 15-year loan facility to RLU. The partial credit guarantee on the transaction is provided by the United States Agency for International Development (USAID) and is rated 'Aaa' by Moody's.

The project is built between national parks and conservation areas creating a wildlife corridor for Sumatran tigers, elephants and orang-utans. Out of the total plantation area of 88,000 ha, 34,000 ha will be planted in rubber, while the remaining 44,000 ha will be used for community livelihoods and conservation programmes, impacting the lives of 50,000 people and creating 16,000 jobs for the local communities. Upon maturity, the rubber from the plantation will represent 10% of natural rubber purchased by Michelin with an annual rubber yield of 1.7 tonnes per hectare, twice more than the current Indonesian standard of 0.8 tonnes per hectare. Thus the project not only supports climate smart sustainable rubber production but is also is a step forward in fostering development by establishing a multi-stakeholder holistic approach between the government, private sector and communities.

Currently, TLFF boasts a pipeline of 20 grid-connected renewable energy projects and is in the process of structuring to make them commercially viable. Since the current RE regulations are not favourable and PPA structure unviable, TLFF is focusing on RE projects in the Eastern region where tariffs are marginally higher, thereby making the projects bankable for investors. Considering that the RE projects in the pipeline will have different project development timelines, a pool of funds will be established and aggregated through private placement and securitisation when it reaches the economy of scale. On the investment front, TLFF is seeking to support projects by offering attractive interest rates with long-term debt of 10 to 15 years in IDR or USD, including equity participation. Collaboration with guarantors for full or partial guarantees for the overall lending structure is also being considered.

There are two funding windows under TLFF, a lending platform for loans and a short grant window for capacity building, monitoring and evaluation activities. On the other side, TLFF has also established synergies with other programmes for joint activities such as working with USAID and Indonesia Clean Energy Development (ICED) on due diligence of renewable energy projects or the World Wide Fund for Nature (WWF) Indonesia on ecosystem restoration.

The upcoming second tranche will provide financing for a community partnership programme that will include smallholder finance covering 7,000 hectares of land. TLFF investment is impact focused adhering to its ESG policy and standards that define eight core objectives: forest retention, improved rural livelihoods, peatland restoration and rehabilitation, sustainable supply chains, clean energy, reduced emissions, biodiversity protection and pollution reduction. The important KPIs for the facility are to measure forest areas, the carbon value of the forest, community livelihoods, and GHG emissions reductions.

TLFF is an innovative financing mechanism to unlock private finance to support mitigation and adaptation activities demonstrating a feasible model of sustainable production and climate-resilient employment for local communities within the amalgamated framework of conservation and high-value investment landscape that seeks to contribute substantial environmental and social dividends alongside risk-shared financial returns. TLFF financing models could be applied and scaled at national level to unlock finance from investors for achieving NDC targets.

7. The role of policy and regulation in financial markets

It is widely accepted that coherent policy, regulation and reporting frameworks are the basis of strong, functioning economies. What differentiates successful cases from cases where the enabling environment is weak is coordination, coherence and striking the right balance between thoroughness and simplicity.

This section seeks specifically to explore the main issues surrounding policy, regulation and reporting, as they relate to their role in supporting the greening of the economy and in promoting the mobilisation and scaling up of private sector resources.

7.1. The regulatory space

A stable context can facilitate the enabling and financing functions undertaken by the NDBs. At the same time, it represents a great opportunity to influence and shape the regulatory and policy framework, alongside the relevant governmental stakeholders, in such a way as to make the enabling environment more efficient and conducive to green growth. As explored in the sections below, it is significant that in cases where the regulatory framework is well-developed and intertwined with financial capital markets, the development of green financial instruments and products has been very rapid, such as in Singapore. In these cases, the regulatory bodies and capital market infrastructures are strong, with clear roles and standards.

In the cases analysed, it is important to see that the regulatory and policy functions are often spread across several institutions, in some cases with clear boundaries of responsibilities (Hawaii, Singapore), while in others there is much overlapping in the functions of institutions (Indonesia). Who is responsible for what also varies country by country, with different powers and responsibilities considered to be central functions or delegated to subnational levels. Top-level guidance often comes from primary legislation, with line ministries (e.g. energy, transport) becoming the main counterparts responsible for drawing up laws. Depending on the specific sector, regulation can be devolved downstream. For example, in energy/climate, regulation and legislation is mostly dealt with at central level; in water or in forestry, accountabilities are often devolved to councils, communities, and/or watershed authorities, reflecting not only the spatial extent but also the level of control of environmental impacts.

Table 8 below shows examples of the typical roles covered by central banks in monetary policy and by a number of different regulators (depending on country these can be the Ministry of Finance, Securities Commissions, or other financial supervisory authorities).

Table 8: Roles and measures of various regulatory bodies (examples)

Regulator	Instruments and requirements	Policy measures
Central banks regulations (central banks, monetary authorities)	Interest rates Quantitative easing Licensing	Interest rate setting Quantitative easing-funds Distribution and control of licences
Supervision of banks and financial services providers (can be central banks, also dedicated financial conduct authorities)	Capital requirement Reserve requirement Corporate governance Financial reporting and disclosure requirements	Capital requirement setting (Basel accord) Reserve requirements Credit guidance and controls Verification frameworks
Financial Regulation (securities commission, financial authorities, line ministries e.g. Treasury or Finance)	Supervision of stock exchanges Corporate governance Financial reporting and disclosure requirements	ESG reporting Climate risk disclosure
Financial supervisory / conduct authorities; Stock exchanges	Supervision of listed companies Supervision of investment management	Analysis of financial disclosure Compliance with regulations

A supportive policy and regulatory framework can give assurance, provide stability and thus minimise risks for first-time entrants and investments. Supportive policies and regulations are coherent and simple, yet thorough, they have clear boundaries of scope and responsibilities, they avoid overlapping with past or ongoing requirements, and have clear guidelines and financing for their implementation. Stable conditions in national markets (financial markets, macroeconomic stability, respect for the rule of law) underpin risk valuation and pricing in international capital markets. This is true in all markets but is of particular relevance to climate financing, as awareness of climate risk determines the level of participation of private sector actors in green sectors.

Recent literature (Green and Denniss, 2018; Lazarus, Erickson, and Tempest, 2015) has highlighted the importance of working with policy toolkits in green finance in order to create a portfolio of options conducive to the implementation of measures able to achieve the targets that the countries have set in climate action, environmental sustainability and conservation. Policy toolkits, such as the example below in Box 13, can provide a list of areas and questions for a government to consider as it develops roadmaps, policies and regulations. In some cases, standard policy measures may also be provided. In particular, a balance between supply-side policy options (for example, eliminating subsidies to fossil fuels) and demand (for example, GHG labelling) from institutions and customers have been deemed to be more cost effective for the achievement of greenhouse gas reductions and of sustainability targets. This is promising, not only because the climate challenge is tackled from both ends, but also because a strong positive cycle between the private sector, financial institutions and the regulators is established.

Box 13: Toolkits

1) Consider the contextual factors which may hinder or support green growth

Enabling environments:

Does the national government promote a regulatory environment that is conducive to green growth? What incentives do businesses and national governments have to invest and move towards green growth? This might include both generic incentives (e.g. competitive advantages for companies moving to green growth), or incentives embodied in the current institutional framework? Is the current structure of taxation and government spending aligned to green growth? For example, are there fossil fuel subsidies or energy-related taxes and tax expenditures conducive to low-carbon and green growth?

Systemic conditions: Have systemic issues which negatively affect policy outcomes been identified by the national government? To what extent are they being minimised? Do appropriate governance mechanisms exist to deal with e.g. inertia in economic systems or market failures that lead to inefficient resource use?

2) Ensure coherence between different levels of government (vertical coherence)

International level:

Which of the international agreements relevant for green growth and sustainable development (e.g. on climate, energy, green trade and investment) is the country a party to? This might include both legally binding instruments such as conventions, or adherence to e.g. OECD guidelines. Is there a clear commitment at the highest political level to take action towards green growth and sustainable development? Is there coherence between different international frameworks and agreements, including the SDGs and the UNFCCC? What are the main environment-related targets at national level? For example, commitments for reducing GHG emissions and eliminating environmentally harmful subsidies? What measures are in place (action plans or legal frameworks) to support domestic compliance and implementation of international commitments? Does the national government provide assistance or collaborate with other countries to support the implementation of international frameworks for green growth and sustainable development?

National level:

To what extent has the national government integrated green growth objectives into broader economic policy making and national development planning? Is there a national strategy for green growth? If so, how does it link to SDG implementation and the obligations in multilateral environmental agreements such as climate change agreements? Is policy coherence an element of the strategy for implementation? Are there mechanisms for policy coordination at national level? Is there involvement of the finance ministry in the formulation of the national green growth strategy?

Subnational level:

How have subnational-level actors (public and private) been involved in the formulation of national green growth strategies? Have the responsibilities been specified between the national and subnational levels for policy implementation? Are the respective mandates of different levels of government conducive or a hindrance to green growth objectives? Do municipalities and agencies at local level have the capacity and skills to implement green growth measures? Is there clear guidance for implementation at local level?

3) Identify policy interlinkages of relevance to green growth (horizontal coherence)

National level:

Does the national government: consider economic, social and environmental policy interlinkages (synergies and trade-offs) when designing new and/or implementing existing policies? ensure consistency between objectives and implementation practices of existing sectoral policies and green growth objectives? promote institutional arrangements that facilitate integrated policy making (e.g. cross-ministerial working groups)? If a green growth strategy exists at national level, is there a good understanding of how it can contribute towards achieving the SDGs?

4) Consider the various sources of finance (public, private, domestic, foreign)

Financing:

Has the range of potential sources for finance been identified (public, private, domestic, foreign)? Are there any policies or mechanisms in place to support coordination between international, regional and national funding instruments? When engaging in subsidy reform, does the national government also consider the coherence of subsidies with other national government objectives (e.g. on developing countries)? What are the framework conditions to ensure contributions from private sources? How does the national government: promote environmental and social disclosure? encourage the greening of sovereign wealth funds? participate in the coordination of development finance institutions?

5) Assess the impact of policies and monitor progress towards green growth

Impact assessment:

What approaches are used by the national government to appraise the effects of its policies ex-ante and/or evaluate them ex-post? Do these tools capture the environmental consequences of policy choices? Do these approaches capture the different dimensions of sustainable development, i.e. here and now, later, and elsewhere? Are appropriate monitoring and reporting systems in place for tracking progress towards green growth?

In addition to economy-wide policy and regulation, sector-specific regulation is often mandated at central governmental level, but developed and implemented through line ministries (e.g. energy, transport, environment), often also at subnational level (e.g. water, forestry). Table 9 illustrates some sector-specific regulations and what supply-side and demand-side policies would entail.

Table 9: Regulating for the environment and enabling green finance[18]

Sector	Supply Side	Demand Side	Notes
Climate	• Emissions Trading System (ETS) for GHG emissions (IN, PE, MO) • Systematic accounting for social cost of GHG emissions in project assessment • Phasing out HFCs in all sectors (ratification of Kigali Amendment and introducing related policies)	• Education Schemes • Introducing credible national offset schemes • GHG/pollution labelling of energy on bills • Food waste reduction schemes (IN, ME, MO, PE)	• Overlaps with energy on the demand side • Food waste reduction can have substantial climate benefits through supply chain effects
Energy	• Target setting for renewables in Final Energy Supply (IN, ME, MO, PE) • Establishing mandatory loss reduction targets for utilities (IN, ME, MO, PE)	• Cost-reflective tariffs for all consumers to enable good O&M in grid companies and encourage energy efficiency in end use (subsidy reform[19]) (IN, ME, MO, PE) • Small-scale installation connections/net metering regulations (IN, MO) • Efficiency regulations for consumer goods/tyres/cars • Minimum performance standards for industrial equipment • Building regulations	• Demand side regulations exist in all four countries, only recently introduced in MO, PE, so financing schemes would support these • All four countries have RES targets for power, but not for final energy use • MO allows construction of small-scale but not feeding into the LV grid Regulations are now being developed
Water	• Watershed conservation policies/ schemes • Introducing standards for utilities to reduce non-Revenue Water Losses through investment • Enhanced O&M of pipeline networks	• Requiring water-saving equipment, e.g. drip irrigation • Financing water-saving devices in households/industry • Cost-reflective tariffs	• Often implemented at subnational level
Forests	• Deforestation bans • Community empowerment • Banning imports of non-certified wood linked to deforestation	• Consumer education Schemes • Establish and promote labelling schemes • Mandatory purchase of certified woods for public use	• Often implemented at subnational level

7.2. The policy space – Regulatory and policy framework consistency and alignment

In the policy space, it has been observed that clearest directions towards green investments are reached when the formulation of NDCs has been followed up by specific sectoral roadmaps, such as in the case of Vietnam (see Section 8.1) with its top-down reforms in the green growth macroeconomic space. In addition, when a policy is also accompanied by a dedicated financial mechanism, whether through governmental backing (e.g. budgetary contribution) or capital markets (green bonds), then the successful implementation of the policy is more likely, while also achieving multiple co-benefits. It is important that the identification of financial mechanisms or instruments is explicit (as for example, in the case of HGIA in Hawaii and the issuance of a green bond), rather than general or indicative (as the example of many developing countries, with general references to climate finance). These are clear signals that reinforce the financial capital markets. In turn, well-developed capital markets can provide institutional investors – both domestic and foreign – with opportunities to allocate green finance flows to asset classes in accordance with portfolio needs. They create economic dynamism, transparency and trust.

In Indonesia, for instance, the government recognises that there is a large and somewhat untapped potential to boost green finance and attract much-needed capital investments while ensuring that environmental harm from projects is avoided or at least minimised. Indonesia is a country with a huge growth potential in the area of green finance, but

18 IN = Indonesia, ME = Mexico, MO = Morocco, PE = Peru, countries indicated could benefit from introducing such regulations

19 Energy subsidy reform is probably the single biggest step that could be taken in all four countries to make sustainable consumption choices more attractive to consumers and in the commercial/productive sectors

also with significant investment needs in the critical infrastructure for energy efficiency and renewable energy and in environmentally sensitive areas such as agriculture, forestry, energy, mining and waste (UNEP, 2015).

In this context, the Financial Services Authority (OJK) issued a Sustainable Finance Roadmap for the period of 2015 to 2019 (OJK, 2014) and the Indonesian Financial Services Sector Master Plan 2015-2019 to adequately meet the current and future economic challenges (OJK, 2016). There is also a long-term implementation plan from 2015 to 2024 to increase demand and supply for sustainable financing, targeting specific priority sectors – industry, energy, agriculture, infrastructure and MSMEs. Furthermore, OJK's Board of Commissioners has agreed to issue regulations on sustainable finance for banking, capital markets and non-bank financial institutions (OJK, 2017).

Details are also specified under voluntary financing guidelines for renewable energy, energy efficiency, green buildings, organic farming and palm oil. Inconsistencies in the regulatory area can also hamper the scope of investments in green finance. For example, in Indonesia, while there is a drive to further enhance renewable energy generation, supported by legislation on feed-in-tariffs, the quite conservative lending practices (also backed by Bank Indonesia regulations on collateral requirements and securitisation of assets) are limiting private capital participation in the renewable energy generation infrastructure.

While a clear policy framework and regulatory environment can create stability and transparency – ultimately with clear benefits for portfolio development and the delivery of finance, as detailed above – the opposite can often be true. The absence of a climate-focused roadmap that directly translates commitments into action can limit a country's advancement in its mobilisation of finance at national level. Similarly, inexistent, unclear or unenforced regulations can prevent knowledge and awareness for both the public and the corporate sector from being spread further. In Indonesia, for example, regulation exists, but it also tends to be unclear and often changes, thus creating confusion which ultimately results in many cases of non-compliance.

In the case of Peru, policies and regulations are in place but the lack of a coordinating institution results in unclear roles among national policy makers and institutions. A low-emitting country but highly vulnerable to the adverse effects of climate change, Peru could benefit from having an institution, whether public or private, that could take the role of first mover and create a link between the real sector on the one hand, and policy and regulations on the other. With little vision for a green financial system, most best-practice examples in Peru remain unknown and often confined to grassroots initiatives. In such cases, it is likely that corporate transparency on responsible business practices, particularly the environmental and social aspects, may not have been perceived as necessary or important in the local private sector (the real economy).

Box 14: Peru's regulations to implement NDCs

In 2016, Peru approved the following to support the implementation of the Paris Agreement:

- The **Climate Change Framework Law** (CCFL), which incorporates responsibilities from the Paris Agreement and creates an institutional framework to address climate change and articulates the scope of existing national policies in a single instrument
- The **National Payments for Ecosystem Services Law** (Ley de Mecanismos de Retribuciones por Servicios Ecosistémicos)
- A separate **Sanitation Sector Reform Law** that creates a process for water utilities to access payments for ecosystem services to secure water supplies through watershed conservation
- A **National Strategy for Forest Conservation** in the context of climate change, with an innovative 'production-protection' approach, which aims to increase productivity on the land while assuring and leveraging the benefits from conserved forests
- **Guidance for Biodiversity Offsets** under Peru's no-net-loss rules. This guide, specific to Andean ecosystems, clarifies a policy issued in 2014, just before COP20 was held in Lima. The policy requires all development projects in Peru with the highest degree of environmental impacts – including large mining, hydropower, oil and gas, and infrastructure – to assure there is no net loss of biodiversity. The guide details a process and methodology for calculating the losses and gains due to projects and potential offsets, using metrics corresponding to ecosystem structure, composition, and functions that go beyond pure assessments of area and into actual ecological quality.

7.3. Constraints in financial regulation

Capital and liquidity constraints

In large-scale projects for infrastructural development (for example, energy infrastructure such as grids; or physical infrastructure, such as climate-resilient upgrades of ports), the case studies in this report show that the issue of capital and liquidity constraints of banks can undermine their ability to extend long-term financing to green projects. In some cases, specific capital adequacy requirements, as provided by the regulators and consistent with Basel III requirements, was highlighted as an obstacle, but also seen as a necessary requirement to ensure liquidity over time.

Commercial syndications (i.e. partnering with additional banks) or public co-financing (i.e. obtaining grant or discounted loans) through NDBs or multilateral institutions has been highlighted as a solution to bridge potential financial gaps by providing cheaper loans with longer tenors.

Yet, more stringent regulation also underpins the strength of capital markets, and in turn well-developed capital markets can provide institutional investors – both domestic and foreign – with opportunities to allocate green financing to different types of investments (short-term, long-term). In particular, regulation such as Basel III can support long-term 'patient' investors, such as pension funds, which often favour investing in long-term funds and equity rather than risking direct exposure to project developers or technology companies.

Monitoring and evaluation (M&E) and disclosure

Strong M&E practices and disclosure allow investors to understand risk properly and to price for that risk. One of the most significant deterrents to investments in green finance is often the lack of clear and widely accepted methodologies for assessing risks related to the negative impacts of climate change. Case studies have shown that in some economies disclosure alongside the ESG standards may not be sufficient to create robust models. In this regard, as part of financial regulation, there have been recent proposals to introduce ratings that include concepts of 'probability of default' (i.e. the probability of an investment not being able to repay the borrowed capital) and 'loss given default' (i.e. the assets that may be lost) in green investments, in particular in larger project finance and in listed companies. This is to widen assessments beyond liquidity and also beyond traditional ESG, to differentiate the extent of sustainability of companies, and to provide more transparency to assess the costs of climate-related risks.

Creating more robust models will support the rebalancing of pricing vis-à-vis estimate risks (credit, financial, technical). For a national development bank, this can be useful for assessing the appropriateness of the instruments they offer and the level of concessionality they can extend in a given transaction. Table 10 can provide NDBs and development partners with an additional toolkit that can be presented to clients or used internally to appraise risk and determine loan pricing.

Table 10: Typical elements of disclosure and risk

Theme	What they are	Solutions
Boundaries of disclosure	The type of risk that is being analysed / quantified, probability of occurrence	Aligned with material risk; forward-looking; sector-specific; include short, medium and long-terms
Materiality and location	The represent the concrete evidence (materiality) that is needed to make an assessment, and the place (i.e. location of reports, sites, etc.) where these can be found	Explicit climate-related financial information; standardised location (e.g. indices, ESG); regularity of reporting
Scenario analysis	Analysis of different probabilities of events occurring	Develop, align tools and standards for scenarios; industry-specific
Metrics	Quantitative models and tools	Standardisation of metrics

7.4. Conclusions and recommendations

As regards the policy and regulatory space, there is a dual role that the NDBs can play: on the one hand, they can act as the link with national regulation, whereby they can engage in systematising requirements and in promoting the need for enhanced transparency. With their knowledge of the market they can support regulators in designing, revising and promoting ESG standards. On the other hand, NDBs and other strong institutions can also be the vehicle to promote the introduction of ESG and risk management systems further down in the companies they finance.

They can also engage institutional investors in the country to support and invest in a portfolio of companies with clear green mandates, for example, dedicated financial vehicles such as green investment funds. ESG reporting as implemented in investment banking and finance is an important aspect of climate finance, when considering that investment and lending decisions are taken on the basis of environmental screening and risk assessment to meet sustainability standards.

Specific measures that NDBs and partner countries can implement, include:

- Improving disclosure programmes by promoting standardisation of definitions and of principles, seeking to make ESG reporting mandatory
- Establishing dedicated training and policy dialogue platforms for ministries to promote policy de-risking instruments targeted at tackling the root causes of policy imbalances or misalignments, through:
    - platforms to strengthen inter-ministerial dialogue on distribution of roles and responsibilities
    - consistent drafting of an action plan, with dedicated 'theory of change' models that state the outcomes needed for a given policy to be successful
- Identify possible financial streams to counteract existing liquidity gaps. NDBs can ensure that policy and regulation are also accompanied by a dedicated financial stream, for which they can also be a delivery vehicle. This can include:
    - Pre-investment assistance (technical audit; financial audits)
    - Co-financing, either on same conditions to bridge the financing gap; or discounted (i.e. concessional loans) to lower the price of the investment
- Offer best-practice examples for those countries with weaker regulatory systems, to the benefit of regulatory bodies such as central banks, stock exchanges and clearing houses, to establish clear guidance as to how and what to report on ESG, on the basis of existing best international practice. This could also help solve taxonomy issues while providing a clear framework for reporting
- Ensure capacity building and training for staff between NDBs and clients, for example as part of capacity building and financial readiness programmes. Those programmes can be included in, for example, credit line structures and offered alongside loans, while readiness/pre-investment programmes can enhance the technical and financial capacity of borrowers, e.g. to include the establishment of ESG and risk management systems at corporate level in order to facilitate the assessments of climate-related risks and their pricing.

8. Case studies: The Strengths of Policy Frameworks

8.1. The case of Vietnam

8.1.1. The green finance context in Vietnam

Vietnam is one of the fastest growing countries in Southeast Asia, with rapid urbanisation and industrialisation, as well as significant demographic and social changes, which have contributed to a rise in greenhouse gas emissions, urban pollution and stress over natural resources. The dynamism that has driven rapid change in the past 30 years is also reflected in the pace at which the country has been opening up globally and in its drive to become a modern industrialised country by 2020, as laid out in the Socio-Economic Development Plan 2016-2020 (Socialist Republic of Vietnam, 2016a).

First approved in 2012 and still under implementation, the Macro Economic Reform/Green Growth Programme (GIZ, 2018) is seen as an important measure to ensure the rapid, effective and sustainable economic development of Vietnam. The programme is jointly implemented by Vietnam and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ) and with co-financing from the European Union. It is designed to promote economic restructuring in an efficient and sustainable manner in line with the National Green Growth Strategy (Socialist Republic of Vietnam, 2012). Green growth is defined as increased investment in conservation, development and efficient use of natural capital sources, reduction in greenhouse gas emissions, improvement in the quality of the environment and livelihoods, thereby creating positive economic and social co-benefits, which in turn further support commercial activities and economic growth (Socialist Republic of Vietnam, 2012).

The Republic of Vietnam's plan to implement the Paris Agreement also cross-references the Green Growth Action Plan to address the negative effects of climate change and to promote green finance at the same time. Several of these activities respond to the dual challenge and are seen as part of the same solution, e.g. (Socialist Republic of Vietnam, 2014):

- investment in projects for solar and wind energy
- sea water filtering, clean water supply and waste water treatment for residents in the border and coastal zones as well as islands
- protection of forests and mangroves, afforestation and reforestation programmes
- efficient industrial and domestic use of energy sources
- increased energy security by reducing dependence on imported oil products
- gradually reducing coal export volumes and importing an appropriate amount of coal
- connecting with the energy networks of neighbouring countries
- enhance the application of new technologies

The Green Financial Sector Reform Component, set up as a green financial policy framework, is aimed at supporting the implementation of both the National Climate Change Strategy (Socialist Republic of Vietnam, 2011) and the National Green Growth Strategy. This is promoted through the design and delivery of green financial instruments and products to mobilise funding for sustainable development in Vietnam via traditional budgets as well as the financial market. The component includes a very detailed action plan specific for the banking and financial sector (Socialist Republic of Vietnam, 2015a) which focuses on the de-carbonisation of the economy, reduced greenhouse gas emissions, efficient use of energy and natural resources, development of green production, services and sustainable consumption. It also targets activities to build awareness and the capacity in the banking sector for granting credit to green economic industries and in developing products and services that can best support enterprises in their green growth business plans.

In their official documentation, there is a clear division of roles and responsibilities for the implementation of the Green Growth Action Plan:

- the Green Growth Coordinating Board under the National Committee on Climate Change is the national coordinating agency in charge of consolidating action plans of all ministries

- the Ministry of Planning and Investment is the leading agency in green growth, responsible for – inter alia – the identification and allocation of local funding sources and coordination of foreign funding

The Green Growth Action Plan also states that the state will prioritise and allocate appropriate funds from the central and local budget to implement the plan, especially for energy efficiency and renewable energy generation. At the same time, there is also recognition of the importance of establishing an appropriate regulatory framework to encourage financial institutions and enterprises to invest in activities that are consistent with the principles of green growth.

"The banking system has a decisive role in greening capital flows. The two most important issues are resource mobilisation and development of credit programmes with appropriate targets in line with criteria of green and environmentally friendly projects".

(Mrs Nguyen Thi Hong, Deputy Governor of State Bank of Vietnam)

Box 15: Vietnam's NDC (Socialist Republic of Vietnam, 2016b)

Vietnam's NDC, which was submitted to the UNFCCC in September 2015, includes a mitigation and an adaptation component. The mitigation component includes both unconditional and conditional contributions. The unconditional contributions are measures that will be implemented using domestic resources, while the conditional contributions are measures that could be implemented if new and additional international financial support, technology transfer and capacity building are received. With domestic resources GHG emissions will be reduced by 8% by 2030 compared to the BaU scenario. The contribution could be increased up to 25% with international support. The adaptation component describes the climate change adaptation actions that are currently being implemented and identifies adaptation gaps in terms of institutional and policy arrangements, financing, human resource capacity, technology and prioritised adaptation measures for the 2021-2030 period. It is estimated that the national budget will be able to meet approximately one third of the financial needs to implement adaptation measures in this period, with the rest being supported through international cooperation and private sector investments.

As regards recent legislation, in 2016 the Government of Vietnam adopted its Renewable Energy Development Strategy 2016-2030 (Socialist Republic of Vietnam, 2015b) which sets clear medium- and long-term goals for the development of energy generation through solar, biomass and wind technologies. In order to finance this, the government also established a Sustainable Renewable Energy Fund to be capitalised through state budget and fees from fossil fuels. This development is also paired with an ambitious target to reduce coal and oil imports to cut greenhouse gas emissions, as stated in the country's NDC.

In 2016, Vietnam adjusted its National Power Development Plan to make it consistent with the Renewable Energy Development Strategy 2016-2030, so that both legislation reflect the same targets to increase renewable energy generation share in the country (GIZ, 2016).

Vietnam's securities market has grown significantly since it began over 22 years ago, contributing to improving and strengthening the structure of financial markets, with continued support to long-term capital raising, for example through bonds and public shares. In turn this has supported the strong industrialisation and modernisation of Vietnam and has attracted substantial foreign direct investment into the country. The newly drafted revisions to the Securities law will be discussed in October 2018, with a view to further modernising the law and bringing it up to international standards. This can include: modernisation of corporate governance standards in enterprises; enhancing the transparency and reliability of information, including ESG; widening the instruments being used in addition to bonds and shares (e.g. derivatives).

8.1.2. The way forward

There are some positive lessons that can be derived from the case of Vietnam and the Green Growth Programme. Government action in this context has been necessary to provide the right signals to the public and the private sector to steer them in the direction of green finance. This was achieved by setting a clear policy roadmap, such as the one presented in the green Financial Sector Reform Programme, as well as the establishment of an NDC implementation roadmap, accompanied by additional relevant legislation, such as on renewable energy generation.

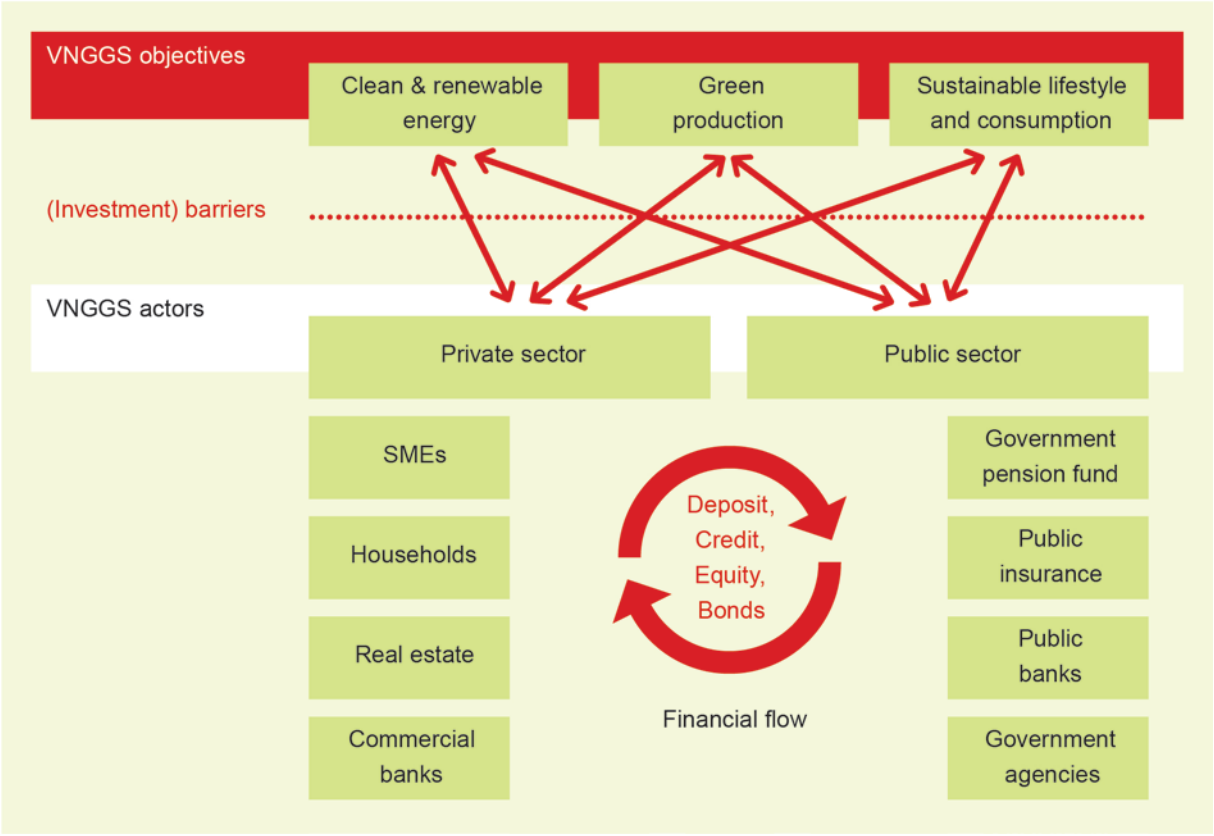
In many cases the government of Vietnam also identified concrete financial sources to implement policies through

appropriate budgetary allocation, such as with the creation of a dedicated Sustainable Renewable Energy Fund. Green finance roadmaps can enhance the ability of the financial systems to mobilise green finance, with the identification of needs, barriers to scaling, and priority actions. They can also be evidence of continued commitment by the government in this area, which in turn boost investors' confidence.

Moreover, fixed responsibilities are fundamental for output delivery and coordination; these include defining clear roles for the Ministry of Planning and Investment for overall technical planning, the Ministry of Natural Resources and Environment for climate and sustainability roadmaps and the Ministry of Finance for budgetary issues. This has increased transparency and trust in governmental processes, as barriers have been removed in order to help sustainable initiatives get off the ground and to accelerate the greening process wherever possible. In addition, financial regulation has also been aligned with the country's drive to support economic growth, as for example with the introduction of objectives to increase the ratio of lending to priority green projects, as determined by the State Bank of Vietnam (SBV).

One of the priority areas supported by SBV is promoting the development of SMEs as part of the green growth strategy. Recently, many banking institutions – including state-owned banks – have been scaling up concessional lending to SMEs, with a focus on those businesses that target measure to promote sustainable consumption and production, green innovation, pollution reduction and air quality improvement.

Figure 9: Interrelations between the private and public sector and financial flows in Vietnam (Eisinger and Cochu, 2016)



8.2. The case of Singapore

8.2.1. The green finance context in Singapore

Singapore, a traditionally strong hub for the financial sector but a late entrant in green finance, represents a strong case outlining the successful outcomes ensuing from a coherent interplay between the public and the private sector. As part of its commitments to the Paris Agreement to reduce emissions intensity by 36% below 2005 levels

by 2030 (Republic of Singapore, 2016b), the government has launched a series of initiatives, such as the Public Sector Sustainability Plan 2017-2020 (MEWR, 2017), backed by regulations (for example, mandatory disclosure requirements on a 'comply or explain basis' for public companies listed on the Singapore Exchange) and supported through dedicated guidelines, such as the Singapore Exchange (SGX) Sustainability Reporting Guidelines (SGX, 2016). These were positively received by the financial sector, with dedicated guidelines on investments, such as the Association of Banks in Singapore's Guidelines on Responsible Financing (ABS, 2018), which catalysed the mainstreaming of ESG considerations as part of the banks' overall business and lending practices.

A number of banks, most notably DBS (formerly the Development Bank of Singapore Limited), have very swiftly stepped up their capacity building, disclosure and implementation of investments in the area of green finance. DBS is a public company majority owned by a holding company which in turn is owned by the government of Singapore. Operating on a commercial basis, DBS has gradually expanded to become of the largest banks in Southeast Asia, with a significant sustainability business. Their success, arguably as the leading bank in Singapore for green finance products, stems from persistent efforts to integrate sustainability concepts in the bank's core business strategy, the existence of a robust environment and social risk assessment and credit approval framework to evaluate clients and transactions, and finally in ensuring senior management responsibility in implementing and reporting on ESG.

Box 16: SGX Singapore Exchange and its Sustainability Reporting guidelines for Listed Companies (SGX, 2016)

The Singapore Exchange (SGX) defines sustainability reporting as the publication of ESG information in a comprehensive and strategic manner that reflects the activities and outcomes across these three dimensions of an organisation's performance. Currently, all public companies listed in the SGX must report according to the SGX Sustainability Reporting Guidelines and, from 2018, produce annual sustainability reports. In this way, the SGX Code of Corporate Governance sets high standards for corporate governance in Singapore. Principle 1 of the Code states that the Board is collectively responsible for the long-term success of company, and further elaborates that the Board's role includes consideration of sustainability issues, e.g. environmental and social factors, as part of its strategic formulation.

The SGX Exchange provided several policy statements to promote the introduction of mandatory reporting in a belief that sustainability reporting is an important aspect of the holistic disclosure by listed companies, where environmental and social aspects of an organisation's performance are reported alongside the financial and governance aspects that are already part of customary and regulatory disclosure practices. The success of a company rests both on its interaction with the communities in which it operates and in its relationships with stakeholders. It is paramount for companies to understand their environmental and social impacts over those communities affected by the investments. This notion became very important in Singapore after 2015, at the height of the haze crisis, to guide companies to take action on transboundary haze pollution, after it became clear that the financial sector was involved in financing many of the companies that were clearing land in Southeast Asia to produce palm oil, rubber, paper, and timber. Good relationships with stakeholders drive companies to conduct their businesses responsibly.

Monetary Authority of Singapore and the green bond scheme

The Monetary Authority of Singapore (MAS) is the country's banking and financial regulatory authority. Set up by an act of Parliament, it exercises its regulatory functions through dedicated legislation (acts), guidelines, policy statements, practice notes, and directives. It covers traditional central bank monetary functions as well as financial stability through regular analysis of risks and vulnerabilities that could affect the stability of the markets; corporate governance frameworks, licensing and risk management.

In June 2017, the MAS launched a new 'green bond' scheme to assist issuers with the costs incurred in obtaining an external review of bonds to ascertain whether they comply with internationally recognised criteria, as for example those highlighted by the Singaporean Stock Exchange for sustainable projects (Singapore Institute, 2017). The scheme stems from the recognition that, generally, issuing green bonds is more expensive then issuing traditional bonds and that covering those cost can act as an incentive to trigger further issuances. This scheme further supports Singapore's position in the global market for green bonds, increasing the country's competitiveness in sustainable investment.

After this scheme was launched, there were several high-profile bonds launches:

- City Development Limited: USD 100 million (April 2017)
- DBS: USD 500 million (July 2017)
- Indian Renewable Energy Development Agency (listed in Singapore): INR 19.5 billion
- Star Energy geothermal, listed on the SGX (for geothermal exploration development in Indonesia, the first corporate bond in the country): USD 580 million
- Manulife Financial Corp.: USD 500 million

These bonds give evidence that the right incentives in stable markets can be catalysts to private sector participation in green finance.

Government securities: A model to raise funds from individuals for long-term projects

Singapore Savings Bonds (SSB) are a type of investment issued and backed by the government of Singapore. They were introduced in 2015 and are aimed at individual investors (UOB, 2018). The annual issuance is between SGD 2-3 billion[20]. They protect investors from loss, offer relatively low interest, and can be bought with a minimum investment of SGD 500. Investment is capped at SGD 100,000 per investor and they cannot be traded. While the nominal tenor is 10 years, investors can sell out at any time without penalty. Initially the interest rates were relatively low, leading to low uptake, more recently they have become competitive with similar forms of investments, such as cash savings accounts, and the bonds were oversubscribed earlier this year, leading to a decision to increase the monthly issuance from SGD 150 million to SGD 200 million – and in the latest issuance, to SGD 300 million.

The structure of the bond rewards long-term investors by paying higher interest rates in later years of the tenor. The interest rate for the October 2018 issuance ranges between 1.74% for year 1 to 2.97% for year 10, fixed. This compares to the April 2018 10-year government (traditional) bond with a coupon rate of 2.625%, and a central bank rate of 1.06%.

SSBs are a simple form of general purpose revenue raising aimed at less sophisticated investors. In Singapore, they are currently not tied to any specific project and they provide about 3% of the government's budget. Because of their relatively long tenor and the protection they offer, they can be used by governments to fund specific policy areas, such as energy efficiency, reforestation, renewable energy and water investment programmes. These are similar to the utility payback model, requiring long-term finance and providing stable, low returns. SSBs would be less suitable for project-specific investments with a higher risk.

They could also be offered to local financial institutions with a good rating, to induce them to begin lending for activities that require longer payback periods, such as energy efficiency, and the local financial institution could blend the bond proceeds from the government with its own funds, thereby bringing down the overall pricing of the loans for the defined purposes.

8.2.2. The way forward

Singapore is setting itself up to become the green financial hub of Southeast Asia. The country aims to reduce its emissions intensity by 36% below 2005 levels by 2030 and to stabilise its emissions with the aim of peaking around 2030. Despite its small size, Singapore aims to showcase best practices in the 'greening' of financial services and capital markets. A planned carbon tax on large direct emitters of greenhouse gases will be imposed from 2019. Pricing carbon emissions sends an economy-wide signal to corporations on the value that Singapore places on greenhouse gases. It also encourages the energy market and sectors to be more energy efficient through the use of clean technology and market innovation. It is expected that approximately 30 to 40 emitters currently operating in Singapore will be affected by the tax. Those direct emitters of greenhouse gases, such as power plants, will need to change and adapt, as will larger energy consumers. Revenue from the carbon tax will help fund industrial initiatives to help companies reduce their emissions.

In addition, Singapore is well positioned to provide assistance to develop knowledge and capacities, for example in structuring green bonds (following the example of the Monetary Authority) and in the formulation of best reporting practices.

20 Singapore Dollar (SGD) 1 = USD 0.73, thus approx. USD 1.5-2.2 billion

9. Concluding remarks: The Green Economy Challenge – the need for concerted action

The climate challenges that need to be overcome in future years will affect every level of society, hence the strong complementarity in the role played by many stakeholders, including the 'real' sector (the businesses on the ground), associations, individuals, and other non-state actors. Following up from the latest Intergovernmental Panel on Climate Change report in October 2018, the urgency of finding and implementing solutions to combat the negative impacts of climate change is more obvious than ever. This critical context makes planning and visioning crucial at this very moment, cognisant of the fact that time is running out.

Around the world, environmentally and socially conscious businesses and individuals are playing a major part in the growth of new brands, products and thus in making steps to advance green finance. For example, brands with a strong reputation for environmental and social stewardship are winning over an increasing share of markets, with players such as GLS Bank and Yes Bank leading as well as responding to customers' needs.

However, in many of the cases explored in this study, it has been observed that where the demand for 'green' products or 'green' solutions is weak, the growth of green finance has also been weak, leaving opportunities in the market untapped, such as the case of solar energy production in Indonesia. In these underdeveloped markets, the business case for greening the economy is often not fully voiced and not fully understood.

Typical barriers to the full deployment of green finance can be established practices, habits and traditions that make it more challenging to adopt alternative measures. For example, realising the importance of recycling and waste disposal and households/businesses taking appropriate action requires not only an information/education programme for communities, but also a waste management system to be put in place by the local municipality or province. Even where there is a good understanding of the challenges and the possible solutions to overcome them, current regulatory and economic conditions may make taking action and investing in green solutions more expensive than business as usual. There is no evident economic benefit from investing in green solutions, unless these barriers are removed.

In this context, the role of NDBs can be one of support in unlocking market pathways that can be conducive to strengthening business activities on the ground.

Businesses, associations and other non-state actors can also have a crucial role in this by disseminating knowledge, introducing best practices, and changing behaviour patterns. This will build up the pressure for change, for example air quality regulations being introduced in many countries. Nevertheless, grassroots or bottom-up action like this may not be sufficient to achieve a paradigm shift.

Government action, at all levels, can provide the crucial incentives that are required to make investments in green solution a viable option. There is a wide range of these that could be used, including but not limited to provision of advice to citizens or businesses on energy-saving or investing in small-scale renewables, passing energy efficiency regulations, introducing recycling ordnances and systems, and introducing cost-reflective pricing or subsidising the good (such as energy efficiency) rather than the bad (such as fossil fuels). In many cases it may be necessary to regulate the real economy by pricing externalities. One example could be the introduction of a carbon tax, which would then render some of the existing regulations on renewables and climate finance obsolete. Always keeping in mind risk/return considerations in investments, a CO_2 tax would make energy-intense operations more expensive, making other processes more attractive. It is in these other processes that the business opportunities lie.

NDBs have a strong understanding of both the policy and regulatory environment and of the realities on the ground. An important role of the NDBs in achieving this shift could therefore be to extend their outreach to dedicated associations, think tanks and other organisations present in the banking, financial and green finance space, providing information and education, alongside tailored financial solutions.

NDBs could focus on four specific goals in this outreach:

- **Providing access to knowledge** for businesses about role of NDBs as financiers and enablers of finance. As shown in Section 5 on private sector entities, there are some cases where the private sector understands its financing ecosystem very well (c.f. Yes Bank). However, more frequently than not in emerging markets, the real sector (businesses on the ground) does not have all the relevant information to access green finance and thus may not be able to develop the business plans needed to attract the right level of financing for their projects.

- **Extending specific technical knowledge** to support the business case for green finance, sustainability and stewardship of the planet. This could potentially strengthen the commitment of stakeholders (e.g. banks, their clients) towards specific development plans (e.g. the Green Growth Action Plan in Vietnam or the National Development Plan of South Africa); or by providing best practice examples for investments, as in the case of the Guidelines on Responsible Financing by the Association of Banks of Singapore (ABS, 2018), or in structuring green

bonds. These can be built around values such as governance, transparency and trust in order to underpin faith in the financial sector so that it can continue to play an important part in developing sustainable economies globally.

- **Expanding the financial elements of corporate citizenship** to promote inclusion by enabling access to green finance. This could include helping smaller businesses improve their financial literacy, enhancing the affordability of green solutions, financial education about climate solutions and risk, and continuing to innovate and diversify the options available.

- **Extending demand in the corporate sector and in households, through incentivisation as well as knowledge sharing** on the benefit of environmentally and socially conscious investments. In countries such as Morocco and Indonesia, the dynamics of private green finance from internal resources are just getting off the ground. The marketing of 'green' products remains experimental and often reliant on external time-limited programmes, with low inherent demand from households and small businesses in particular.

Interaction between NDBs, non-governmental actors, business associations, governments, is key to influencing legislation and regulation so that the goals above can be achieved, while moving the economy forward towards the targets set by national plans, including the NDCs. Only with a concerted effort by all relevant actors will the transformation into a low-carbon and climate-resilient economy be successful. In this context, the NDBs play an important and growing role as the hinge that can transpose political targets into economic activity, which could ultimately prove decisive in overcoming the green transition challenge.

Table 11: Summary of recommendations

Challenges	Recommendations	Role of NDBs
In several countries it has been noticed that there is a mismatch between the stated targets, and their legal and regulatory underpinning in the economy.	Align national targets and demand-side regulation and legislation at all levels of government.	Advise the government on the scale of the barriers.
Potential clients for green financial products do not have the knowledge to take advantage of them.	Implement solutions by working with clients, such as local financial institutions or local authorities/ utilities.	
Green solutions are uneconomic because of distorted prices/subsidies.	Introduce information/education support systems.	Utilise the network of local financial institutions to channel advice on e.g. creating green business plans.
Green technologies are not available.	Level the playing field through removal of e.g. fossil fuel subsidies, and/or introducing cost-reflective pricing. Foster new and advanced technologies through specific support schemes.	Advise the government on the scale of the barriers.

10. ANNEX 1: List of references

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11. ANNEX 2: International regulations, guidance and initiatives

Table 12: International regulations, guidance and initiatives in green and climate finance (examples)

Type	Name	Short description and implications for climate finance (mainstreaming)
International Regulation	Basel III	Basel III (or the Third Basel Accord or Basel Standards) is a global, voluntary regulatory framework on bank capital adequacy, stress testing, and market liquidity risk. It was agreed upon by the members of the Basel Committee on Banking Supervision in 2010–2011, and was scheduled to be introduced between 2013 and 2015; The third instalment of the Basel Accords was developed in response to the deficiencies in financial regulation revealed by the financial crisis of 2007–08. Basel III is intended to strengthen bank capital requirements by increasing bank liquidity and decreasing bank leverage.
International Guidance	Equator Principles (EPs)	The Equator Principles is a risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects. It is primarily intended to provide a minimum standard for due diligence and monitoring to support responsible risk decision-making.
	Principles of Responsible Investment (PRI)	PRI aims to understand the investment implications of ESG factors and to support its international network of investor signatories in incorporating these factors into their investment and ownership decisions. The PRI acts in long-term interests of its signatories, of the financial markets and economies in which they operate and ultimately of the environment and society as a whole.
	Green Bond Principles	The International Capital Market Association developed the Green Bond Principles, which have become an informal international standard for Green Bond issuances. Though not legally recognised by states, the framework has become a blueprint for other regulatory Green Bond standards such as in ASEAN countries. Despite the GBP, the International Capital Market Association (ICMA) has also published frameworks for Sustainability Bonds and Social Bonds.
	UN Global Compact	The United Nations Global Compact is a United Nations initiative to encourage businesses worldwide to adopt sustainable and socially responsible policies, and to report on their implementation. The UN Global Compact is a principle-based framework for businesses, stating ten principles in the areas of human rights, labour, the environment and anti-corruption. Under the Global Compact, companies are brought together with UN agencies, labour groups and civil society. Cities can join the Global Compact through the Cities Programme.
(Supra-) National Regulation and Guidance	EU Action Plan on Sustainable Finance	The EU Action Plan on Sustainable Finance was published in March 2018. Based on the report of a high-level expert group on sustainable finance, the action plan includes development of an EU Taxonomy for Sustainable and Green Finance, as well as policies and regulations regarding ESG investment.
	China Green Credit Guidelines	Developed by the China Banking Regulatory Commission in 2012 to address the risks of increasing environmental problems. They contain specific requirements for FIs to adjust their lending policies towards more environmentally protective lending by managing the E&S risk of their clients while putting limits on lending to environmentally high-risk clients.
	Netherlands Green Fund Scheme	A combination of tax credits and tax exemptions given to investors and savers of all sizes who invest in green funds and directs funds via commercial financial institutions to a variety of sustainable activities in agriculture, energy, construction, transport, etc.

International Initiatives	Financial Stability Board's Task Force on Climate-related Financial Disclosure (TFCD)	The aim of the TFCD is to develop climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers and other stakeholders. The task force considered the physical, liability and transition risks associated with climate change and what constitutes effective financial disclosures across industries. The recommendations of the task force are voluntary.
	G20 working groups	The objective of the G20 Working Group is to influence the G20 countries and to work with relevant stakeholders to ensure that G20's policies promote sustainable development, with a particular focus on increasing investments into energy efficiency and renewable energy. In addition, it ensures that development planning is in line with full decarbonisation and makes finance available to poorer countries to ensure that these countries can adapt to climate change and put infrastructure and policies in place that are climate friendly.
	UNEP Inquiry	The Inquiry into the Design of a Sustainable Financial System was initiated by UNEP to advance options for improving the financial system's effectiveness in mobilising capital towards a green and inclusive economy. The inquiry published its final report in early 2018.
	UNEP FI	The UNEP Finance Initiative is the most overarching initiative for climate finance and is involved in most projects, conferences and knowledge hubs. In terms of its own research, UNEP FI launched the UNEP Inquiry for a Sustainable Finance System, which focused on a diverse group of countries (including industrialised, emerging and less-developed countries) to advance the implementation of a sustainable financial system at the public policy level. UNEP FI is also a strong supporter of the Principles of Responsible Investment (PRI) and a regular co-host of international conferences.
	C40 Initiatives	C40 Cities is a global network for cities, exchanging ideas and innovation on climate change issues, including green growth, adaptation, energy and urban planning. C40 has also created a finance facility aiming to provide finance for projects. GIZ has supported the development of the facility.
	Carbon Disclosure Project	CDP runs the global disclosure system that enables companies, cities, states and regions to measure and manage their environmental impacts. Among other work, CDP is a pioneer in assessing carbon footprints of investments and financial portfolios.
FI Initiatives	IDFC	The International Development Finance Club is a multilateral association of development banks, both on the national and sub-regional level. The banks share the common goal of a sustainable economic development. The IDFC produces an annual Green Finance Mapping, which shows the spread of investment into different projects and their regional targets. IDFC has no investment or research activities of its own. The club identifies more as a forum and network of DFIs.
	Network of Central Banks and Supervisors for Greening the Financial System	At the Paris 'One Planet Summit' in December 2017, eight central banks and supervisory authorities established a Network of Central Banks and Supervisors for Greening the Financial System (NGFS). The Network's purpose is to help strengthening the global response required to meet the goals of the Paris agreement and to enhance the role of the financial system to manage risks and to mobilise capital for green and low-carbon investments in the broader context of environmentally sustainable development.
	Global Alliance for Banking on Values	The GABV is a network of banks from around the world committed to advancing sustainable change in the banking sector. The goal of the alliance is to change the banking system so that it is more transparent, supports economic, social and environmental sustainability and is composed of a diverse range of banking institutions serving the real economy.
	Sustainable Banking Network	The Sustainable Banking Network is an association of multiple financial regulators, banker associations and central banks from emerging economies and developing countries. The SBN is a forum for exchange and regularly publishes case studies on the activities of its members.

12. ANNEX 3: Methodology and Guiding questions

The global study was based on both desk research of existing academic and non-academic literature as well as structured/semi-structured interviews with a number of stakeholders representing different target groups in the green finance and sustainability space. A full list of interviewees is provided in Annex 4 below. This methodology favoured qualitative exploration – through questions and probing – of the reasons behind certain investments, product delivery or regulations, how those are perceived by national actors, and the real or perceived links (as the market sees them) between the real sector, national institutions, and government and regulators. This methodology allowed us to capture the trends in global green finance as well as the concrete actions on the ground.

The initial desk research carried out between June-August 2018 focused on two distinct areas. First, developing a better understanding of the state of green finance and green financial flows in the country, as well as what the needs of the market would be for national green finance as it continues to evolve and emerge. This covered sectoral analyses of potential demand hot-spots, such as agricultural resilience, infrastructure adaptation, electric mobility, mass transit, energy efficiency or renewable energy, as well as an overview of the products that are already available in the market in this area. Secondly, whether (and if so, how) national climate policies connect to the operations of NDBs and the wider financial sector.

Regarding the NDBs, central banks and other equivalent local financial institutions, the critical element of the study was whether climate policy vision, objectives, metrics and ambition exists for the financial sector, and if so, whether it is being articulated by the NDB.

Following the desk research phase, on-site visits and virtual interviews were conducted in the period July-September 2018. These site visits were critical to the success of the project as they created the opportunity to directly engage with the relevant actors in country, and in so doing they allowed us to understand the nuances of their work, their views and their commitment in green finance and sustainability.

On-site visits and interviews were conducted with a large number of stakeholders, including the government, regulators, national public institutions such as formal NDBs, other national institutions, local financial and private sector, local offices of MDBs and DFIs, consumer associations, chambers of commerce/sector organisations. Questions raised tackled policy, financial regulation, climate and environmental regulation, ESG and risk management systems, sectoral analysis, green finance mechanisms, instruments and products, and finally access to finance.

In particular, at the policy level the discussion focused on the link between government climate policy/NDC to financial regulation and NDB mandates. It covered elements such as laws and regulations, the effectiveness of the institutional arrangements at government level (where usually NDBs/financial sector would come under the Treasury while climate policy would come under the Ministry of Environment), and links/relationships with MDBs/DFIs regarding the climate operations of these institutions in the country.

At the national financial institution level, questions focused on mandates, specific barriers (e.g. through local regulations/budgeting laws), technical capacity, and sectoral analysis. At the international FI level (MDBs/DFIs) the questions focused on the view of the market in the country, and how the MDB/DFI climate mandates are getting traction in it. In addition, at national level, the greening of the global financial system relies on indicators that track the connectivity and permeability of the whole financial system for the promoted green finance practices. As a goal, green finance indicators should enable the tracking of the transparency, efficacy, resilience and efficiency aspects of greening efforts. Those elements can become part of a robust monitoring system as well as knowledge management system.

At the end-borrower level, the questions centred on the specific needs for green finance, and the ability to access it, with a specific focus on barriers encountered in doing so. This can include issues such as the credit-scoring process, and how e.g. increased resilience, or improved energy efficiency is treated by loan officers when scoring loan applications. The discussions during the visit were guided by making reference to best practices, e.g. in the form of sample operations that have been successful in other countries, and understanding –based on the reaction of the local counterparts – whether this be promising for the country, and if not, why not?

Below are the questions that stakeholders were asked as part of the interviews conducted either by phone, skype or on site. They cover general as well as specific issues:

General country context

- What are the existing links between public policy and the private sector, both on the demand and supply sides

for climate-focused products?

- Are there (new or existing) best practices in investment policies that can better support the greening of the financial sector and of the economy overall?
- What links can be ascertained between the role of stability and the money markets / capital markets? Can countries where these links are present access cheaper long-term finance in capital markets? If so, does access to such lower-cost finance translate into the provision of mechanisms (i.e. the way in which resources are provided in general) and climate-focused products (to end-beneficiaries)?
- Are the NDCs sufficiently detailed to translate into national green finance policy and planning? If not, what are the gaps, and how can it be ensured to be introduced at the first revision?

Specific country context

- To what extent has the potential market for green and climate finance been analysed?
- Has the local NDB or NDB equivalent been given a mandate to specifically cover climate-related aspects? If not where does that mandate reside?
- Do they have a dedicated climate policy for the investments that can be directly traced back to the existing NDCs and / or dedicated government-backed sectoral roadmaps?
- Does the NDB have the ability to invest directly in projects and provide defined-purpose lines of credit to the local banking/finance sector?
- What is the level of access to long-term finance, traditional, green and climate?
- What are the relevant metrics currently used to measure impact of public sector funding into the space?

NDB/Institutional context

- What is the NDB management's knowledge and view of this sector?
- Is climate risk assessment and disclosure part of the institution's policies and if so, is it (climate risk) considered a primary / secondary risk?
- Has the NDB been put forward to the Green Climate Fund for accreditation or been introduced as an Executing Entity? If not, who is the country's interlocutor in that sense?
- Has the NDB utilised MDB/DFI dedicated green finance lines?
- Does it have specific technical capacity to engage in green finance?
- Where does this technical capacity reside within the NDB and where does accountability for its performance lie?
- Does it participate in international initiatives, e.g. on mainstreaming green finance?
- If the NDB has green products available and in use already, what form do these take, and what has been the experience and uptake been for them?
- Are there particular concerns identified internally by the NDB regarding investing in this sector, especially related to risk and/or uptake?
- What are the existing climate tracking and monitoring capabilities?
- What are the risk disclosure standards the NDB employs and adheres to?

Do the NDBs or equivalent institutions carry out the following activities related to climate risk and if so, are the capabilities internal or reliant on outsourced support:

- Assessments and incorporation of climate, environmental and social risks in the lending process?
- Mandatory disclosure of environmental risks and assessments?
- Monitoring and reporting for GHG, (e.g. GHG measurement standards and protocols) as well as for other impacts / risks?
- Modelling of historical and future weather variability as it pertains to their own investment portfolio.

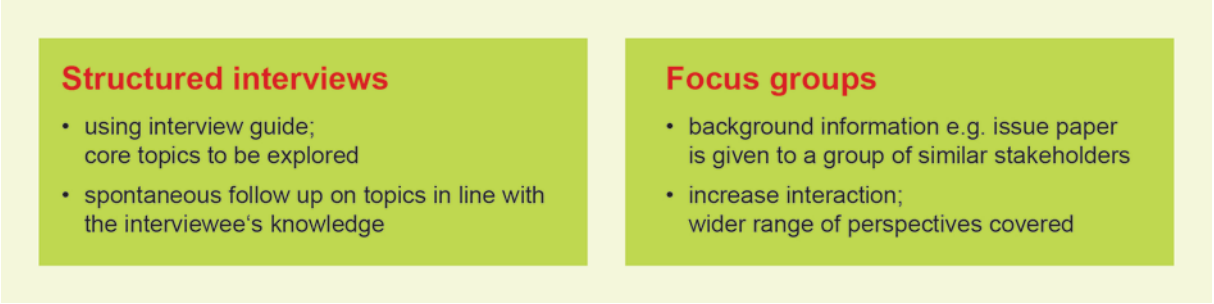
Do the NDBs or equivalent institutions provide the following mechanisms?

- ESG Support; Technical Assistance support, capacity building and mentoring
- Integrated approaches that introduce different financing instruments in the same project cycle – a blended finance approach
- Special purpose credit lines (e.g. energy efficiency / renewable energy)
- Risk transfer schemes (can include insurance)
- Capital markets participation / bond issuance.

Do the NDBs or equivalent institutions provide the following products, whether in support of climate operations or more generally?

- Incentives – performance-based finance
- Concessional debt / equity / Private equity

Figure 10: Approach to country assessments



13. ANNEX 4: List of interviews

Table 13: Interviews conducted for the global report

Name of Institution	Date
Yes Bank	13/08/2018
Hawaii Green Infrastructure Authority	15/08/2018
Vietnam	23/08/2018
GLS Bank	31/08/2018

Table 14: Mission to Rabat, Morocco, 15-19 July 2018

Name of Institution	Date
Moroccan Agency for Energy Efficiency	16.07.2018
BMCE Bank	17.07.2018
CDG Capital	17.07.2018
Bank Al-Maghrib (Central Bank)	17.07.2018
KfW	18.07.2018
Groupe Credit Agricole du Maroc	18.07.2018
Bourse de Casablanca	19.07.2018
Casablanca Finance City	19.07.2018
GIZ	19.07.2018

Table 15: Mission to Lima, Peru, 30 July - 2 August 2018

Name of Institution	Date
Agrobanco (NDB)	30/07/2018
Peruvian Federation of Municipal Saving & Loan Banks (Cajas de Ahorro)	30/07/2018
COFIDE (NDB)	31/07/2018
A2G & Principle of Responsible Investment Secretariat Peru	31/07/2018
CAF – Development Bank of Latin America	31/07/2018
Fondo Mivivienda (Public Fund for Housing)	31/07/2018
NESST (Impact Investor)	01/08/2018
Financiera Credinka (Micro financer)	01/08/2018
PROFONANPE (NGO)	01/08/2018
Diviso Grupo Financiero & CREDKINKA (Money Manager, Microfinance Institution)	01/08/2018
Climate Change Unit – Ministry of Economy and Finance	02/08/2018
Bolsa de Valores Lima (Stock Exchange)	02/08/2018
Inter-American Development Bank (telephone interview)	07/08/2018
Ministry of Environment (MINAM) (telephone interview)	08/08/2018
Root Capital (Impact Investment Fund) (telephone interview)	14/08/2018
Catholic University (telephone interview)	17/07/2018
IFC Washington, DC (telephone interview)	17/07/2018

Table 16: Mission to Mexico City, Mexico, 27 August - 1 September 2018

Name of Institution	Date
GIZ Team	27/08/2018
SEMARNAT – Secretaría de Medio Ambiente y Recursos Naturales (Ministry of Environment)	27/08/2018
Banco de Mexico (Central Bank)	27/08/2018
FIRA – National Agriculture Trust Fund (a sector specific NDB)	28/08/2018
BANOBRAS	28/08/2018
MÉXICO$_2$ @ Mexico City Stock Exchange	28/08/2018
Asociación de Bancos de Mexico (ABM)	29/08/2018
CAF - Development Bank of Latin America	29/08/2018
SHCP – Secretaría de Hacienda y Crédito Público - (Finance Ministry)	30/07/2018
HSBC	30/08/2018
KfW	30/08/2018
GIZ Team closing debrief	31/08/2018
GFLAC (telephone interview)	07/09/2018
BANCOMEXT (telephone interview)	14/09/2018
BANORTE (email interview)	28/09/2018

Table 17: Mission to Jakarta, Indonesia, 3-14 September 2018

Name of Institution	Date
Indonesian NAMAs Financing Support (INFIS), GIZ	04/09/2018
International Energy Agency (IEA)	04/09/2018
Ministry of Energy and Mineral Resources (MEMR)	04/09/2018
USAID- Indonesia Clean Energy Development	04/09/2018
WWF Indonesia	04/09/2018
PT Sarana Multi Infrastruktur (SMI) Persero	05/09/2018
Fiscal Policy Agency, Ministry of Finance	05/09/2018
GIZ, Climate Governance Program	05/09/2018
Belantara Foundation	06/09/2018
Proklima International, GIZ	06/09/2018
Green Chillers NAMA, GIZ	06/09/2018
ASHRAE (Heating and Cooling Association)	06/09/2018
Korea International Cooperation Agency (KOICA)	07/09/2018
Tropical Landscape Financing Facility (TLFF)	07/09/2018
Centre for Climate Change and Multilateral Policy, Ministry of Finance	07/09/2018
Indonesian Institute for Energy Economics	10/09/2018
Indonesia Climate Change Trust Fund	10/09/2018
KFW	10/09/2018
Tropical Forest Alliance	10/09/2018
Coalition for Green Capital	11/09/2018
Bank Artha Graha	12/09/2018
Bank BRI	12/09/2018
Kehati	13/09/2018
Institute for Essential Services Reform (IESR)	13/09/2018
Global Green Growth Institute (GGGI)	14/09/2018

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