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**THE ROLE OF NATIONAL PUBLIC DEVELOPMENT BANKS IN FINANCING
THE WATER AND SANITATION SDG 6, THE WATER RELATED GOALS OF
THE PARIS AGREEMENT AND BIODIVERSITY PROTECTION**



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LIST OF ACRONYMS

ADB	Asian Development Bank
AFD	Agence Française de Développement
AFL	Agence France Locale
AfDB	African Development Bank
AWF	Africa Water Facility
BAD	Banque Africain de Développement
BANOBRAS	Banco Nacional de Obras y Servicios Públicos
BCIE	Banco Centroamericano de Integración Económica
BDE	Banco de Desarrollo del Ecuador
BEIF	Border Environment Infrastructure Fund
BNB	Banco do Nordeste do Brasil
BNDES	Banco Nacional de Desenvolvimento Econômico e Social
BOAD	Banque Ouest Africain de Développement
BSTDB	Black Sea Trade and Development Bank
CABEI	Central American Bank for Economic Integration
CAF	Banco de Desarrollo de América Latina
CAP	Community Assistance Program
CEB	Council of Europe Development Bank
CDC	Caisse des Dépôts et Consignations
CDG	Caisse de Dépôt et de Gestion
CDP	Cassa Depositi e Prestiti
DB	Development Bank
DFI	Development finance institution
DBSA	Development Bank of Southern Africa
DWA	Dutch Water Authorities
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EPA	Environmental Protection Agency
ESG	Environment, Social and Governance standards
EU	European Union
FAIS	Fondo de Aportaciones para la Infraestructura Social
FMO	Netherlands Development Finance Company
FNE	Fundo de Financiamento do Nordeste
FONPLATA	Fondo Financiero para el Desarrollo de la Cuenca del Plata
GAD	Gobierno Autónomo Descentralizado
GCF	Green Climate Fund
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GSIF	Green Social Investment Fund
GWSP	Global Water Security and Sanitation Partnership
IADB	Inter-American Development Bank
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDB	Inter-American Development Bank
IDFC	International Development Finance Club
IFI	International Financial Institution
Ilbank	İller Bankası
IMTA	Mexican Institute for Water Technology
IsDB	Islamic Development Bank
IPCC	Intergovernmental Panel on Climate Change
KfW	Kreditanstalt für Wiederaufbau
LAC	Latin America and the Caribbean
LAIF	Latin American Investment Facility
LMIC	Low- and middle-income country
MDBs	Multilateral Development Banks
NADB	North American Development Bank
NPBDs	National Public Development Banks

NDCs	Nationally Determined Contributions under the Paris Agreement
NRW	Non-Revenue Water
NWB	Nederlandse Waterschapsbank
OECD	Organisation for Economic Cooperation and Development
OJK	Financial Services Authority
OO	Organismo Operador
PATGES	Programa de Asistencia Técnica para la Gestión de Servicios de agua y saneamiento
PDAM	Local Water Supply Utility (Indonesia)
PDB	Public Development Bank
PFF	Public Sector Financing Facility
PMOOA	Programa para la Modernización de Organismos Operadores de Agua
PPP	Private-Public Partnership
PT SMI	PT Sarana Multi Infrastruktur
SDGs	Sustainable Development Goals
SEDA	Société d'Eau Dessalée d'Agadir
SMAT	Società Metropolitana Acque Torino
SME	Small and medium sized enterprise
SOE	State-owned enterprise
SPV	Special Purpose Vehicle
SWAP	Sector wide approach
TA	Technical assistance
TF	Trust fund
TrackFin	Tracking Financing to WASH
UfM	Union for the Mediterranean
VDB	Vietnam Development Bank
VGf	viability gap fund
WASH	Water, sanitation, and hygiene
WB	World Bank
WSP	Water and Sanitation Programme

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EXECUTIVE SUMMARY

BACKGROUND

This report is a global assessment of national public development banks' (PDBs) involvement in the water sector in its broadest sense. It was commissioned by the Agence Française de Développement (AFD) in the context of the Finance in Common Initiative, which seeks to enhance PDBs' role in financing countries' commitments to the Sustainable Development Goals (SDG) and the Paris Agreement.

PDBs are banks located within the public sphere by mandate, ownership or governance. PDBs have a specific mandate to deliver on public policy objectives that support the economic and social development of a country or region.

Historically, national PDBs have played a significant role in water sector development in high-income countries such as France, Italy and the Netherlands. Whilst there are examples that PDBs play a similar role in middle-income countries, it also appears that their involvement in the water sector has not yet reached its full potential.

The main hypothesis of the assessment was that **national public development banks are underused and that they have the potential to raise finance for achieving both the SDG 6 and the water-related Paris Agreement goals.**

To test this hypothesis, this research assessed: 1) the nature and extent of PDB involvement in financing water-related investments, and 2) the drivers and constraints for PDB involvement in the water sector. Finally, the assessment sought to define recommendations for enhancing PDBs' role in water-related investments, to see if the hypothesis could be confirmed.

In particular, the study focuses on national PDBs (operating at national and local level), though also considers regional PDBs (operating at multi-country level). It also questions the role of international financial institutions (IFIs) in financing the water sector through national and regional PDBs.

This study is based on a literature review (Annex 4); the analysis of PDBs' datasets commissioned by AFD; and an **in-depth review of 13 national PDBs, 16 IFIs, development finance institutions (DFIs) and multilateral development banks (MDBs), that are known to be active in the water sector.** The selection was based on their geographic spread, size and availability (Annex 2). The reviews of the PDBs, IFIs, DFIs and MDBs were based on interviews with senior technical and financial staff and were complemented by a documentation review, particularly of PDBs' annual and strategic reports.

The study focused on PDBs that were involved in financing water-related investments and excluded PDBs that did not work at all in the sector. This means that the research cannot draw conclusions on the reasons why PDBs are not involved in some countries at all.

NATURE AND EXTENT OF NATIONAL PDBS' INVOLVEMENT IN WATER

The study confirms that national PDBs are key players, both historically and currently, in financing water in the countries where they operate. Europe and the Latin American and the Caribbean (LAC) region host a number of national PDBs that are very active in the water sector. In other regions there are also countries which have national PDBs that finance water-related investments, but these are fewer. The subsectors to which most of the financing goes depend on the historical mandate of the national PDBs and the level of development or maturity of the water sector.

National and regional PDBs included in this study have a strong focus on financing sanitation and water supply services. PDBs predominantly fund sewerage and wastewater treatment expansion as well as large water treatment and desalination works. They are involved to a much lesser extent in water resources management, including stormwater and flood management.

Ecosystem and biodiversity protection does not seem to be specific areas of investment of national PDBs involved in the sector. Rather, biodiversity protection is often considered through a 'do no harm' lens or as a positive side-effect of investments (e.g., in wastewater treatment).

Water sector investments (in the broad sense) represent on average between 5% and 15% of PDBs' portfolio, though figures are not always available in a comparable manner. There are data limitations because PDBs' lending activities are either not always tracked according to sector, or the definitions of sectors is not consistent across PDBs, especially when funds are channelled to municipalities and used for multiple sectors.

As a result, the extent of funding for water channelled via PDBs compared to other sources and channels is also not clear, including at national level. There is very limited data on the absolute amounts invested by PDBs in water and how they compare with investments directly made by other key actors, including central government, commercial banks and MDBs.

The nature of national PDB involvement in the water sector includes one or more of the following financial instruments and services.

- Providing credit for infrastructure investments in different forms: 1) balance sheet credit; 2) credit to local governments and utilities for specific investments; 3) project finance, usually directed to private sector entities, which may set up dedicated Special Purpose Vehicles (SPVs). This is the core set of financial products of all PDBs reviewed in this study.
- Structuring project finance – including co-financing mechanisms and private-public partnership (PPPs) for the operation of water and sanitation services. Whereas the previous point referred to providing the credit, there is often technical assistance involved in structuring the financing and co-financing of the more complex investments.
- Project preparation, either grant-funded, or through loans that are repayable if the project preparation leads to a bankable project. The extent to which PDBs offer this service depends very much on the extent to which they have non-repayable funds available for this.
- Technical assistance (capacity strengthening) to utilities and local governments, oriented at their technical and financial performance improvement. This is done with the dual aim of making the utilities and local government more creditworthy, and of strengthening the sustainability of the investments. Whereas this service is considered very important, not all PDBs have the ability to provide it, as this is usually funded through non-repayable finance.
- Influencing sector reforms and sector dialogue for improving regulatory frameworks and funding related studies. Only a few PDBs were involved in national level reforms.
- Channelling central government transfers to local governments and utilities (from taxes or sovereign loans). Only a few PDBs mentioned this role.
- Administering dedicated trust funds for the water sector. In some cases, these are trust funds set up at the request of national government or external financiers. The PDBs may or may not replenish these funds out of their own profits. This was mentioned by only two PDBs.

Loans are the main financial instruments deployed by PDBs in the water sector.

- Through loans, national and regional PDBs:
 - finance investments, such as the large expansion of sewerage and treatment networks, potabilisation and desalination plants and sewerage treatment plants;
 - finance mid-sized towns and utilities which are more creditworthy than smaller municipalities and rural areas, but which are not able to negotiate favourable loans directly with IFIs or commercial banks. In several countries (e.g. Ecuador, Philippines, Brazil), larger utilities can obtain loans from commercial banks or IFIs at more favourable conditions, whereas smaller municipalities (and their utilities) are not creditworthy at all, not even for PDBs.
- Channel sovereign loans from IFIs to smaller municipalities and utilities.

- Finance climate change adaptation investments, with financing sourced from climate funds as a few PDBs are accredited to manage such funds.
- Where both financial markets and the water sector are mature, PDBs also support utilities accessing international capital markets through bond issuance.

CONSTRAINTS AND SUCCESS FACTORS OF PDBS' ENGAGEMENT IN WATER

The main constraints for national PDBs involvement in the water sector can be grouped in the demand for PDBs financing to the water sector and the supply of financing.

On the demand side

Historically, utilities and municipalities in many countries rely on central and/or local government funding for investments, which may inhibit demand for regional or national PDB financing for the water sector. In some countries, as financial regulations and strategies within the water sector evolve, public finance may primarily be directed to the poorest municipalities, and the mid-sized and larger utilities may be incentivised to take on loans for investments.

There are many risks related to the financial and operational performance of municipalities and utilities. In several countries, utilities face low revenues from tariffs, as either tariff levels are too low, or non-revenue water levels too high. This means the revenue flow to repay loans is seen as insufficient. This has led some PDBs to dedicate financing and programmes to improving the performance of utilities and municipalities as prospective borrowers. This is not the case everywhere. In high-income countries, the water sector is seen as low risk, exactly because there are frameworks in place that ensure stable revenue flows from tariffs.

There are limitations on the extent to which local governments can take on debt or spend more in the sector (fiscal space). Treasuries often set the amount of local government spending and debt and this constrains investments in the water sector which does not generate immediate returns.

The time it takes for projects to originate and source finance is another constraint. The combination of limited skills, knowledge, data and studies in the sector and the limited capacity of utilities/municipalities to formulate projects, means that it can take 3-5 years for projects to originate and source financing. In order to address this constraint, several PDBs have dedicated financing to project preparation.

A final constraint is the limited capacity for project execution. Borrowers also need the capacity to execute the projects, have processes in place for tendering, contracting, procurement, supervision of works etc. This capacity may differ between borrowers, with smaller municipalities and utilities typically having less capacity than mid-sized and larger utilities. For this reason, PDBs don't only finance the investment, but also provide technical assistance in execution where needed. Where the borrowers have the capacity –for example in the Netherlands – the role of the PDB is limited to providing finance only.

On the supply side

There is internal pressure to prioritise sectors in which investing is easier and more profitable. Whilst national PDBs are mandated to implement government policy and take on risks, they also need to balance their books. This means that they can be less proactive in sourcing projects in sectors deemed riskier, such as water, or those that are they less familiar with. Several interviewees commented on the fragmented nature of the water sector, given its decentralisation with roles spread between utilities and local government. This makes it more difficult to finance than sectors that are more centralised and concentrated in fewer institutions.

Currency risk was not mentioned as a major constraint (compared with all of the above) and it is not specific to the water sector, however it is a limitation mentioned by some of the PDBs. For PDBs that get finance from external sources on a foreign currency, there is always currency risk. Some IFIs offset this risk by lending in the local currency, but most of the currency risk is managed by PDBs and their swap teams.

Other critical factors on the PDB supply side include:

- a clear mandate to finance the water sector;
- the financial means to implement this mandate; and,
- in-house water sector knowledge and expertise.

Other relevant drivers include:

- strong relationships with the client base and contributions to improvements in the water sector;
- engagement in national dialogues on policy or regulatory reforms; and,
- taking on the risks of early-stage project preparation and then bringing other private investors and service providers on board.

In general, the difference between PDB financing and domestic private bank financing is related to the conditions offered and the non-financial instruments made available by national PDBs. Technical assistance to local governments and utilities is an added value of PDBs, as are the conditions for loan repayment. One of the most relevant aspects to the water sector is that PDBs are instrumental in implementing multi-sector projects that are cross-subsidising in nature. This allows for the mutualisation of risk between lower (i.e. larger utilities) and higher credit risk borrowers (i.e. smaller municipalities) and lower and higher risk sectors, enabling smaller borrowers to access more favourable conditions.

The other relevant aspect – and difference with commercial banks – is that national PDBs use government and donor grants, concessional loans from IFIs and commercial loans from the local banking sector (blended finance). Moreover, they use specific funding tools for this purpose such as revolving funds. The blended finance is not only intended to increase financial resources to the sector, but also to lower the interest rates of loans to the local government and utilities.

IFI FINANCE TO THE WATER SECTOR THROUGH NATIONAL PDBS

IFI investments in the water sector through PDBs are not widespread. The channels of IFI financing to the water sector depend on how the water sector is structured. In many developing countries where the central government continues to play an important role in water sector funding, IFIs typically provide sovereign loans to a central ministry of finance, which then passes them on as grants/loans to line ministries and/or utilities and local governments. In other countries, where decentralisation is effective, some IFIs also provide sub-sovereign loans directly, typically to metropolitan utilities, local government and specific projects.

IFI financing for water through PDBs is conditional on the presence of national PDBs in the first place, and whether they have a clear mandate for water. Some countries either have no national PDB or only nascent PDBs. Some sub-regional IFIs operate in countries where there are no domestic PDBs. In these cases, IFIs provide loans directly to local governments or utilities. For example, none of the Central American Bank for Economic Integration's (CABEI) borrowing member countries have national PDBs that operate in the water sector. The same applies to most of the member countries of Fondo Financiero para el Desarrollo de la Cuenca del Plata (FONPLATA).

IFIs that do provide loans to national PDBs for the water sector, do so for on-lending to municipalities and service providers. Lending can be earmarked for water or for multiple-purpose municipal projects. The rationale for financing through PDBs is that they are able to reach a broader geographical scope and therefore reach more beneficiaries than IFIs. National PDBs can also target smaller municipalities and utilities and provide smaller loans while IFIs are often unable to provide loans under a certain amount. National PDBs can also provide credit lines in the local currency, which is often a limitation for IFIs.

Water sector loans provided through national PDBs are larger than other loans to the sector, with IFIs being able to shift most of the lending risks to PDBs, which are often backed by sovereign guarantees. PDBs manage the currency risk since most of the water projects are financed in local currencies while IFIs mostly finance in hard currencies.

Investing in the water sector through national PDBs provides value for money to IFIs in terms of outcomes achieved relative to the size of loans they provide. By working with national PDBs, IFIs can also put in less time and resources in water project preparation. In these cases, IFIs work upstream with finance institutions and regulators and not directly with municipalities or service providers. It is then national PDBs that take on the responsibility for project preparation and ensure all sub-projects comply with IFIs standards and procedures.

National PDBs also provide a good solution for investments in the sector when IFIs do not have local offices. National PDBs can actively contribute to project origination, preparation and monitoring on behalf of IFIs. Additionally, the collaboration with PDBs contributes to capacity reinforcement and increases the autonomy of the countries' financial systems in terms of processes and international standards – which then benefits many other sectors.

From a national PDB perspective, working with IFIs also has benefits. IFIs often have a good credit rating and can therefore attract capital at interesting rates, which allows national PDBs to on-lend at lower rates. Other attractive benefits include the potentially large size and long tenure of IFI financing. What common happens is that PDBs co-finance larger and complex projects jointly with IFIs.

However, in some contexts, national PDBs have access to cheaper finance from local capital markets. This is the case in some LAC and Asian countries (e.g. Brazil, Philippines) where local capital markets are well-developed. The combined effect of IFIs' lending procedures, conditionalities (which represent opportunity costs for national PDBs) and currency risks can incentivise them to seek finance locally, although size and tenure may be smaller.

CONCLUSIONS

The main hypothesis of the study has been confirmed. Namely, that PDBs are underused in the sector and that there is a potential to further enhance their role.

National PDBs can play an important role in achieving both the SDG 6 targets and the water-related Paris Agreement goals. Globally, PDBs are key players in financing investment, with PDB financing representing 8% to 10% percent of global investments. Financial data on the extent of financing for water channelled through PDBs is lacking, but there is historic evidence of the role PDBs have played to support water sector development at scale (and continue to do so) in some countries. In addition, current experience indicates a well-established role for national PDBs in the water sector in certain regions (Europe and LAC in particular).

National PDBs are able to provide a unique range of financial instruments and services. This study confirmed different types of loans that PDBs can provide for infrastructure investments. PDBs are able to provide these at better terms and conditions than commercial banks, particularly to mid-sized utilities and local governments that have a reasonable level of financial performance and capacity to formulate and execute projects. In addition, they provide a range of services for project preparation, performance improvement and technical support in project execution. They are also able to structure and provide co-finance mechanisms with commercial banks and IFIs. This has allowed them to cater for both financial and technical gaps in the sector, at least in certain segments.

Considering the large financing needs of the water sector, there is room for both national PDBs and IFI finance. The study suggests opportunities for IFIs to collaborate with PDBs to reach broader water sector development outcomes. In turn, IFIs' expertise, particularly on project appraisals, can help build PDBs' capacities. This is particularly needed for boosting investments in ecosystem and biodiversity protection.

There is also room for both commercial finance and PDB finance. As discussed, the products and services offered are different. PDBs, for example, can extend a range of technical assistance services and some also extend long maturity loans. There is also some evidence that PDBs can play an active role in mobilising private capital for water. They support the project preparation process – and take on very early-stage risks – and assist with financial transactions and bond structuring/issuance. More research in this area is needed to better understand the role PDBs can play in mobilising private capital for the sector.

There are still many countries where national PDBs either do not have a mandate in the sector or only have a nascent/limited role, suggesting an untapped opportunity for increasing finance for water. A number of key factors are determinant for enhancing their engagement in the sector, particularly a clear mandate with financial allocation and in-house water sector expertise.

Finally, national PDBs are well-placed to address some of the wider challenges in the water sector which limit the ability to mobilise finance. They can provide technical assistance and non-repayable finance for programmes focused at improved performance and enhanced creditworthiness of utilities and local governments. They can also play a significant role in project preparation and support the dialogue on tariffs and cost-recovery. As public institutions, PDBs are well-placed to engage in these types of dialogues, where they can bring compelling evidence to invest in the sector through their financial and technical expertise.

RECOMMENDATIONS FOR ENHANCING PDBS' ENGAGEMENT IN THE WATER SECTOR

The overall recommendations are for governments and IFIs to strengthen PDBs' capacity to prepare and appraise water sector projects and to allocate financing and funding to PDBs earmarked for water investments. At the same time, boosting PDBs' engagement requires supporting demand creation for water financing and addressing water sector inefficiencies and constraints. Specific recommendations are provided for three groups of actors: 1) national PDBs themselves (thereby differentiating between PDBs that already operate in the water sector and seek to enhance that role, and ones that are only involved to a limited extent); 2) governments; and, 3) IFIs. In addition, there are recommendations for further research.

Recommendations for PDBs that are investing in the water sector and seek to enhance that role are to focus on: 1) removing demand-side constraints at sector level; 2) removing demand-side constraints at PDB level; and, 3) increasing supply-side measures. Specifically, this study recommends PDBs to:

- contribute to policy dialogues on sector financing strategies;
- support consultations with clients and sector organisations to help lift some of the important barriers to project bankability;
- adopt a programmatic approach, including the standardisation of processes and contracts, and finance water projects with different risk levels; and,
- articulate an approach towards mitigation and adaptation in the water sector.

Recommendations for PDBs that have the mandate but are not, or only to a limited extent, investing in the water sector are to: 1) ensure that the water sector is seen as a sector of opportunities in the internal strategy of the PDB; and, 2) develop the capacity to finance water sector investments. Specifically, this study recommends PDBs to:

- recognise and map the specific needs and opportunities of the water sector. There are financing needs exist across the sector, from water to sanitation, and across geographical settings;
- articulate the contributions that financing water investments can make to SDG and climate-related targets;
- establish dedicated windows or programmes for project preparation, utility performance improvement and/or technical support in project execution; and,
- develop internal sector expertise, including through South-South cooperation.

Recommendations for national government entities, such as water sector line ministries and agencies, water sector regulators, as well as ministries and regulators in charge of finance are to: 1) enable PDB finance in the sector; 2) strengthen PDB capacity to engage in, and provide finance for, the water sector; and, 3) address water sector inefficiencies through regulatory measures. Specifically, the study recommends government entities to:

- formulate sector financing strategies and define PDB's roles in them;
- engage PDB staff in sector finance strategies;
- provide political leadership for guiding PDB's mandates in the water sector;
- allocate public funds to initiate PDBs to provide water sector investments;
- start with small projects, as a basis for standardising processes;
- have flows of non-repayable finance for certain segments and/or co-financing;
- develop policy and regulatory measures to improve the efficiency and performance of water sector institutions; and,
- develop regulatory measures that incentivise investment and enable private investments.

Recommendations for IFIs are to: 1) support PDBs and governments to implement the recommendations mentioned above for as far as it is within their power and mandate; and 2) direct their financing to the water sector in collaboration with PDBs. Specifically that would include:

- supporting the policy dialogues around sector finance strategies that include defining the role of PDBs;
- supporting evidence and narrative creation on the nexus between the water sector and climate change adaptation and mitigation;
- supporting capacity building in PDBs in the water sector, including by facilitating South-South cooperation;
- channelling loans via PDBs, particularly when PDBs are relatively new to the water sector;
- providing grants, concessional finance and technical assistance to overcome a number of water sector related constraints;
- co-financing larger investment projects with PDBs; and,
- channelling funds for water sector investments through PDBs in local currencies.

RECOMMENDATIONS FOR FURTHER RESEARCH

The findings of the study also raise additional questions. **This section lists important gaps that this report either did not address or did not find detailed answers for.** It is recommended that these be taken up in either country-specific research or more global research. These include:

- measures to increase PDBs' involvement in the water sector in specific countries;
- complementarities between PDBs and commercial banks in the water sector; and,
- attractiveness of ecosystem and biodiversity protection for PDBs.

For a summary of the recommendations see page 41 >

This global report is accompanied by a stand-alone report on Latin America where PDBs have played an important role in supporting the water sector.

PART 1

OVERVIEW & FINDINGS

1. INTRODUCTION

This report is a global assessment of public development banks' (PDBs) involvement in the water sector. It was commissioned by the Agence Française de Développement (AFD) in the context of the Finance in Common Initiative, which seeks to enhance PDBs' role in financing countries' commitments to the Sustainable Development Goals and the Paris Agreement.

1.1 PURPOSE

Reaching SDG 6 and any water-related goal of the Paris Agreement requires significant investments and optimising of public funding allocations. The water sector is presently underfunded and underfinanced.

There is an estimated financing gap of US\$ 114 billion to only achieve universal coverage for water and sanitation. This does not include the need to repair and replace ageing infrastructure or the costs of projected population growth, urbanisation and climate change (Hutton and Varughese, 2016; UNESCO, 2019; Biswas and Seetharam, 2008).

New estimates from the World Bank suggest that achieving SDG targets 6.1 and 6.2 will cost low and middle-income countries US\$ 198 billion a year, with a further US\$ 103 billion required for flood protection (World Bank, 2019).

Achieving universal access to safely managed sanitation services by 2030 will require a fourfold increase in current rates of progress (15 times in least developed countries and nine times in fragile contexts) while achieving universal access to safely managed water services by 2030 will require a fourfold increase in current rates of progress (10 times in least developed countries and 23 times in fragile contexts) (WHO/UNICEF, 2021). See Table 1.

The finance gap for implementing the countries' Nationally Determined Contributions (NDCs) under the Paris Agreement related to water and sanitation is unknown. With regards to water-related ecosystem protection, a recent report recommends an increase in financial flows to watershed protection programmes from US\$ 27 billion to US\$ 104-138 billion annually by 2030 (Deutz et al., 2020).

Table 1: Water supply and sanitation services: the size of the challenge

Sanitation	Water
3.6 billion people lack safely managed services	2 billion people lack safely managed services
Two thirds of people who still lack even basic services live in rural areas. Nearly half of them live in sub-Saharan Africa.	Eight out of 10 people who still lack even basic services live in rural areas. Around half of them live in least developed countries (LDCs).

Source: WHO/JMP 2021

Recognising the potential of national public development banks (PDBs), this study highlights what specific roles PDBs can play in supporting governments to achieve SDG 6 and reaching their commitments under the Paris Agreement.

The main hypothesis of the study is that national public development banks are underused and there is a lot of potential for them to raise finance for achieving both the SDG 6 targets and the water-related Paris Agreement goals.

In order to confirm this hypothesis, the study seeks to understand:

- the extent and nature of national PDBs' operations in the water sector and confirm whether they fulfil the roles mentioned above;
- the drivers and constraints of their involvement, including mandates, water sector needs and the structure of water sector markets; and
- if the hypothesis is confirmed, what can be done for national PDBs to fulfil their potential and enhance their operations in the water sector.

The results of the study will help inform a future course of action for IFIs, PDBs, national and local governments and other development partners seeking to support PDBs in the water sector.

The report contains recommendations on:

- actions to address water sector constraints that limit national PDBs' involvement;
- actions to enhance national PDBs' capacity to deliver financial products for water; and
- what other technical assistance would be useful to mobilise water sector finance via national PDBs.

This report is accompanied by a stand-alone report on Latin America where regional and national PDBs have played an important role in supporting the water sector.

1.2 SCOPE AND DEFINITIONS

What are public development banks?

PDBs are banks located within the public sphere by mandate, ownership or governance. This dynamic definition comprise what public banks do, how they operate and why (WB 2018, FDC 2020, McDonald et al., 2021).

Unlike other kinds of state-owned financial institutions, such as state-owned commercial banks or insurance companies, PDBs have a specific mandate to deliver on public policy objectives that support the economic and social development of a country or region. In some cases, PDBs may also engage in commercial lending and lend to individuals.

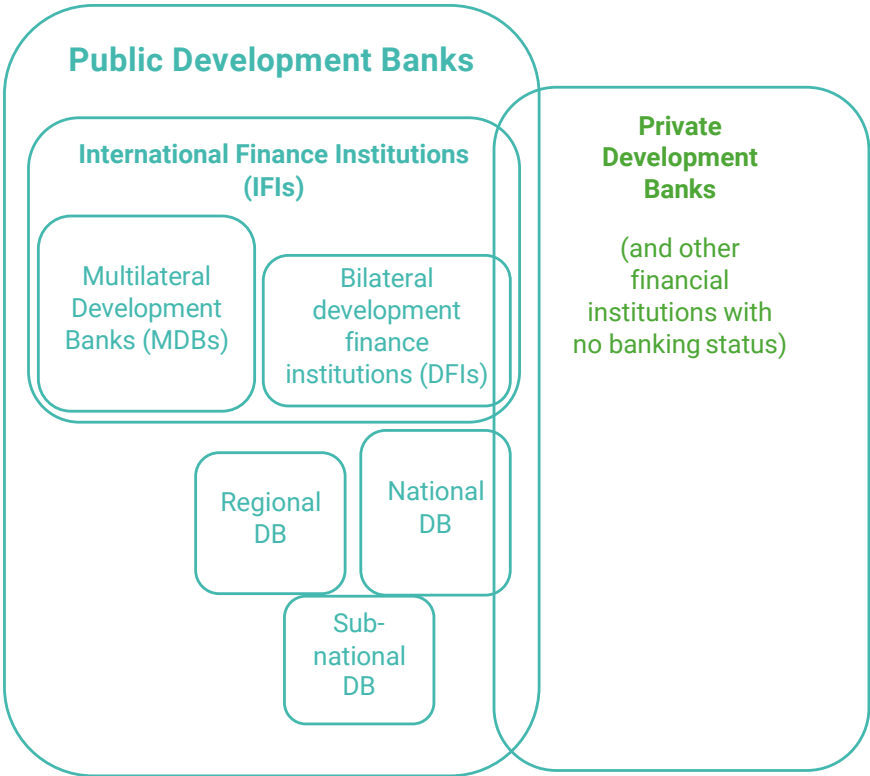
There are an estimated 452 PDBs worldwide (AFD 2020a), 80% is fully government owned and they finance US \$2.3 trillion annually representing 8% to 10% of global public and private investments (UN, 2021).

PDBs can be international, regional, national or sub-national (Figure 1, Box 1). Their sizes vary, but the average assets for both multilateral and bilateral banks are US\$ 149 and US\$ 139 billion respectively; for regional PDBs US \$12 billion; national US\$ 15 billion; and subnational US\$ 12 billion (WWF et al., 2021).

The study particularly focuses on national PDBs (operating at national and local level), but also considers regional PDBs (operating at multi-country level). It also interrogates the role of IFIs in financing the water sector through national and regional PDBs.

Annex 4 compiles the literature review on what is known about who they are, their mandates, the benefits, the challenges and their potential role in financing the water sector.

Figure 1: Public development banks: an overview



Source: authors

Box 1: Definitions of public development banks

Public development banks include international financial institutions (IFIs) conducting development-oriented finance on a bilateral (DFIs) or multilateral basis (MDBs).

- > **Multilateral development banks (MDBs)** are public or private sector arms of international financial institutions (IFIs) that have been established by more than one country, and hence are subject to international law (i.e. World Bank, Asian Development Bank).
- > **Bilateral development finance institutions (DFIs)** are either independent public institutions, such as the Netherlands Development Finance Company (FMO) or the Agence Française de Développement (AFD), or part of larger bilateral development banks (i.e. Kreditanstalt für Wiederaufbau (KfW) Germany, Cassa Depositi e Prestiti (CDP) Italy).

National, regional or local development banks are government owned financial institutions that provide financing for economic development. In this study we focus on national and regional public development banks and call them national PDBs for simplification. In some literature they are also called domestic development banks.

Source: OECD (n.d.)

The main difference between PDBs and commercial banks is usually the target beneficiaries (e.g. municipalities) which are not covered by commercial banks and the ability to provide longer tenor loans, non-reimbursable finance and lower interest rates. PDBs also offer more diversified financial and

non-financial products such as guarantees, policy based loans, technical assistance to local governments etc. For a summary of the discussion on public development banks vs commercial banks see Annex 4 which contains the literature review.

At a more limited scale, the report also considers non-banking institutions that deliver financial services where their activities are complementary to PDBs. For example, it reflects on the role of Water Agencies (Agences de l'Eau) in France, which provide both technical assistance and financial assistance to help deliver government water sector policy objectives.

What is considered the water sector?

This study considers the water sector at large, i.e. the water and sanitation infrastructure (production, distribution) and services, multipurpose infrastructure (irrigation canals, agriculture, flood protection) and water resources management, including nature-based solutions as well as water-related ecosystem protection, which contribute to achieving SDG 6 and the Paris Agreement (see Box 2 for definitions).

It also takes into account investments contributing to biodiversity protection where this is achieved through water-related investment, such as the development of wastewater treatment facilities.

Box 2: Definition of key terms considered under the broader 'water sector'

Water services. Activity of planning, developing, distributing and managing access to sufficient, safe, physically accessible, and affordable water to all the people in a defined service area.

Sanitation services. Sanitation services refer to the management of excreta from the facilities used by individuals, through emptying and transport of excreta for treatment and eventual discharge or reuse.

Water resources management. Activity of planning, developing, distributing and managing the optimum use of water resources. Might include drought management and flood control.

Water-related ecosystem protection. Activity related to restoring and protecting water-related mountains, forests, wetlands, rivers, aquifers and lakes.

Nature-based solutions. Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience (European Commission definition).

Multipurpose infrastructure. Encompasses all constructed water systems, including dams, dikes, reservoirs and associated irrigation canals and water supply networks, which may be used for more than one purpose for economic, social and environmental activities.

Biodiversity protection. Action of protecting the variety of life on Earth, including plants, animals, fungi, microorganisms, the habitats in which they live and ecosystems they form.

1.3 FOR WHOM IS THIS DOCUMENT?

Public policy and financial stakeholders are the main audience for this study. They include staff of PDBs as well as other non-water experts, particularly ministries of finance and treasury.

The study provides suggestions on how to advance PDB support, including support to the enabling environment of the water sector, i.e. support to the institutions and the regulatory and policy environment in which PDBs operate and incentives linked to financing mobilisation.

The study also targets water-specialised institutions such as water sector regulators, public water operators, municipal water managers and ministries responsible for water, to raise awareness of the potential role of national PDBs and bring them up to date on how to raise domestic resources via PDBs. The study makes recommendations on how water-specialised institutions' roles can be more impactful on PDBs and help shape their agenda for the future.

The findings are also relevant for PDBs themselves. As the study highlights PDBs' activities in the water sector, it also describes enabling operational modalities, the role of central government and international finance institutions (both MDBs and DFIs) and therefore holds lessons for PDBs seeking to increase their operations in water.

1.4 RATIONALE FOR THE STUDY

Historically, national PDBs have played a significant role in water sector development in high-income countries such as France, Italy and the Netherlands (Box 3). PDBs also play a key role in several upper middle-income countries that are part of this review (see Annex 1 Case Studies).

From the post World War Two era to the beginning of the structural adjustment period, development banks were regarded as the centrepiece of a development strategy even if they were often providing mixed results (Wagner, 2020).

This role has also been highlighted in the Addis Ababa Agenda for Action on financing sustainable development agreed in July 2015 (UN, 2015). In its roadmap for the financing of the SDGs, the UN made it a priority to strengthen its engagement with national development banks so as to enhance their role in SDG and climate finance. This means supporting them to identify SDG investment opportunities, strengthen their capacity to issue SDG bonds and similar financial products and promote the implementation of Environment, Social and Governance (ESG) standards (UN, 2019).

As financial institutions with a public mandate, PDBs can play a role in increasing and improving financial allocations to the water sector (see literature review in Annex 4). PDBs can fulfil this role in multiple ways, including by:

- channelling finance to sectors that bring social, environmental and economic returns that are not attractive to commercial banks;
- acting as a catalyst in policy dialogue for SDG goals achievement;
- tailoring financial products suitable for the water sector, which often requires long-term capital with favourable terms and tailor made arrangements;
- channelling funds and expertise for project preparation in order to bring water projects to bankability stage;
- designing financial products able to attract third parties, particularly private sector investors and commercial banks.

PDBs have proven to provide a countercyclical role contributing to restoring the financial and economic stability. This happened during the 2008/9 global financial crisis and more recently during the Covid-19 crisis. Development banks have been able to provide urgent support to health systems and economic activity more generally, with some doubling their funding volumes to support the most affected sectors (UN, 2021).

In the water sector, the largest IFIs have made repayments more flexible and created specific credit lines. PDBs are able to play this role because of their longer time horizons and more stable funding sources.

Box 3: A historical perspective: the cases of CDP (Italy) and NWB (Netherlands)

Cassa Depositi e Prestiti (CDP), Italy. CDP was established in 1850 with the main purpose of mobilising private savings managed by the State for financing public works. As of 2021, 83% of its share capital is owned by the Italian Ministry of Economy and Finance, the 16% is held by various banking foundations, while the remaining 1% is in treasury shares. Since its creation, CDP has played a major role in financing local development, especially through the provision of debt to municipalities. Compared to other institutions, CDP offered better interest rates, duration times spread according to the nature of works and long tenures (up to 50 years). This made CDP a key financial partner for Italian municipalities looking to expand basic infrastructure, including water and sanitation services. In Milan for example, CDP's involvement dated as far back as 1906 when it provided 35-50 years payback period loans to the city of Milan for multiple sectors, including water. At that time, the Italian Central Government did not provide any transfers to municipalities who had to finance infrastructure development from their own resources (primarily local taxes) and repayable finance. At the time CDP also provided short-term debt to the municipality to cover interest rates payments from loans contracted from commercial banks.

Nederlandse Waterschapsbank (NWB), Netherlands. The NWB Bank was officially established in 1954, with a mandate to provide the Dutch Water Authorities (DWA) with funding for investments at the lowest possible cost. In its first five years, the NWB issued 323 long-term and 919 short-term loans. The NWB was capitalised mainly through private loans provided by institutional investors and banks, allowing the DWA to attract resources on relatively favourable terms. In 2021, 81% of the NWB is owned by the DWA, 17% by the Dutch state and 2% by the provinces. The NWB provides the DWAs with: i) long-term loans; ii) financial services; iii) a central treasury function; iv) centralised financial expertise; and v) low interest rates. Nowadays the NWB does not focus only on the water sector: 63% of its investments are on social housing and 14% in water authorities. In 2006, the NWB established the NWB Fund to finance support to water management projects in developing countries (Dutch Water Authorities, 2015).

Source: Crespi Reghizzi, 2012; Havekes & Dekking, 2014; and Dutch Water Authorities, 2015)

1.5 DATA SOURCES AND LIMITATIONS TO THE STUDY

This study is mostly based on grey literature review (Annex 4) and the analysis of PDB datasets commissioned by AFD (2020a and 2020b). The datasets provide a quantitative insight into the number and nature of existing PDBs in the world, the size of their assets and an indication if they are involved in SDG 6 related financing.

In addition, the study included in-depth reviews of 13 national public development banks and 16 IFIs, development finance institutions (DFIs) and multilateral development banks (MDBs), that are known to operate in the water sector. The selection was based on their geographic spread, size and availability to take part in the study (Annex 2). The reviews were based on interviews with senior technical and financial staff and complemented with documentation reviews, in particular PDBs' annual and strategic reports.

For more in-depth information, case studies were written up on the PDBs, the context in which they operate and their operations in the water sector. These case studies are presented in Annex 1. A separate report on PDBs in the water sector in Latin America is also available as this region has some of the best-known cases of PDBs involved in the water sector.

Specific challenges and opportunities of national water sectors were also quickly scanned to highlight factors that currently contribute to PDBs' involvement. These factors include water sector needs (which provide project opportunities for banks), water and sanitation services institutions and sector market structures, all of which influence the degree of service decentralisation and private sector participation (either as investor or service provider) in the delivery of services.

Despite this broad coverage, the study does have some important limitations. Time and resource constraints limited the depth of the assessment of the financial context, particularly issues related to financial regulations, debt servicing, liquidity and competition.

The study is also constrained by data availability. Not all the reviewed PDBs were able to precisely disclose or disaggregate the volume of investments and other financial/non-financial services going to the water sector. Many were able to share the order of magnitude of their investments in water, but more detailed information was not always available. This is the case when PDBs do not track water investment separately, but as part of overall infrastructure investments, municipal services and/or environmental services. PDBs may also be reluctant to fully disclose the nature of their activities for confidentiality reasons. As a result, the case studies presented in Annex 1 vary in the level of detail presented.

The study focused on PDBs that were involved in financing water-related investments and excluded PDBs that were not involved in the sector at all. To answer the research questions, the study had to select PDBs currently working in the water sector. This means that the research cannot draw conclusions on the reasons why PDBs are not involved at all in some countries.

Interviews with AFD staff were carried out on PDBs in two additional countries, but the PDBs were excluded as case studies given their limited involvement in water. Some lessons from these cases are highlighted in section 3.4.

1.6 REPORT STRUCTURE

The structure of this report strives to target different audiences, ranging from more generalist to more specialised as follows.

Part 1 Overview and findings

- Section 1 sets the purpose, scope, audience, rationale and limitations of the study.
- Section 2 presents a global landscape of national PDBs and their involvement in water.
- Section 3 brings together the main findings of the study based on the PDBs case studies.
- Section 4 summarises the findings and interviews with the IFIs.
- Section 5 presents the conclusions.
- Section 6 formulates recommendations on the way forward for different stakeholders.

Part 2 Analysis

- Section 5 takes a closer look at national PDB activities in the sector, drawing on case studies of selected PDBs.
- Section 6 discusses how, at present, IFIs interact with national PDBs in the water sector.

Part 3 Case studies, methodology, terminology and references

- Annex 1 includes the selection of case studies.
- Annex 2 presents the methodology and the list of organisations and individuals interviewed as part of the study.
- Annex 3 describes key banking and finance terminology used in this report.
- Annex 4 contains findings from a literature review that addresses the different areas of the report.

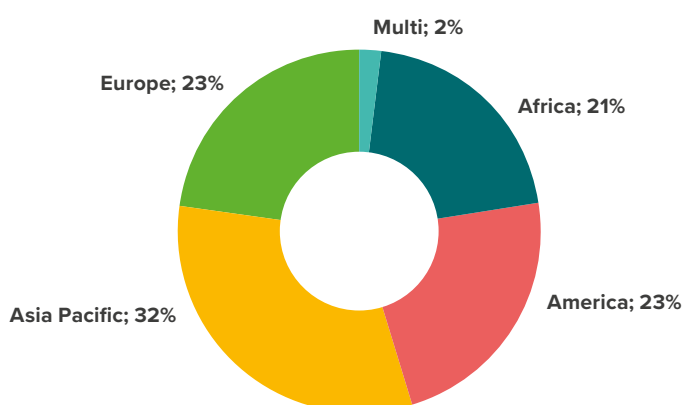
2. PUBLIC DEVELOPMENT BANKS: A GLOBAL LANDSCAPE

This section provides an overview of PDBs globally and their roles in implementing government agendas related to the SDGs and Paris Agreement. It draws primarily on the analysis of the AFD PDB database (2020a).

2.1 GEOGRAPHICAL SPREAD

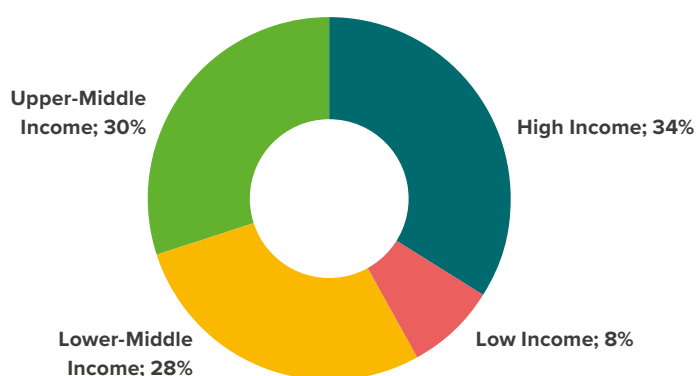
The AFD (2020a) database has identified 452 PDBs globally. These include national PDBs as well as regional and international institutions. The oldest PDB is Caisse des Dépôts et Consignations (CDC) created in France in 1816. The newest is the Scottish National Investment Bank created in 2020. The majority of PDBs are based in the Asia Pacific (Figure 2) and in high-income and upper middle-income countries (Figure 2).

Figure 2: PDBs geographical spread



Source: AFD database (2020a)

Figure 3: PDBs per countries' level of income

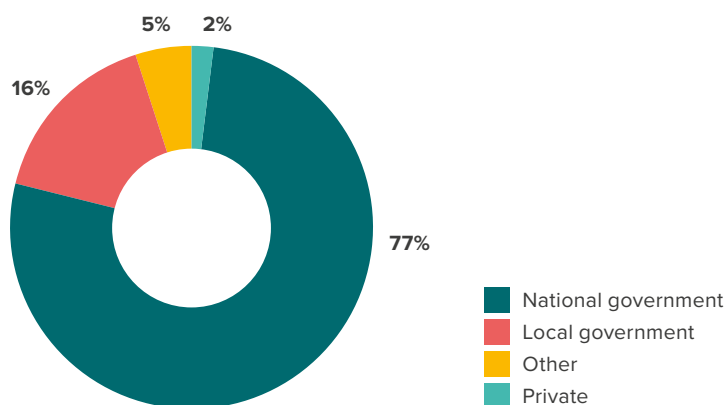


Source: AFD database (2020a)

2.2 OWNERSHIP

The large majority (80%) of the PDBs is 100% government owned, either by national governments (66%) or local government (14%). The breakdown of primary ownership (more than 50%) is illustrated in Figure 4.

Figure 4: PDBs primary ownership (more than 50%)



Source: AFD database (2020a)

2.3 ASSETS

In total, in 2020, PDBs owned US\$ 11,586,088 million in assets, with net profits of US\$ 48,178 million (AFD, 2020a). Most of the assets and net profits are from PDBs located in Eastern Asia PDBs (Table 2). The top 10 PDBs own 59% of overall PDBs assets, the top 20 PDBs own 75% of overall assets.

Table 2: Top regions, PDB asset ownership and net profits

Region	Assets (%)	Net Profit (%)
Eastern Asia	43%	44%
Western Europe	24%	23%
Multi	8%	5%
South America	7%	6%
Southern Europe	5%	8%
North America	3%	2%
Western Asia	2%	3%
Central America	2%	1%
South Eastern Asia	1%	4%
Southern Asia	1%	3%
Eastern Europe	1%	-4%
Northern Africa	1%	1%

Source: AFD database (2020a)

Table 3: Top 20 PDBs in the World (measured by assets, million US\$)

Country	Bank	Acronym	Mandate	Assets (mln US\$)
China	China Development Bank	CDB	General	2,352,293
China	Agricultural Development Bank of China	ADBC	Agriculture	996,287
Multi	European Investment Bank	EIB	General	636,687
China	Export-Import Bank of China	ChinaExim	Export/Import	609,695
Germany	Kreditanstalt für Wiederaufbau	KfW	General	560,899
Italy	Cassa Depositi e Prestiti	CDP	General	486,953
Multi	International Bank for Reconstruction and Development	IBRD	General	403,056
Brazil	Caixa Econômica Federal	CAIXA	Housing	325,863
Canada	Caisse de Dépôts et Placement du Québec	CDPQ	General	256,518
Korea	Korea Development Bank	KDB	General	233,562
Brazil	Banco Nacional de Desenvolvimento Econômico e Social	BNDES	General	206,787
Multi	International Development Association	IDA	General	201,591
Japan	Japan Finance Corporation	JFC	Micro, SMEs	192,210
Multi	Asian Development Bank	AsDB	General	191,860
France	Caisse des Dépôts et Consignations	CDC	General	186,727
Germany	Development Bank of Hessen-Thuringia	HELABA	Micro, SMEs	186,688
Germany	North Rhine-Westphalia Development Bank	NRWBank	Micro, SMEs	170,801
Japan	Japan Bank for International Cooperation	JBIC	General	164,172
Netherlands	BNG Bank Nederlandse Gemeenten	BNG	Local	157,523
Japan	Development Bank of Japan	DBJ	General	154,512
			Total	8,674,684

Source: AFD database (2020a)

3. NATIONAL PDBS INVOLVED IN THE WATER SECTOR: FINDINGS FROM THE CASE STUDIES

3.1 OVERVIEW OF NATIONAL PDBS IN THE CASE STUDIES

In total, 13 national and regional PDBs with operations in the water sector, have been interviewed and reviewed (Table 4). All but one are 100% publicly-owned. CDP Italy is the only one with a share of privately owned capital (17%). The PDBs vary significantly in size, with assets ranging from US\$ 2 billion (Banco de Desarrollo del Ecuador) to US\$ 487 billion (Cassa Depositi e Prestiti, Italy). See Annex 2 for the criteria for selecting these PDBs.

Table 4: Overview of national and regional PDBs case studies (organised per asset ownership). All data are from 2019

Country	Bank	Acronym	Assets (mln US\$)	Level of Income	Year established	S&P credit rating
Italy	Cassa Depositi e Prestiti	CDP	486,953	High	1850	BBB
Brazil	Banco Nacional de Desenvolvimento Econômico e Social	BNDES	206,787	Upper-Middle	1952	BB-
France	Caisse des Dépôts et Consignations	CDC	186,727	High	1816	AAA
Netherlands	Nederlandse Waterschapsbank	NWB	95,900	High	1954	AAA
Mexico	Banco Nacional de Obras y Servicios Públicos	BANOBRAS	42,918	Upper-Middle	1933	BBB+
Morocco	Caisse de Dépôt et de Gestion	CDG	26,255	Lower-Middle	1959	n.a.
Brazil	Banco do Nordeste do Brasil	BNB	15,107	Upper-Middle	1952	BB-
Vietnam	Vietnam Development Bank	VDB	14,018	Lower-Middle	2006	n.a.
South Africa	Development Bank of Southern Africa	DBSA	6,202	Upper-Middle	1983	AA+
Turkey	İller Bankası	İlBank	6,093	Upper-Middle	1933	n.a.
Indonesia	PT Sarana Multi Infrastruktur	PT-SMI	4,344	Lower-Middle	2009	AA
France	Agence France Locale	AFL	3,623	High	2013	AA
Ecuador	Banco de Desarrollo del Ecuador	BDE	2,371	Upper-Middle	2015	n.a.

Source: AFD database (2020a)

Most national PDBs included as case studies have relatively good international ratings. This indicates a strong financial position and a capacity to mobilise finance in general, and for water specifically, from multiple sources. Credit rating data is, however, not available for all of them.

National PDBs in the cases studies represent a mix of young and old institutions. CDC (France) and CDP (Italy) are the oldest ones, with operations dating back to the late nineteenth century. At the opposite end, BNB (Brazil) and AFL (France) have only been in operation since 2015 and 2013 respectively. Such young institutions may face the constraints of limited liquidity, product offering and credit lines as well as limited market knowledge and experience. By contrast, older institutions have strong ties with their client base and can have a stronger capacity to deploy new products.

3.2 WHAT IS THE EXTENT OF NATIONAL PDB INVOLVEMENT IN THE WATER SECTOR?

The case studies confirm that national PDBs are key players, both historically and currently, in financing water in the countries where they operate. Europe and Latin America and the Caribbean (LAC) have very active PDBs in the sector. They channel finance directly to water sector investors, local governments, public utilities and projects operated by public and private operators. They also play a role in attracting private investors through project structuring support and co-financing for project finance and blended finance vehicles.

While fewer in number, some countries in other regions also have national PDBs that finance water-related investments.

The sub-sectors to which most of the financing goes depend on the historical mandate of the national PDBs and the level of development or maturity of the water sector.

The national and regional PDBs included in this study have a strong focus on financing sanitation and water supply services. PDBs predominantly fund sewerage and wastewater treatment expansion as well as large water treatment and desalination works. They are involved to a much lesser extent in water resources management, including stormwater and flood management.

Ecosystem and biodiversity protection does not seem to be areas of investment of national PDBs in the sector. Rather, biodiversity protection is usually considered through a 'do no harm' lens or as a positive side-effect of investments (e.g. in wastewater treatment).

The extent to which PDBs are engaged in providing water-related financing can be measured in two ways.

- **Water-related investments as a percentage of the PDBs' overall portfolio.** Though comparative figures are not always available, this ranges from a few percent up to 37% (BDE - Ecuador). The relative size is as much a result of a PDB's historical and current mandate, as a reflection of the demand. Water sector investments in a broad sense represent on average between 5% and 15% of PDBs' portfolios.
- **PDB financing as percentage of all investment flows in the water sector.** This number is available only for two countries (Brazil and the Netherlands) and is estimated to be around 10%. In both these countries, tariffs are the main source of finance for the sector and are used by local governments and utilities for 'regular' investments, such as the gradual expansion of services. Tariffs also represent the revenue flow against which local governments and utilities can take on loans. Public finance is a key financial flow for investments in the water sector, particularly for investments in low-income areas or where the municipalities and utilities are small.

There is very limited overall data available on the absolute amounts invested by or the size of investments of PDBs in the water sector compared to other sources of financing and funding for the sector.

3.3 WHAT IS THE NATURE OF NATIONAL PDB INVOLVEMENT IN THE WATER SECTOR?

Based on the case studies (Annex 1), the nature of national PDBs involvement in the water sector includes one or more of the following.

- Providing credit for infrastructure investments in different forms: 1) balance sheet credit; 2) credit to local governments and utilities for specific investments; 3) project finance, usually directed to private sector entities, which may set up dedicated Special Purpose Vehicles (SPVs). This is the core set of financial products of all PDBs reviewed in this study.
- Structuring project finance – including co-financing mechanisms and private-public partnerships (PPPs) for the operation of water and sanitation services. Whereas the previous point refers to credit provision, technical assistance is often involved in structuring the financing and co-financing of more complex investments.
- Project preparation, either grant-funded or through loans that are repayable if the project preparation leads to a bankable project. The extent to which PDBs offer this service depends very much on the extent to which they have non-repayable funds available.
- Technical assistance (capacity strengthening) to utilities and local governments, oriented at their technical and financial performance improvement. This is done with the dual aim of making the utilities and local government more creditworthy, and of strengthening investment sustainability. While this service is considered very important, not all PDBs have the ability to provide it as it is usually funded through non-repayable finance.
- Influencing sector reforms and sector dialogue for improving regulatory frameworks and funding related studies. Only a few PDBs were involved in national level reforms.
- Channelling central government transfers to local governments and utilities (from taxes or sovereign loans). Only a few PDBs mentioned this role.
- Administering dedicated trust funds for the water sector. In some cases, these are trust funds set up at the request of national government or external financiers. The PDBs may or may not replenish these funds out of their own profits. This was mentioned by only two PDBs.

Loans are the main financial instruments deployed by PDBs in the water sector. Some of the ways in which PDBs use this type of financial instrument include the following.

- Through loans, national and regional PDBs:
 - finance investments, such as the major expansion of sewerage and treatment networks, potabilisation and desalination plants and sewerage treatment plants;
 - finance mid-sized towns and utilities which are more creditworthy than smaller municipalities and rural areas, but are not able to negotiate favourable loans directly with IFIs or commercial banks. In several countries (e.g. Ecuador, Philippines, Brazil), larger utilities can obtain loans from commercial banks or IFIs on more favourable conditions, while smaller municipalities and their utilities are not creditworthy at all, not even for PDBs.
- PDBs can channel sovereign loans from IFIs to smaller municipalities and utilities.
- PDBs can finance climate change adaptation investments with financing sourced from climate funds, given that few PDBs are accredited to manage such funds.
- In cases where both the financial markets and the water sector are mature, PDBs also support utilities to access international capital markets through bond issuance.

Whilst PDBs have the mandate to address climate change – and some do access international funds for this purpose – water is either not yet seen as a key priority area in this regard, or is incipient. The link between climate adaptation and mitigation finance for the water sector is not clear for PDBs who allocate funds to more ‘classic’ renewable energy projects. For example, BDE (Ecuador) is in the process of being accredited to source climate funds. It is seeking to use these in the water sector, but is still identifying how adaptation projects need to be formulated and defined in the water sector.

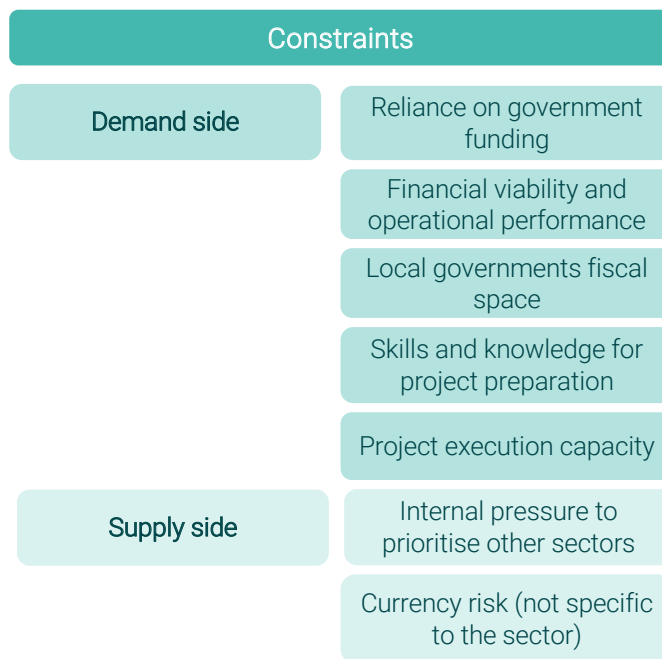
In middle-income countries such as Turkey, South Africa, Brazil and Mexico, PDBs play a critical role early on in the project preparation stage. Not only are PDBs proactive in generating demand for water projects, but they can also finance feasibility studies or small pilot projects that can be replicated at scale. Sector expertise and knowledge acquired by PDBs enable them to support the implementation of large-scale water projects through to completion. These PDBs have dedicated technical departments with water specialists.

From the sample in this study and interviews, it appears that the main segment that PDBs cater for are intermediate water utilities. In several countries (e.g. Brazil, Philippines), experts commented that larger utilities can get loans from commercial banks or IFIs at more favourable conditions, whereas smaller utilities are not creditworthy at all, not even for PDBs.

3.4 WHAT ARE THE CONSTRAINTS FOR NATIONAL PDBS INVOLVEMENT IN THE WATER SECTOR?

Constraints have been identified from the demand side of finance from PDBs to the water sector and from the supply side, on the availability of finance (Figure 5).

Figure 5: Summary of constraints for national PDB involvement in the water sector



On the demand side

In some countries, national PDBs' role in the water sector is only now emerging given the historical reliance of utilities and municipalities on central and/or local government funding. This is the case for Indonesia, Morocco, Southern Africa and others. In these countries/regions, until recently the bulk of water sector investments was mobilised via national and/or local government funding and IFI financing, which has limited PDBs' opportunities. Historical reliance on central government funding has also made the water sector a lesser priority investment area, therefore inhibiting demand. In Indonesia, for example, PT SMI has not requested financing for water projects through its public finance facility.

'Demand for water sector financing is relative – if we have a higher level of projects there will be other projects and collaboration as the portfolio grows – but someone needs to start' – National PDB

There are many risks related to the financial and operational performance of municipalities and utilities. Lower middle-income countries' PDBs face additional constraints which limit their involvement in the water sector. Many countries do not have cost-reflective water and sanitation services tariffs, nor a regulatory framework to enforce such tariffs, whilst also facing service provision inefficiencies (e.g. poor revenue collection, high non-revenue water). This is the case in Mexico. This means the revenue flow to repay loans is seen as insufficient. For that reason, some PDBs have dedicated financing and programmes to improve the performance of utilities and municipalities as prospective borrowers. This is not the case in all countries. In high-income countries, the water sector is seen as low risk, exactly because there are frameworks in place that ensure a stable revenue flow from tariffs.

Most countries set limits on local government debt or spending in the sector through fiscal discipline legislation (also known as fiscal space). Several PDBs note strict caps on local government debt as one of the factors affecting investments in the water sector. This particularly affects smaller municipalities which typically have lower revenue flows to take on debt.

Limited skills, knowledge, data and studies in the sector, combined with the limited capacity of utilities/municipalities to formulate projects, mean that it can take three to five years for projects to originate and source financing. To address this constraint, several PDBs have dedicated financing to project preparation.

Limited capacity for project execution. Borrowers also need to have the capacity to execute projects and have processes in place for tendering, contracting, procurement, supervision of works etc. This capacity may differ among borrowers. Generally, smaller municipalities and utilities have less capacity than mid-sized and larger utilities. For that reason, PDBs do not only finance the investment, but also provide technical assistance in execution where needed. Where the borrowers have the capacity – for example in the Netherlands – the role of the PDB is limited to providing finance.

On the supply side

There is internal pressure to prioritise sectors in which investing is easier and more profitable (e.g. energy and transport). Whilst national PDBs have the mandate to implement government policy and take on risks, they also need to balance their books. This means that they can be less proactive at sourcing projects in sectors deemed riskier, such as water, or with which they are less familiar. Several interviewees commented on the fragmented and decentralised nature of the water sector, with roles spread among utilities and local government. This makes it more difficult to finance than sectors that are more centralised and concentrated in fewer institutions. PDBs are also aware of the strong political influence in the water sector in their countries and question the financial security of water providers and water projects.

Currency risk was not mentioned as a major constraint and it is not specific to the water sector. However, it is a limitation mentioned by some of the PDBs. There is always currency risk for PDBs that get finance from external sources in a foreign currency. Some IFIs offset this risk by lending in the local currency, but most of the currency risk is managed by PDBs and their SWAP teams.

Box 4 provides additional insights into factors limiting PDBs' involvement in water.

Box 4: Potential factors limiting PDBs' involvement in water

PDB involvement in the water sector is almost non-existent in some countries. Interviews carried out in these countries mentioned the following contributing factors.

- Water sector market structure: in many countries, central government is still actively involved in planning and directly funding investments, even though local governments have been devolved the responsibility for the sector. As a result, the market for PDBs in that sector is non-existent. This is the case in Egypt, for example, where water security is a key strategic investment area for the national government. In these contexts, private sector investments are also limited.
- PDBs' financial position and credit rating: PDBs with a weak financial position and low credit rating are not in a good position to attract investments and therefore have less liquidity, limiting their ability to expand to sectors which they are not traditionally familiar with.
- Weak environmental regulations: sanitation investments, such as for the improvement of wastewater discharged by industries, are potentially low-hanging fruit for PDBs already familiar with these industries. However, in contexts of weak environmental regulations, incentives to carry out such investments are also weak, implying limited opportunities in this area.
- Water sector risks: water projects' financial viability is a concern for PDBs where tariffs do not reflect the costs of the services provided.

3.5 WHAT ARE THE DRIVERS FOR NATIONAL PDB INVOLVEMENT IN THE WATER SECTOR?

The case studies (Annex 1) highlight some 'success factors' or drivers behind PDBs' active role in water. The most critical factors are discussed in this section.


PDBs need a clear mandate in the water sector and the financial means to implement this mandate. This means that water needs to be a key strategic objective, and that there needs to be allocation of financial and human resources to support and develop projects in the water sector. Caisse des Dépôts (France) and DBSA (South Africa) have, for example, dedicated financial products to the sector. Caisse des Dépôts' Aqua Prêt has been allocated an envelope of EUR billion 2 to be spent by the end of 2022. DBSA approaches water programmatically with a clear policy objective and a matching financial envelope.

If they are to play an active role in water, PDBs need to develop sector expertise. This expertise includes the type of financial products appropriate to the sector and how to generate demand for and build portfolios on bankable projects. This needs to be done across all branches of the PDBs and institutionalised through standardised approaches and procedures. Several of the revised PDBs in Latin America have sector experts among their staff and/or dedicated units responsible for water projects.

The PDBs most involved in the water sector mentioned other relevant drivers. One of these is that PDBs involved in the water sector have a strong relationship with their client's base and contribute to improvements in the water sector. Some PDBs offer financial products either tied to operational performance conditionalities (i.e. Caisse des Dépôts' Aqua Prêt, France) or which specifically target improvements in service efficiency (i.e. DBSA's non-revenue water programme, South Africa).

Some PDBs are actively engaged in national dialogues on policy or regulatory reform. PDBs offer their perspectives on financial products, policy and regulatory constraints and project viability and can ultimately help tailor solutions, including the development of national programmes for water (i.e. Caisse des Dépôts in France, BNDES in Brazil, BANOBRAS in Mexico and DBSA in South Africa).

Some PDBs are attracting private sector finance. PDBs are taking on the risks of early-stage project preparation (PT SMI, Indonesia), but are also providing credit enhancement products (e.g. guarantees) to facilitate access to commercial finance (DBSA, South Africa).



In general, the difference of PDB financing as opposed to that of domestic private banks concerns the conditions offered and the non-financial instruments made available by national PDBs. Technical assistance to local governments and utilities is an added value, as are the conditions for loan repayment. One of the most relevant aspects to the water sector is that PDBs are instrumental in implementing multi-sector projects that are cross-subsidising in nature. This allows for the mutualisation of risk between lower (larger utilities) and higher credit risk borrowers (smaller municipalities), and lower and higher risk sectors too, enabling smaller borrowers to access more favourable conditions.

The other relevant aspect of PDB compared to commercial bank financing is that national PDBs use government and donor grants, concessional loans from IFIs and in some cases commercial loans from the local banking sector (blended finance). Moreover, they use specific funding tools such as revolving funds for this purpose. The blending is not aimed only at increasing financial resources to the sector but also lowering the interest rates of loans to the local government and utilities.

4. IFIS FINANCE TO THE WATER SECTOR THROUGH NATIONAL PDBS

This section draws on interviews with 16 of the largest multilateral international and regional development banks to cover regional representation (Table 5). The total assets of these 16 banks amount to 18.6% of the assets of all PDBs (AFD, 2020a). Representation from Asia is weak in the sample as the research team had difficulties in establishing contacts.

The institutions covered in the study include:

- bilateral development financial institutions focused at global level: KfW, AFD;
- multilateral banks focused at global or continental scale. These have always had a very broad multi-sectoral mandate: IDA/WB, AfDB, ADB, IsDB, EIB, IBRD, EBRD, CAF;
- sub-regional banks that historically have a broad multi-sectoral mandate: CABEL, BOAD, CEB;
- sub-regional and binational banks with historically specific geographical or sectoral mandates: FONPLATA and NADB.

Table 5: List of IFIs interviewed for the study (organised by assets)

Region	Bank	Acronym	Assets (mln US\$)
Western Europe	European Investment Bank	EIB	636,687
Western Europe	Kreditanstalt für Wiederaufbau	KfW	560,899
Multi	International Bank for Reconstruction and Development	IBRD	403,056
Multi	International Development Association/World Bank	IDA/WB	201,591
Multi	Asian Development Bank	AsDB	191,860
Latin America	Inter-American Development Bank	IADB	129,459
Western Europe	European Bank for Reconstruction and Development	EBRD	70,853
Western Europe	Agence Française de Développement	AFD	49,107
Multi	African Development Bank	BAD	46,960
Latin America	Banco de Desarrollo de América Latina	CAF	40,014
Western Asia	Islamic Development Bank	IsDB	30,658
Western Europe	Council of Europe Development Bank	CEB	27,892
Latin America	Banco Centroamericano de Integración Económica	CABEL	10,850
Western Africa	Banque de Développement des Etats de l'Afrique de l'Ouest	BOAD	4,485
North America	North-American Development Bank	NADB	1,959
Latin America	Fondo Financiero para el Desarrollo de la Cuenca del Plata	FONPLATA	1,043

Source: AFD database (2020a)

IFIs investments through PDBs in the water sector are not widespread. The channels of IFI financing to the water sector depend on how the water sector is structured. In many developing countries where the central government continues to play an important role in water sector funding, IFIs typically provide sovereign loans to a central ministry of finance, which then passes them on as grant/loans to line ministries and/or utilities and local governments. In other countries, where decentralisation is effective, some IFIs also provide sub-sovereign loans directly, typically to metropolitan utilities, local government and specific projects.

IFIs' financing for water through PDBs is conditional on the presence of national PDBs in the first place, and whether they have a clear mandate for water. Some countries either have no national PDB in place or only nascent PDBs. Some sub-regional IFIs operate in countries where there are no domestic PDBs. In these cases, IFIs provide loans directly to local governments or utilities. For example, none of the borrowing member countries of the Central American Bank for Economic Integration (CABEI) have national PDBs that are involved in water. This also applies to most of the member countries of Fondo Financiero para el Desarrollo de la Cuenca del Plata (FONPLATA).

IFIs that provide loans to national PDBs for the water sector do so for on-lending to municipalities and service providers. Lending can be earmarked for water or for multiple-purpose municipal projects. The rationale for financing through PDBs is that they are able to reach a broader geographical scope and therefore reach more beneficiaries than IFIs would. National PDBs can also target smaller municipalities and utilities, extending smaller loans while IFIs often cannot extend loans below a certain amount. National PDBs can also provide credit lines in the local currency, which is often a limitation for IFIs.

Water sector loans provided through national PDBs are larger than other loans to the sector, with IFIs being able to shift most of the lending risks to PDBs (often backed by sovereign guarantees). PDBs manage the currency risk since most of the water projects are financed in local currencies while the IFIs mostly finance in hard currencies.

Investing in the water sector through national PDBs gives value for money to IFIs in terms of outcomes achieved relative to the size of the loans they provide. By working with national PDBs, IFIs also put less time and resources into water project preparation. In these cases, IFIs work upstream with finance institutions and regulators and not directly with municipalities or service providers. It is then national PDBs that take on the responsibility for project preparation and ensure that all sub-projects comply with IFI standards and procedures.

National PDBs are also a good solution for investments in the sector when IFIs do not have local offices. National PDBs can actively contribute to project origination, preparation and monitoring on behalf of IFIs. Additionally, the collaboration with PDBs contributes to capacity reinforcement and increases the autonomy of the countries' financial systems in terms of processes and international standards – which then benefits many other sectors.

From a national PDB perspective, working with IFIs also has benefits. IFIs often have a good credit rating, and can therefore attract capital at interesting rates, which allows national PDBs to on-lend at lower rates. Other attractive benefits include the potentially large size and long tenure of IFI finance, and that PDBs co-finance larger and complex projects with IFIs.

However, in some contexts, national PDBs have access to cheaper finance from local markets. This is the case in some LAC and Asian countries (e.g. Brazil, Philippines) where local capital markets are well developed. The combined effect of IFIs lending procedures and conditionalities (which represent opportunity costs for national PDBs), and currency risks can incentivise PDBs to seek finance locally, even though size and tenure may be smaller.

5. CONCLUSIONS

The main hypothesis of the study was confirmed: namely that PDBs are underused in the sector and that there is a potential to further enhance their role.

National PDBs can play an important role in achieving both the SDG 6 targets and the water-related Paris Agreement goals. Globally, PDBs are key players in financing investment, with PDB financing representing 8% to 10% of global investments. There is little financial data on the extent of financing for water channelled through PDBs, but there is historic evidence of the role PDBs have played and continue to play in supporting water sector development at scale in some countries. In addition, current experience points to a well-established role for national PDBs in the water sector in certain regions such as Europe and LAC.

National PDBs provide a unique range of financial instruments and services. This study confirmed different types of PDB loans for infrastructure investments. PDBs are able to provide these at better terms and conditions than commercial banks, particularly to mid-sized utilities and local governments that have a reasonable level of financial performance and capacity to formulate and execute projects. In addition, they provide a range of services for project preparation, performance improvement and technical operational support. They are also able to structure and provide co-finance mechanisms with commercial banks and IFIs. These advantages have enabled them to cater to both financial and technical gaps in the sector, at least in certain segments.

Considering the large financing needs of the water sector, there is room for both national PDBs and IFI finance. The study identifies opportunities for IFIs to collaborate with PDBs to reach broader water sector development outcomes. In turn, IFIs' expertise, particularly on project appraisal, can help build PDBs' capacities. This is particularly needed for boosting investments in ecosystem and biodiversity protection.

There is also room for both commercial finance and PDB finance. As discussed, the products and services offered are different. PDBs, for example, can extend a range of technical assistance services and some also extend long maturity loans. There is also some evidence that PDBs can play an active role in mobilising private capital for water. They support the project preparation process – and take on very early stage risks – and assist with financial transactions and bond structuring/issuance. More research in this area is needed to better understand the role PDBs can play in mobilising private capital for the sector.

There are still many countries where national PDBs either do not have a mandate in the sector or only have a nascent/limited role, indicating an untapped opportunity for increasing finance for water. A number of key factors such as a clear mandate with financial allocation and in-house water sector expertise are determinant in enhancing their engagement in the sector.

Finally, national PDBs are well-placed to address some of the wider challenges in the water sector which limit finance mobilisation. They can provide technical assistance and non-repayable finance for programmes focused on improving the performance and enhancing the creditworthiness of utilities and local governments. They can also be involved in project preparation and support the dialogue on tariffs and cost-recovery. As public institutions, PDBs are well-placed to engage in dialogue and can bring compelling evidence for investing in the sector through their financial and technical expertise.

6. RECOMMENDATIONS: HOW CAN NATIONAL PDBS BE SUPPORTED TO ENHANCE THEIR OPERATIONS IN THE WATER SECTOR?

Given the potential of PDBs in mobilising finance for water, the main recommendations to increase the supply of PDBs' finance to the sector are for governments and IFIs to strengthen PDBs' capacity to prepare and appraise water sector projects, and to allocate financing and funding earmarked for water investments to PDBs. At the same time, boosting PDBs' engagement requires supporting demand creation for water financing and addressing water sector inefficiencies and constraints.

In order to operationalise these broad recommendations, this section presents specific recommendations for 1) national PDBs, 2) governments, and 3) IFIs. The recommendations are based on examples of measures already being taken or considered by these actors in the various case studies in order to address constraints. This makes us believe that these recommendations are both realistic and actionable. An overview of the constraints, measures to address them, and specific recommendations for the three groups of actors are presented in Figure 6 and are further elaborated below. In addition, we provide recommendations for further research.

Figure 6: Overview of constraints, measures and recommendations

Constraints		Measures	Recommendations			
Demand side	Reliance on government funding	Finance strategies / regulation that target role of PDBs	For national PDBs	For Governments	For IFIs	
			Contribute to policy dialogues in the water sector and support the development of finance strategies	Develop finance strategies that target public finance to utilities / municipalities that most need them	Support policy dialogues and finance strategies for the sector that include explicitly PDBs	
	Skills and knowledge for project preparation	Skills development and dedicated funds for project preparation			Provide TA to pre-project identification and advocacy	
	Local governments fiscal space	Evidence on economic and social returns	Develop sector expertise / Make more use of South-south cooperation (I.e. staff exchanges and secondments) Support smaller projects and standardisation of processes	Pro actively engage PDBs technical staff in relevant sector finance meetings	Strengthen/ support PDBs capacities and skills in the water sector	
	Financial viability and operational performance	Dedicated financing and programmes to improve performance	Clearly articulate the specific contributions they make to the SDGs and climate-related targets through their investments	Develop a climate narrative for the sector finance strategies	Proactively discuss water sector projects within a climate narrative with PDBs Increase cooperation between climate/environmental and water departments	
	Project execution capacity	TA for project execution	Support consultations with national and local gov can lift some of the barriers to creditworthiness	Develop and enforce water sector regulations to enhance (financial) performance of utilities.	Ensure that grants, concessional finance and TA provided to overcome the constraints in project preparation, utility performance and technical support	
Supply side	Internal pressure to prioritise other sectors	Dedicated mandate and funds for the sector			Provide TA to project implementation	
				Establish dedicated windows or programmes for 1) project preparation, 2) utility performance improvement, and 3) technical support in project execution	Provide public finance for: 1) project preparation, and 2) utility performance improvement	Pilot operations where IFIs/PDBs co-finance a water project Support smaller projects and standardisation of processes
				Recognise the opportunities of the water sector	Political leadership for guiding PDBs mandate in the water sector	Channel funds specifically for water sector investments through PDBs (in local currency)
	Currency risk	Lending in local currency				

6.1 RECOMMENDATIONS FOR NATIONAL PDBS

This section presents recommendations for two groups of PDBs: 1) PDBs that are already involved in the water sector, but seek to enhance their role; and, 2) PDBs whose mandate includes the water sector, but who are currently not, or only to a very limited extent, providing finance to that sector.

PDBs that are investing in the water sector and seek to enhance that role should focus on: 1) contributing to sector processes to remove demand-side constraints; 2) take actions within their power to alleviate demand-side constraints; and, 3) increase supply-side measures. Specifically, this study recommends these PDBs do the following.

- Contribute to policy dialogues on sector financing strategies. Such strategies should then clarify which segments of the water sector and which type of investments should be financed by PDBs, and how this finance is interrelated with other funding flows.
- Support consultations with clients (particularly local governments) and sector organisations to help lift some of the important barriers to project bankability. PDBs are uniquely placed to highlight where project viability is threatened by low tariffs, poor performance of utilities and other demand-side constraints. Moreover, PDBs can provide evidence from across projects to sector dialogues so as to advocate for structural measures to address the barriers at sector level.
- Adopt a programmatic approach (including standardisation of projects and contracts) and finance water projects with different risk levels. A multi-project approach also allows PDBs to target weaker or less attractive municipalities/utilities – often the poorest – with risks balanced across the portfolio.
- Articulate an approach towards mitigation and adaptation in the water sector. PDBs need to be more proactive in placing water and sanitation within a climate narrative. They face ongoing constraints in accessing concessional resources for water sector from adaptation and mitigation funds. PDBs can provide evidence and narratives on how water projects can address adaptation needs and contribute to mitigation. This will require interdepartmental conversations to collaborate more, have standard approaches to the sector to access climate funds and start taking measures to reduce the time that it takes for climate funds to be approved.

“If we want to stay relevant, our added value is in the innovation and in the enabling work upstream. To become a knowledge bank, to promote coordination between different MDBs.” – MDB water sector

PDBs that have the mandate but are not, or only to a limited extent, investing in the water sector are recommended to: 1) ensure that the water sector is seen as a sector of opportunities in the internal strategy of the PDB; and, 2) develop the capacity to finance water sector investments. Specifically, this study recommends these PDBs do the following.

- Recognise and map the specific needs and opportunities of the water sector. Financing needs exist across the sector, from water to sanitation, and across geographical settings. PDBs’ expertise in project origination and preparation is particularly relevant for a sector facing a dearth of bankable projects. But it requires the PDBs to map where specific opportunities lie for them.
- Articulate the contributions that financing water investments can make to SDG and climate-related targets. In order to convince the highest authorities of PDBs, as well as the main investors of the PDB, it is important to articulate how investments in water can contribute to the SDG targets and climate-related targets. Water is at the forefront of climate change adaptation and mitigation, whilst water and sanitation services represent important social sectors.
- Establish dedicated windows or programmes for: 1) project preparation; 2) utility performance improvement; and/or 3) technical support in project execution. Where the water sector has been traditionally and historically financed through central governments and IFIs, PDBs need to be proactive in sourcing projects. Dedicated project preparation windows or programmes are a proven mechanism for project sourcing. Windows or programmes for utility performance improvement and technical support in project execution are also relevant to ensure that prospective borrowers are able to take on credit and execute projects adequately.

- Develop internal sector expertise, including through South-South cooperation. This means building up internal capacity and knowledge about the water sector, about public-private partnerships and consulting with potential clients in designing adequate products. PDBs need to allocate resources for building their internal capacity to source, manage and support water projects. This means recruiting dedicated staff, providing training where necessary, and making more use of South-South cooperation. PDBs have a lot to learn from each other and knowledge sharing can be facilitated. This is highly effective and similar to South-South Water Operator Partnerships which have been invaluable for capacity building in water utilities.

6.2 RECOMMENDATIONS FOR GOVERNMENTS

The following recommendations are directed at national government entities, such as water sector line ministries and agencies, water sector regulators, and ministries and regulators in charge of finance. This study recommends them to do the following.

Enable PDB financing in the water sector. This involves creating the enabling policy and strategy framework for PDB financing in the water sector. This is recommended to be done by taking the following three steps.

- Formulate sector financing strategies and define PDBs' roles in them. Case studies indicate that certain segments of the sector – mostly large and medium sized towns and their water service providers – are able to access repayable finance from PDBs to make investments. That potentially frees up non-repayable public finance for investments in harder to reach areas such as rural areas and poorer urban settlements. Sector institutions therefore need to develop overall sector finance strategies so that further clarity is shed on where repayable finance from PDBs can play a role, and where non-repayable finance is needed.
- Engage PDB staff in sector finance strategies. In developing these strategies, it is key to include the insights from PDBs so that specific constraints can be understood and addressed.
- Provide political leadership for guiding PDB mandates in the water sector. Where PDBs have historically not been involved in the water sector, there may be a certain hesitation. Furthermore, in some countries there may be resistance to using debt for financing the water sector. In these cases, governments need to provide political leadership in defining where PDB mandates in investing in the sector lie, and how they complement other sources of funding.

Strengthen PDBs' capacity to engage in, and provide finance for, the water sector. Once the enabling policy and strategy framework is in place, more direct support should be provided to PDBs so they have the technical and financial capacity. This could be done by taking the following measures.

- Allocate public funds to initiate PDB water sector investments. Where PDBs face funding constraints (e.g. limited access to financial markets), governments should consider allocating funds for PDBs to develop water sector products. A dedicated envelope for water may in turn encourage PDBs to be more proactive in sourcing water projects. This thus entails an upfront investment.
- Start with small projects as a basis for standardising processes. Where PDBs are new to the water sector, it is recommended to start small (projects of US\$ 1 million) and have flexible instruments that can grow and develop over time while capacities are being built and relationships being developed. This also allows PDBs to be equipped with standardised approaches in terms of aspects such as feasibility studies, procurement, and environmental impact assessments.
- Have flows of non-repayable finance for certain segments and/or co-financing. Certain segments of the water sector will not be ready to take on repayable finance in the foreseeable future, particularly the rural and small-town subsector or some of the poorest municipalities. Governments can serve them by channelling part of public finance flows through PDBs, either as a full grant or as co-finance to loans. This will not only mean that this segment will get access to finance, it will also strengthen the capacity of the PDB in managing water sector projects and engaging with prospective clients. Moreover, public finance should go to those activities that are more difficult to finance from loans, such as project preparation and utility performance improvement.

Address water sector inefficiencies and constraints by supporting regulatory and sector reforms. PDB finance is not a solution to water sector inefficiencies. Rather, efficient and well-performing institutions are a condition for PDBs to engage in financing the sector. Governments can do this in different ways, including the following.

- Develop policy and regulatory measures to improve the efficiency and performance of water sector institutions. This is usually the domain of sector regulatory bodies and include performance monitoring and benchmarking; establishing penalties, incentives and enforcement mechanisms; and developing tariff regulation.
- Develop regulatory measures that incentivise investment and enable private investments. Particularly where municipal governments face commercial borrowing constraints, private investments should be enabled. This not only entails addressing tariff issues, but also the legal framework (contracts, procurement procedures). Through implementing new legislation in the water sector, Brazil will provide important learning opportunities throughout 2021/22.

6.3 RECOMMENDATIONS FOR IFIS

This research has identified two groups of recommendations for IFIs.

The first group is essentially to support PDBs and governments to implement the recommendations mentioned above, for as far as it is within their power and mandate. This includes:

- supporting the policy dialogues around sector finance strategies that include defining the role of PDBs;
- supporting evidence and narrative creation on the nexus between the water sector and climate change adaptation and mitigation; and,
- supporting capacity building of PDBs in the water sector, including by facilitating South-South cooperation.
- The second group of recommendations revolves around how IFIs can direct their financing to the water sector in collaboration with PDBs. The specific recommendations are:
 - to channel loans via PDBs, particularly when PDBs are relatively new to the water sector. This would allow PDBs to become more familiar with the sector and build up the necessary technical expertise;
 - to provide grants, concessional finance and technical assistance to overcome a number of water sector related constraints. Where concessional finance and grants are deployed, they are best used for those investments that are normally more difficult to finance through loans. That would specifically include the following investments: pre-project identification, project preparation, utility performance improvement and technical support to project execution;
 - to co-finance larger investment projects with PDBs. PDBs and IFIs have their own strengths and weaknesses. Co-financing certain investment projects, particularly the larger ones, draws on the specific strengths of both parties; and,
 - to channel funds for water sector investments through PDBs in the local currency. Though currency risks are not specific to the water sector, they still need to be taken on by the PDB. Using local currency lending can reduce the risks to the PDB.

6.4 RECOMMENDATIONS FOR FURTHER RESEARCH

The findings of the study also raise additional questions. This section lists important gaps that this report did not address or did not find detailed answers to, and that it recommends being taken up in either country-specific research or more global research.

Research into measures to increase PDBs' involvement in the water sector in specific countries.

While the research identified generic trends in the extent, constraints and opportunities for PDB involvement in the water sector, the measures that can be taken will differ between countries. The research questions below should guide country-specific research.

- What is the relative size of PDB investment in the water sector compared to other sources of funding?
- What are the specific niches or segments in the water sector where PDBs have a competitive advantage in providing finance?
- What is an approximate maximum expected market share for PDB finance in the water sector?
- What are the factors constraining the achievement of that market share?
- What specific internal factors enhance PDBs' capacity to invest in water?
- What specific activities should be carried out by PDBs to boost demand for financial services in the sector?
- Local authorities can create their own PDB by being its shareholder (eg. Agence France Locale, Kommuninvest in Sweden, KBN in Norway, MuniFin in Finland). Water utilities can either be part of these initiatives or can create their own mutual PDB (as is the case of NWB in the Netherlands). To what extent can this be reproduced in other countries? Are there benefits to local government/utility owned PDBs for the water sector compared with central government owned PDBs?

Complementarities between PDBs and commercial banks in the water sector.

The research found complementarity between PDBs and IFIs. Some references were obtained, though only limited insights were obtained into the complementarity and competition between PDBs and commercial banks. To gain greater understanding of this, research should be undertaken, preferably in countries with reasonably mature financial markets for the water sector. The research questions below should guide this process.

- Can PDBs take more risk than commercial banks in the water sector, or should they simply offer more products and services?
- What instruments can PDBs deploy to facilitate commercial lending to the sector, such as credit enhancement products?
- In what areas do PDBs create the most added value?

Attractiveness of ecosystem and biodiversity protection for PDBs.

The research found that only a small amount of PDB financing in the water sector is specifically on ecosystem and biodiversity protection. Further research should focus on whether and how this can be made more attractive, and if so, under what conditions?

- What is the role of central government and IFIs in enhancing PDB investments in this area?
- What specific instruments are suitable for these kinds of investments?

This research could be carried out in association with national and regional PDBs. It could involve those that are already heavily involved in the water sector so as to highlight enabling factors, and those that are less involved so as to understand their needs and what governments and IFIs can do to address them.

PART 2

ANALYSIS

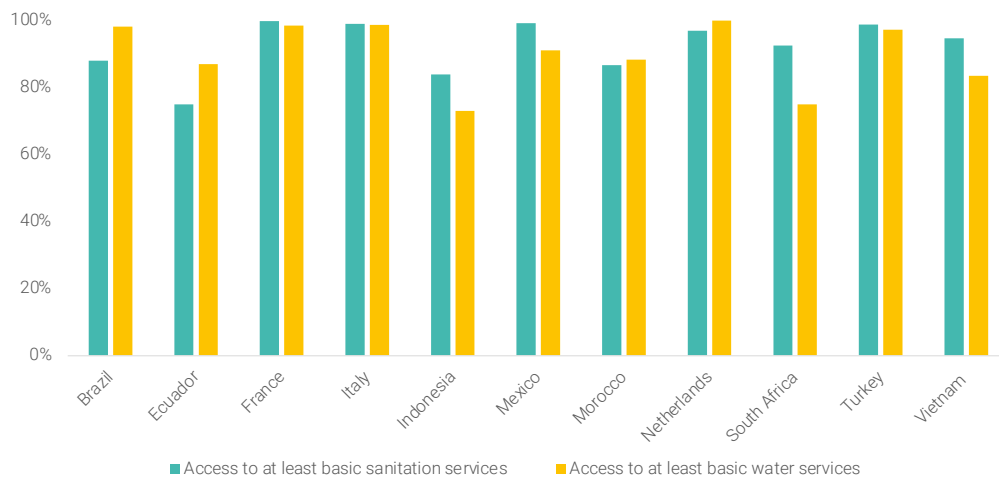
7. NATIONAL PDBS' RESPONSE TO WATER SECTOR CHALLENGES

This section takes a closer look at PDBs' activities in the sector, drawing on the case studies of selected PDBs (Annex 1).

7.1 PDBS WATER SECTOR CONTEXT

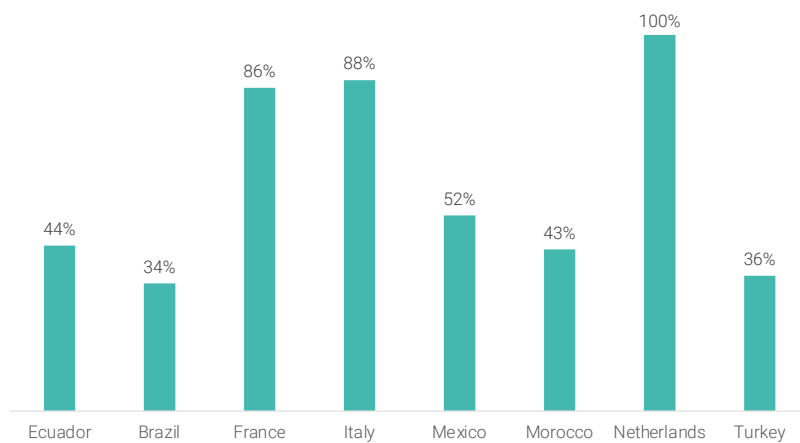
The countries from which PDBs have been selected face different as well as common, water sector challenges. These are all lower to middle and high-income countries where access to at least basic water and sanitation services is high. Some of the countries still need to extend access to water and sanitation services to reach SDG 6 (Figure 7), and almost all need to invest resources in adequate sewerage and wastewater treatment facilities (Figure 8).

Figure 7: Access to basic water and sanitation services (selected countries)



Source: WHO UNICEF (2019)

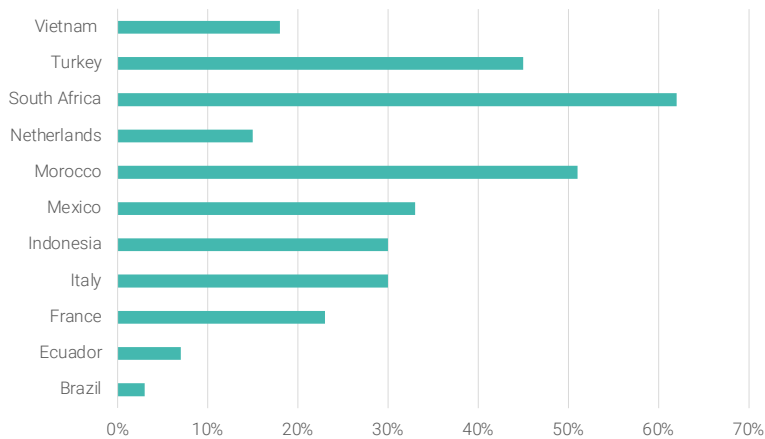
Figure 8: Percentage of wastewater treated services (selected countries)



Source: UN Water SDG 6 data (Note: data not available for Vietnam, South Africa and Indonesia)

Countries also face different levels of water stress, with some facing severe water shortages. South Africa, Morocco and Turkey present the most acute water stress level among the nine countries (Figure 9). However, all the countries face some degree of water stress which calls for a more efficient use of available water, including water loss reduction and pollution controls.

Figure 9: Water stress levels



Source: UN-Water

Note: The level of water stress is defined as the ratio between total freshwater withdrawals by all economic activities and total available freshwater resources, after taking into account environmental flow requirements. Environmental flow requirements are essential to maintaining ecosystem health and resilience.

With regards to institutions, most countries are highly decentralised, with responsibilities for water and sanitation devolved to local governments. This means that local governments have the responsibility to ensure service delivery in their areas of jurisdiction. They typically appoint or contract a service provider, in the form of a public or private utility. These utilities are responsible for operating and maintaining the infrastructure and administering the service. The responsibility for investments in expanding and improving the infrastructure is often shared between the local government and the utility, whereby a utility is typically responsible for the gradual expansion of its network and services, but a local government may contribute to the expansion or improvement of service levels.

Countries have different service delivery models. Many have large metropolitan utilities that serve the capital and other major cities. Others have regional service providers serving millions of customers (such as state level utilities in Brazil and Mexico), or provincial utilities (The Netherlands). In most countries, these utilities serve a large number of smaller municipal utilities, including rural municipalities or even direct service delivery by the municipality itself (i.e. through non-corporatised utilities). In some countries, utilities may further contract out certain processes.

There is a degree of private sector participation in water infrastructure management and financing, although to a limited extent. Private sector participation (including financing) is well-developed in France and Italy across the water management cycle. In other countries such as Brazil and Mexico, concessions are given to private companies mostly for certain parts of the water cycle, such as drinking water production or wastewater treatment. These types of contracts are also emerging in Vietnam, Morocco and Indonesia.

In all the countries, funding for the water sector comes from a mix of public finance and tariff revenues. Water and sanitation services delivery is financed according to the following broad lines.

- Development of infrastructure in areas where there are currently no services: this is generally done through public finance. This may be done by local government through the transfers they receive from the treasury or central government. In some cases, public funds (which may have been obtained as sovereign loans from IFIs) in the form of grants are channelled through PDBs (Ecuador).
- Expansion and improvement of existing water, sanitation and wastewater infrastructure: this is usually a shared responsibility between utilities, local governments and financiers. Utilities are

usually responsible for funding the gradual expansion of their networks out of the revenue they generate from tariffs. Utilities, central government, local government and financiers (whether PDBs or other lenders) need to join forces in investments that imply a step change in expansion or service levels.

- Operation, maintenance and capital maintenance: this is the responsibility of utilities for which they need to levy tariffs. In practice, tariff levels are too low in some countries to cover these costs. Local governments sometimes fill the gap by using their revenues (e.g. fiscal revenues or government transfers) to cover operational costs of utilities. Whether sufficient or not, it reduces the creditworthiness of the local government, as observed for example in Mexico.
- Development and uptake of innovative infrastructure and approaches: central governments, national agencies, IFIs and PDBs extend grants for boosting the uptake of technical innovations, whether for conducting studies, works (e.g. enhancing treatment capacity or bulk water quality) or social interventions – see for example Council of Europe Development Bank's (CEB) Green Social Investment Fund (Box 5).
- Capacity building investments – for example utility performance improvement programmes – are usually financed through public finance or by development partners.

Box 5: Council of Europe Development Bank's Green Social Investment Fund (GSIF)

The CEB established the GSIF in March 2020 to help accelerate its member countries' transition towards low carbon and climate resilient economies. It has been endowed with an initial contribution of € 5 million, allocated from the Bank's annual profit. CEB member countries have also been invited to provide grant contributions to the Fund. The Fund is used to:

- scale up the decarbonisation and climate proofing of social infrastructure; and
- make climate action measures more socially affordable and accessible to vulnerable groups.

It can finance technical assistance and investment grants for projects with high social benefits which enhance climate resilience and aim for climate neutrality. Projects must be aligned with the countries' commitments to Agenda 2030 for Sustainable Development and the Paris Agreement.

7.2 WHAT ARE THE MANDATES OF NATIONAL PDBS IN THE WATER SECTOR?

All PDBs included in the case studies have the explicit mandate to contribute to water sector development, but they do so in reference to different frameworks. Some strategic and business plans make explicit reference to SDG 6. For example, CDP (Italy) recognises the SDGs as a key area of focus in its role of promoting public infrastructure. Examples of national PDBs that explicitly refer to SDG 6 in their planning and reporting include NWB in the Netherlands and BNDES in Brazil. In other PDBs' reports, the SDGs are not referred to, but their mandate is given by national development priorities, such as BANOBRAS in Mexico.

Some PDBs sit at the heart of water policy development. This is clearly the case with Caisse des Dépôts (France) which helped shape French Government policy on water management in recent years (Box 6). Similarly, DBSA (South Africa) plays a critical role in sector dialogues and provides the rationale and data required for policy and regulatory changes where these are necessary. DBSA participates in sector initiatives such as the Government's Sustainable Infrastructure Development Symposium Technical Working Groups which supports public and private sector sponsors to create a pipeline of bankable projects.

Box 6: French national water consultations (Assises de l'Eau)

Caisse des Dépôts took part in the water sector national consultations (Assises de l'Eau) held from 2018-2019. Gathering local authorities and service providers as well as financial institutions, these consultations aimed to address the emerging issue of water quality and availability. A first phase, carried out from April to August 2018, dealt with public water and sanitation services. It resulted in new measures to strengthen the sustainability of water sector investments focused on water leakage reduction, in particular in rural areas, improving water services' quality and enhancing customers' trust in public utilities. A second phase, from November 2018 to July 2019, focused on water resources management particularly in water catchment, water sharing and preservation, and aquatic ecosystems' protection. Following on from the Assises de l'Eau, the French Government committed to provide additional resources and support to local communities, including through Caisse des Dépôts.

Source: www.ecologie.gouv.fr

In order to fulfil their mandates and contribute to policy implementation, PDBs have also set up dedicated business lines, departments or programmes for the water sector. Among these PDBs are Caisse des Dépôts (France), CDP (Italy), BNDES (Brazil) and DBSA (South Africa). Dedicated business lines take different forms, but at their heart lies specific sector expertise, which enables the institution to offer tailored and standardised approaches. Caisse des Dépôts (France) has set-up a dedicated product, the Aqua Prêt (Aqua Loan), which offers large and long-term loans for local authorities meeting certain conditions (see section 5.7). DBSA (South Africa) has set up dedicated water programmes (Box 7). BNDES (Brazil) has a dedicated department with specific lines of credit and non-reimbursable funds for social investments, which includes infrastructure in the water sector. For more details see Annex 1.

Box 7: DBSA water programmes in South Africa

DBSA (South Africa) works programmatically across sectors. The primary objective of the programme approach is to prepare projects, and facilitate and mobilise funding for the implementation of projects at scale. Each programme has different funding options, structures and solutions. The approach has multiple benefits, including:

- the ability to address complexities associated with infrastructure planning and delivery;
- providing customised funding solutions to support the implementation of a specific asset;
- a balanced portfolio and strong pipeline of projects in terms of risks profile, which is often more effective in attracting investment from the private sector.

A programmatic approach is enabled by centralised sector expertise. Programme specific management offices are in charge of project preparation, procurement, incorporating best practice, vetting new technologies, and monitoring and reporting on implementation.

DBSA is responding to the call to action in the National Water and Sanitation Master Plan and is designing a National Water Programme which comprises various sub-programmes including a:

- Non-revenue Water Programme;
- Water Reuse Programme; and
- Private Sector Participation Model.

These three programmes have been positioned as blended finance programmes under the Infrastructure Fund, a fund managed by DBSA aimed at attracting private sector investment in infrastructure in South Africa.

Source: DBSA

However, PDBs also operate within the water sector's policy and regulatory constraints. For example, over the course of project preparation, while a PDB can advise that tariffs should be increased for a project to be viable, local governments retain authority over this. Similarly, PDBs may advise the government to accelerate the involvement of private operators and investors, but they have little influence over the pace of sector reforms (see for example the BNDES case study).

7.3 WHAT DO NATIONAL PDBS FINANCE IN THE WATER SECTOR?

Most water sector projects benefiting from PDB finance relate to water and sanitation infrastructure development. In high-income countries such as France and Italy, ageing infrastructure calls for investment to reduce water and sanitation services inefficiencies and keep up service levels. Flood protection is also a major area of investment. In middle-income countries, the focus of PDBs is both on services extension (as in Turkey with IIBank and Brazil with BNDES) and on making supporting services more efficient through dedicated loan programmes for Non-Revenue Water (NRW) reduction, as offered by DBSA (South Africa). In the Latin American countries, most projects relate to large infrastructure components, such as desalination and wastewater treatment plants.

PDBs' investments appear to benefit both urban and rural areas. Discussions with PDBs show that rural areas and smaller municipalities are also receiving finance and funding. For example, Caisse des Dépôts' Aqua Prêt benefits primarily rural municipalities. In Latin America, it is mainly the mid-sized cities and utilities that access finance from domestic PDBs. The large metropolitan utilities can obtain loans directly from IFIs, or even from commercial sources. The small municipal companies often lack the creditworthiness to access loans.

There were limited examples of water resources management financing. These are mostly projects that include source protection and catchment improvements. There are also examples of stormwater drainage and local flood protection. But these projects remain limited in the water portfolio. Water and sanitation make up 37% of the portfolio of loans of BDE in Ecuador, and water resources management was only 6%. The difficulty in financing water resources management services is that these activities do not have a clear revenue stream as these are usually funded by general municipal taxes and not ring-fenced tariffs.

Investments in water ecosystem protection and biodiversity, such as wetland restoration, appear limited to non-existent. Even in high-income countries, projects require incentive schemes for local governments to prioritise them. However, interviewees argued that by investing in wastewater treatment, important contributions are made to ecosystem restoration and environmental quality. However, ecosystems are not the driver behind these investments. The main arguments for these investments are made from a public health and sanitary perspective.

7.4 PRODUCTS AND SERVICES AVAILABLE FROM NATIONAL PDBS TO THE WATER SECTOR

Of investment products for water, long-term loans are the most readily available. All PDBs included in this review provide long-term loans, in the case of the Caisse des Dépôts, up to 60 years. This French institution is the only one reviewed that has developed a loan product dedicated to water, the Aqua Prêt or Aqua Loan (Box 8). Equity investments are not commonly used in the water sector.

Box 8: CDC's Aqua Prêt

Caisse des Dépôts' Aqua Prêt is granted under certain conditions related to water supply and sanitation asset management. Aqua Prêt loans are granted if prospective borrowers have carried out a diagnostic of their assets and have developed a five-year water investment strategy. The loan was introduced to improve the sustainability of water sector investments in line with government directives. Other key features of Aqua Prêt are that it:

- targets construction and rehabilitation of water and sanitation services, flood prevention and water ecosystems preservation projects;
- extends loans from 25 to 40 years, and up to 60 years for water and sanitation networks; and
- its interest rate for Livret A (national savings) is currently set at 0.5% per year (from February 2020) + 0.60% per year.

Source: Caisse des Dépôts

Most PDBs provide funding for project preparation, but do so as grant funding or as a component of the loan. In South Africa, DBSA boasts an integrated approach to infrastructure and water sector development. It intervenes across the infrastructure value chain, from the planning of projects up to maintaining and improving infrastructure performance. At planning and preparation levels, DBSA provides support in project identification and carries out feasibility assessments and financial structuring services. Others, such as BANOBRAS in Mexico also fund project preparation. It does this either through grant funding (which it in turn funds from its own profits) or as a highly concessional loan. In some cases, if the project preparation leads to a project that eventually gets financed, at least part of the project preparation costs are recovered through the loans.

Whilst some PDBs can provide grants for project preparation, others only provide funding as part of the loan package. This is the case with Caisse des Dépôts (France). One rationale for subsidising project preparation is to work with borrowers to gradually build up bankable projects. DBSA in South Africa provides grants for the purchase and testing of equipment (e.g. bulk meters) to control NRW. If the approach is successful in one service area, it can be scaled-up to a wider service area.

Some PDBs provide funding for technical assistance for utility performance improvement. The latter is a key step in the project cycle as improving the performance of the utility or local government puts them in a better position to provide sustainable services. BANOBRAS provides grant funding for this purpose through its PMOOA programme. The PMOOA programme is not necessarily linked to BANOBRAS' credit programmes, but there is an implicit expectation that as utilities improve their performance – including financially – they make become more credit-worthy to take on loans.

Where Public Private Partnerships (PPP) are being sought, particularly for some of the large-scale investments in desalination or wastewater treatment, PDBs are well placed to take on project preparation risks. Project preparation carries the inherent risk that the project will not take-off and it thus requires intensive resources for carrying out technical and financial feasibility and consensus building among stakeholders. By taking on these early stage risks, PDBs can facilitate private sector participation. In Indonesia, PT SMI has been a key player in the preparation of large-scale PPP bulk water projects in recent years (Box 9). In Brazil, BNDES also plays a key role in structuring loans with public and private players, as does BANOBRAS in Mexico.

Box 9: PT SMI support to PPPs in Indonesia: the West Semarang Water Supply PPP project

PT SMI acts on behalf of the Government of Indonesia and its involvement in the water sector mainly relates to project preparation and advisory services in PPP schemes for bulk water supplies. The central government tasks PT SMI to assist in project preparation and the tendering of the PPP.

One such flagship project is the West Semarang Water Supply PPP project. The project enhances production access to drinking water and expands the service coverage of the Local Water Supply Utility (PDAM), while reducing land subsidence from excessive groundwater abstraction. The project is planning to provide output capacity of 1,000 litres per second to meet the clean water demand from one third of the population of Semarang City (300,000- 350,000 inhabitants) in five zones within the three districts of West Semarang, Ngaliyan, and Tugu. The Government Contracting Agency delivers the project under the Build Operate Transfer agreement. Under the PPP Scheme, the role of the private sector role is to: 1) build and operate a water treatment plant, transmission pipeline, main reservoir, and distribution reservoir; and, 2) operate and maintain these facilities and raw water unit facilities (intake) along with their related facilities. The total cost of the Project was estimated at IDR 1.19 trillion (~US\$ 85 million) with the PPP scope amounting to IDR 417 billion (~ US\$ 29.78 million). This includes the IDR 147 billion (~US\$ 10.5 million) viability gap fund (VGF) provided by the Ministry of Finance. Private sector revenues are to come from the bulk water sales to PDAM. Besides fiscal support from the Ministry of Finance, the Indonesia Infrastructure Guarantee Fund, a state-owned enterprise (SOE) providing guarantee for contingent liabilities, also provided a guarantee to serve as credit enhancement for the implementing business entity or special purpose vehicle in the face of the PDAM's default risk. PT SMI, through its Project Development Facility, assisted the Semarang City PDAM in project preparation and transaction to reach financial close. The project financially closed in 2019, and the asset is targeted to start operating in May 2021. Due to prudent project preparation, PT SMI successfully increased the competition level by encouraging the winning bidders to limit their return in order to win the Project. This resulted in a VGF of IDR 0 (no VGF) and an additional tariff discount proposed by the winning bidder in the proposal, setting a precedent for PPP water projects in Indonesia (with no VGF and Tariff Discount). Aside from the VGF IDR 0, the Project is also considered as one of the fastest PPP Projects with a total duration of 19 months from official assignment to financial close.

Source: PT SMI

7.5 SIZE OF NATIONAL PDBS' INVESTMENTS IN WATER

Many PDBs are unable to disclose or disaggregate the size of water-related investments compared to their overall portfolio. Several factors account for this.

- PDBs do not specifically track water-related investments as these tend to fall within the wider infrastructure, social and environmental investment categories.
- PDBs lend to local governments according to the latter's balance sheets and not on a project-basis. This means that local governments can invest in water, but the information is not systematically shared with PDBs.
- Some PDBs will not share the information externally as it is considered confidential.

For the PDBs that did disclose the information or had figures available, water-related investments represent between 5% and 37% of their portfolios. In the case of the Vietnam Development Bank (VDB), water and sanitation loans represent 6.3% of its outstanding loans. In the case of the IIBank (Turkey), this represented 19% of its outstanding loan portfolio in 2019. Of the 366 projects IIBank financed and completed in 2019, 57 were related to water and 34 to sanitation. In Indonesia, PT SMI estimates water and sanitation to

represent 7% of its total financing in 2020. In Ecuador, 37% of BDE's portfolio is in water and sanitation. In Brazil, the water sector represents about 5% of overall loans but is expected to increase substantially in the coming years with the new regulatory framework. These different levels in part also reflect the historical mandates that PDBs have and are not necessarily a reflection of demand.

There is limited data concerning the size of PDBs investments in relation to the total financing of the water sector. The TrackFin exercise in Brazil showed that repayable finance from public and commercial banks accounted for 12% of all financial flows in the sector (WHO, 2014). Combining various figures on financial flows in the Netherlands, it is estimated PDBs account for 6% of investments in the sector (Annex 1).

7.6 WHO DO NATIONAL PDBS FINANCE?

Local governments and public utilities are PDBs' main clients. In many countries, the responsibility to invest and ensure water services and environmental protection has been devolved to local governments. Local governments may not necessarily directly provide services and may enter into contractual arrangements with services providers. In some cases, such as in France, Spain and Italy, PPP arrangements can shift investment responsibilities – and therefore risk – to private concessionaires. Local government owned PDBs (IIBank in Turkey and AFL in France) provide financial services to local governments, though NWB in The Netherlands can also provide financial services to publicly-owned utilities. IIBank can provide loans to utilities, but only when backed by a local government guarantee (Box 10). BNDES in Brazil provides finance to all entities, public or private, and directly to municipalities.

Box 10: Turkish municipalities access IIBank loans for water infrastructure

IIBank (Provincial Bank) is a development and investment bank owned by the Turkish state and subject to the provisions of private law. Turkish municipalities are able to use loans from IIBank to finance the infrastructure facilities that they need within the framework of existing legislation and their municipal investment programmes. IIBank provides loans from its own resources and acts as an intermediary in mobilising external credits from international financial institutions. In 2011, IIBank initiated a programme (SUPAK) to finance municipal investments in water supply and sanitation infrastructure. IIBank can lend 100% of investment costs to large municipalities (populations above 25,000) and 50% to small municipalities (populations below 25,000) which, subject to approval by the Higher Planning Council, can get a grant of 50% of investment costs funded from the central budget. By August 2018, the SUKAP programme had mobilised EUR 1.5 billion, of which EUR 572 million were grants and EUR 892 million were loans.

Source: Government of Turkey in Union for the Mediterranean, 2020.

Where private sector participation in the water sector is developed, PDBs have also been able to finance private investors. In France, for example, CDC also offers loans to private companies under different terms. In Morocco, CDG Capital has provided equity through a joint venture with Spanish investors for the construction and operation of a desalination plant in Agadir (Box 11). In Italy (CDP) and in Mexico (BANOBRAS), financing to private parties mainly happens in the form of project finance. In these cases, Special Purpose Vehicles are established which takes out the loans but also needs to bring in a certain percentage of the finance. Similar vehicles are supported by BNB in Brazil.

Box 11: The role of CDG in the Agadir desalination project

In 2017, ONEE in Morocco, signed a public private partnership contract with the Société d'Eau Dessalée d'Agadir (SEDA), a joint venture set up by InfraMaroc and the Spanish company Abengoa (desalination specialist), with 49% and 51% shared ownership respectively. The joint venture was set up in response to a call for tenders by ONEE.

CDG Group provided equity through InfraMaroc, an investment fund sponsored by CDG, as well as advisory services for structuring the transaction through CDG Capital Infrastructures, the fund's management company. The MAD 4 billion (€ 365 million equivalent) project with two components (drinking water and water for irrigation) raised debt financing from a consortium of local banks led by BMCE Bank of Africa and that included CDG Capital. Under the contract, SEDA is responsible for constructing and operating the desalination plant for the drinking water component. The total production capacity of the plant will be 400,000 m³/day, eventually including 200,000 m³/day for drinking water supply. The project is expected to benefit about 1.2 million water users and about 3,000 farmers.

Source: CDG Capital (2020); Agadir desalination plant and La ViéEco (2017) Interview with CDG Investment Director; <https://www.bankofafrica.ma/fr>

Loans to individual households or community associations are rare. BNB in Brazil is able to provide loans to individual households and farmers for small-scale on-site water infrastructure, such as private wells, rainwater harvesting tanks, on-farm irrigation systems, and small dams. The FIDEAGUA trust fund (TF) provides funding to community-based organisations through financial intermediaries to improve or build water supply infrastructure. In this case, the role of the PDB is to administer rather than capitalise the TF. But as the TF is part of the institution, the PDB has say in how it allocates its resources.

In many countries, opportunities for private sector participation in financing the water sector remains limited. This also means limited investment opportunities for PDBs through private recipients. Some countries are introducing reforms to address this gap. The new regulatory framework in Brazil for water and sanitation approved in July 2020 has opened the water sector to private concessionaires. This has led to an increase in demand for funds from PDBs across the country.

7.7 HOW DO NATIONAL PDBS SOURCE THEIR WATER PROJECTS?

PDBs that have a significant water portfolio appear to source water projects proactively. They consult local authorities and service providers to design and offer products and services suitable for water. Caisse des Dépôts, DBSA, IIBank and BNDES are very proactive in project origination. DBSA often works with municipalities from project concept up to the formulation of a bankable project. The PDBs can provide funding for project preparation which is eventually capitalised in the loans contracted by municipalities or utilities. DBSA seeks to work with any municipality (including those in weaker financial positions) to accompany them towards project formulation.

PDBs that are proactive in the water sector have a strong mandate, are considered key partners in water sector development and have also secured specific envelopes for water. This is the case of several PDBs in this study. CDC (France), CDP (Italy), and DBSA (South Africa) are examples of institutions that have strong water sector mandates supported by financial resources.

A proactive stance is particularly relevant and important in countries where the water infrastructure expansion has traditionally been funded through the central government. In these cases, local governments may not initiate water projects as they are potentially deemed of lesser priority than other sectors. This seems the case in Indonesia where PT SMI does not provide any water-related investment under its municipal finance products due to the lack of demand.

In practice, PDBs require a strong regional and local presence to develop water projects at scale. PDBs with strong involvement in water have shared water sector knowledge across their institutional branches. Where PDBs do not have a strong presence at the regional and local level, they collaborate with regional PDBs. This is the case with BNDES.

7.8 RISK ASSESSMENTS DONE BY NATIONAL PDBS

PDBs are banks and above all they assess the financial risks. Financial risks are assessed in two ways: balance sheet (corporate finance) or project-based (project finance).

In countries where clients are known to have strong balance sheets (France, the Netherlands) and get balance sheet financing, the risk assessment done by the PDB is minimal. In some of the Latin American countries, there are strict limitations on the level of debt that local governments can take on. These limits are set within the framework for public management and fiscal space. In these countries, the PDB itself does not do the financial risk assessment, but uses those of the relevant ministry of finance. In the case of larger projects, the risk assessment is done on the basis of the project.

In France, Caisse des Dépôts considers financial risks to be minimal: its main clients are municipalities with high credit ratings and strong balance sheets. In other countries where municipalities do not have strong balance sheets, PDBs are likely to favour project-based loans depending on the projected future cash flows. In Italy, for example, CDP only provides corporate (or balance sheet) loans if the entity has a strong balance sheet. This means that smaller utilities cannot easily access this type of financing. Corporate loans to utilities are generally unsecured and have a relatively short tenure (less than 10 years). In contrast, project finance transactions require stable projected cash flows, are usually secured and have a longer tenor.

Closely related to the above, is the institutional risk assessment. Some of the PDBs in Latin America, such as BDE (Ecuador) and BNDES (Brazil), not only assess the finances of the local government or utility, but also their institutional capacity to implement the project. The PDBs look at whether they have the proper tendering and contracting rules in place, the skills and capacity in house to manage complex infrastructure projects, the composition of the members of the board etc.

PDBs also assess non-financial risks. In addition to social and environmental impact assessment routinely associated with project appraisal, some PDBs specifically consider whether projects are fully aligned with their sector mandate. This is particularly the case when PDBs have developed specific sector programmes (or envelopes) which prospective borrowers can access only under specific conditions that may not necessarily be financial. In France, Caisse des Dépôts' Aqua Prêt, which provides large and long-term loans for water investments, is only available for local governments that can demonstrate that the project will contribute to the sustainable management of water assets. Local governments must have carried out a diagnostic of their water and sanitation assets to access loans from Aqua Prêt. If they do not meet the conditions, they may access loans with different terms as a loan product.

7.9 SOURCES OF FUNDS TO THE WATER SECTOR

PDB investments in the water sector come from multiple sources. These include international capital markets (NWB, CDP, AFL), national financial markets, national savings (épargnes, CDC France), public funds from national and state governments (Mexico, Brazil), IFIs and other sources (e.g. revenues from toll roads) as well as their own funds and sovereign loans (BDE in Ecuador and IIBank in Turkey).

Financing sources depend on the maturity of the financial markets in which PDBs operate. In France, the Netherlands and Italy, PDBs have successfully issued water and environment-related bonds (Box 12). PDBs with high credit ratings can raise funds on competitive terms, enabling its borrowers to significantly reduce the cost of the loans they take out to finance social and environmental projects such as water projects.

Box 12: CDP sustainability 'Hydro' Bond in Italy

A testimony to its long-term engagement in the sustainable development of Italy's infrastructures, in 2018 CDP issued the Sustainability 'Hydro' Bond, the first of its kind launched on the international capital market by an Italian issuer. The Bond was dedicated to supporting the financing of the construction, development and modernisation of Italy's water infrastructure, which is characterised by a significant infrastructural gap and an average annual per capita investment that is substantially lower than those of other European countries. The Sustainability 'Hydro' Bond has € 500 million and the proceeds were used to finance the water-related public infrastructure projects of 1,212 public entities through loans. The Bond has improved the efficiency of the water system, which has reduced the water dispersion by at least an estimated 40 million cubic metres, and has created and retained an estimated 10,000 full-time jobs.

Source: CDP (2021)

Global development funds set up to tackle climate change remain under-used for water. Many PDBs have access to funds created to boost climate-friendly investments such as the Green Climate Fund (GCF). However, discussions with PDB representatives showed that water-related investments are likely to only represent a small share of climate-friendly investments as PDBs tend to divert these funds towards the energy sector. The main reason for doing this is that to access 'climate funds', PDBs have to justify how their investments lead to decarbonisation. The energy sector has more obvious links to climate mitigation and adaptation. That link is harder to demonstrate with water-related investments unless a local context specific due diligence is made. According to CDC France, which accesses funds from the European Investment Bank, water investments on their own are not considered climate-friendly according to EIB's taxonomy – they need to be linked to energy savings.

Several of the interviewed PDBs, such as BDE and BANOBRAS, are still in the process of being accredited to manage Green Funds. They consider these funds to be an additional way of financing adaptation. But as they are in process, they could not comment on how they plan to use the funds in the water sector.

7.10 CO-FINANCING AGREEMENTS BETWEEN PDBS AND OTHER STAKEHOLDERS

All the PDBs in low and middle-income countries that we reviewed have been long-term partners of IFIs, multilateral development banks (MDBs) and bilateral development finance institutions (DFIs) in implementing large-scale water projects. In Turkey, IIBank benefited from € 390 million in loans from the World Bank for on-lending to municipalities specifically for water and sanitation projects between 2005 and 2016. By 2017, 14 municipalities had benefited from the project, giving 2.95 million people access to improved water sources and 1.5 million people improved sanitation. IIBank's involvement from sub-project design to implementation and monitoring largely contributed to the project's success (Box 13).

BDE (Ecuador), BANOBRAS (Mexico), BNB and BNDES (Brazil) all report that they frequently collaborate with the WB, Inter-American Development Bank (IDB) and CAF. They do so in different ways such as co-financing infrastructure, sharing different parts of the costs (e.g. one of the IFIs providing concessional finance for project preparation and the PDB providing the credit), and technical support (e.g. in structuring project finance). In El Salvador, the IDB provided technical support in establishing the FIDEAGUA trust fund for water service providers which is administered by BANDESAL, the national PDB. Section 6 discusses IFI investments through PDBs in the water sector.

Box 13: IIBank and the implementation of a large-scale water and sanitation project in Turkey

The Municipal Services Project was the first project financed by IIBank using IFI finance. Approved in 2005 for an initial amount of € 212 million, the Municipal Services Project benefited from an additional € 178 million in 2010 to meet the high demand from municipalities. IIBank borrowed the funds under sovereign guarantee from the state and acted as a financial intermediary between the World Bank and municipalities. The project emerged in the context of high urbanisation rates and Turkey's ambition to join the EU, which made environmental services a priority for the Government of Turkey. The objectives of the project were to support the development of municipal infrastructure to improve the environment and quality of water, wastewater, and solid waste management service and to support municipalities strengthen their financial position. It also included an institutional strengthening component for IIBank itself. In line with these objectives, the project has three main components.

- Physical investments in building and rehabilitating water and wastewater networks, constructing new treatment plants and solid waste management.
- Support to sub-borrowers to carry out feasibility studies, urban planning, the preparation of design and bidding documents and other projects documents.
- Strengthen IIBank's institutional capacity as this project was the first of its kind for the Bank.

IIBank implemented the project by on-lending World Bank loan proceeds to qualifying municipalities. Criteria to identify eligible sub-borrowers included: no overdue payments to the Treasury; sector debt service ratio coverage of at least 1:2; and, satisfactory institutional arrangements for sub-project implementation.

In total 14 municipalities benefited from the project. In these municipalities, 2.95 million people benefited from access to improved water sources in urban areas; 3.5 million people benefited from the industrial and municipal waste disposal capacity created; and 1.5 million people were provided with access to improved sanitation.

The main reasons for the successful completion of the project included: the existence of a strong pipeline of sub-projects at municipal level; feasibility studies carried out prior to project approval to confirm demand; and, IIBank's longstanding relationship with municipalities which reduced the risk of insufficient demand.

Source: World Bank (2017): Municipal Services Project. Implementation Completion and Results Report

Increasingly, as governments are realising the scale of water sector financing needs, PDBs are tasked to crowd in private finance. In South Africa, DBSA is increasingly looking to enable private sector participation through blended finance. South Africa's infrastructure sector has predominantly been funded through central and local government funds. However, the scale of the needs is pushing the Government to crowd in private sector investment and expertise.

This comes at a time when there is an increased appetite from the private sector for SDG and ESG compliant projects. In this context, DBSA's role is to support project preparation (including via grants, other forms of project preparation funding and technical assistance) and enhance projects' creditworthiness through means such as providing credit enhancement products. In Italy, CDP successfully supported a public service provider in international bond issuance (Box 14).

Box 14: CDP's role in Società Metropolitana Acque Torino (SMAT) bonds issuance, Italy (2017)

SMAT is the public company that manages water services in the Turin Metropolitan Area that covers 2.2 million inhabitants across 291 municipalities. CDP acted as the anchor investor of the bond issuance operation to attract other international institutional investors. The operation represented SMAT's debut on the international bond market, with proceeds planned to be used to finance water and sewerage networks and expand and modernise plants. The bond issuance secured € 135 million with CDP as the principal subscriber.

Source: CDP

Some countries have dedicated water agencies to boost specific investment areas. Their role appears complementary to that of PDBs as they provide technical assistance and financial assistance to targeted sub-sectors that receive less attention from utilities/local governments. In France, for example, local governments can benefit from substantial grants covering up to 70% of project costs from dedicated river basin water agencies for wetland restoration. These agencies are mandated to accelerate the implementation of Government policies with regard to the water sector by providing financial incentives for investments in targeted areas. Box 15 examines the role of one of these agencies, the Rhone Mediterranean Corsica Agency (Agence RMC).

Box 15: Agence RMC

The Rhone Mediterranean Corsica Agency (Agence RMC) is a public establishment dedicated to water protection and regulated by the Ministry for the Environment. It collects fees based on the 'polluter pays' and 'taker pays' principle. Every euro collected is re-invested in local authorities and economic and agricultural stakeholders to fight pollution and improve the use of available water.

Agence RMC is one of the six water agencies in France created to manage water resources. A key function of the water agencies is to collect fees (redevances) from all water users/polluters. All water users who alter the quality and availability of water must pay fees. Agence RMC operates in the Rhone-Mediterranean and Corsica basins. Most of the fees levied come from household water bills (tax on domestic use amounting to 10% of the water bill). Households pay for the quantity of water that they use. Local authority water departments collect the fees on behalf of the water agency. Economic stakeholders also pay fees that target polluting practices, water storage or water abstraction with potential consequences for water and aquatic environment quality.

Agence RMC provides financial aid as part of its six year action programme for supporting the execution of water master plans, European Directives and national policies. Financial support is used to fund research and works and encourages regional adaptation to climate change, water saving measures, water quality recovery for drinking water, the restoration of the natural functions of rivers, and biodiversity promotion.

As do all the water agencies, Agence RMC supports water sector investments by local authorities in several ways.

- Subsidies for projects: this is the major part of Agence RMC's programme. Subsidies are provided to finance up to 70% of a project.
- Bonus grants for efficient wastewater treatment.
- Repayable advances (i.e. loans at zero interest rate).

To ensure that projects are in line with its policies, Agence RMC actively engages in consultation with local authorities. It also launches calls for projects to stimulate investment in local authorities' non-priority areas. In 2020, for example, it launched a call for wetland restoration projects for which it would contribute up to 70% of the financing.

Source: Agence RMC, <https://www.eaurmc.fr/>



8. HOW ARE IFIS (MDBS AND DFIS) INVESTING IN THE WATER SECTOR THROUGH PDBS?

This section discusses how IFIs (both MDBs and DFIs) are investing in the water sector through PDBs; the types of investments; the instruments used; the risks and sustainability challenges they face; and the limitations to increasing investments via PDBs.

8.1 TO WHAT EXTENT DO IFIS FINANCE THE WATER SECTOR THROUGH NATIONAL PDBS?

There is no clear typology of IFI investment in the water sector through PDBs. They typically provide sovereign loans to a central ministry of finance, which then passes it on as grants/loans to line ministries and/or local governments. Some of these IFIs do provide loans through PDBs, sometimes earmarked for the water sector. Some of the IFIs also provide sub-sovereign loans directly, typically to metropolitan utilities, local governments and specific projects.

Most IFIs interviewed invest directly in PDBs for on-lending, which might be used in the water sector. There are also many examples of co-financing. For example, NADB (US/Mexico) sometimes co-finances investments in water and sanitation with BANOBRAS (Mexico).

Some of the sub-regional IFIs operate in countries where there are no domestic PDBs. None of the borrowing member countries of the Central American Bank for Economic Integration (CABEI) have domestic PDBs that operate in the water sector. The same applies to most of the member countries of Fondo Financiero para el Desarrollo de la Cuenca del Plata (FONPLATA). In these cases, sub-regional IFIs provide loans directly to local governments or utilities.

IFI finance to the water sector is sometimes also channelled through broader urban/municipal development projects. All IFIs mentioned that they provide loans for solid waste management, drainage and flood management within city development plans for climate mitigation and adaptation. Examples were also mentioned of water treatment plants (North Africa), drought management (LCA, North Africa and South Africa), irrigation linked to food security (LAC and North Africa), water network extension and rehabilitation (Eastern Europe). A few examples were mentioned of water reuse, support PPPs (Brazil and Middle East) and rural development plans (LAC).

The size of water and sanitation portfolios varies but is smaller than transport (the largest sector) and energy. Water portfolios range from less than 5% up to 15% of IFIs' overall portfolios, but up to 75% in the case of NADB. How much is channelled through PDBs is unclear. Further, investments in the water sector through PDBs are difficult to track as investments are not sectoral and only a few examples were mentioned.

Some IFIs also support water sector reforms or institutional support. A few IFIs (AFD, CAF, IDA/WB, EBRD) support sector reforms and work with regulators to improve the overall financial sector. Many others also provide institutional support to governments and utilities in the water sector (AfDB, KfW).

Most IFIs don't have a specific water sector agenda, largely because priorities for investments are set by countries/clients. The size of the water portfolio thus depends on changes in demand from clients. The Asian Development Bank (ADB) has set a specific target for sanitation investments to be increased to 25% of its water portfolio. AFD has also set objectives in its Sectoral Intervention Framework for the water sector (AFD, nd). IFI's historic mandates also play a role. For example, FONPLATA has historically focused on transport and has only started to grow its water portfolio. It takes time to expand into new sectors. NADB, on the other hand, has a very specific mandate in investing in environmental infrastructure in which water and its sub-sectors have a very prominent position (75%) without specific targets.

The Paris Agreement and climate targets are driving decisions behind investments for the majority of IFIs. AFD, EIB and ERBD have all increased their targets: by 2030, 50% of investments should be climate compatible. CAF is committed to at least 30% of investments being climate compatible in the short term. The SDGs are also leading for some IFIs, a few of which have combined the climate targets and the SDGs.

Whilst biodiversity is not yet a dedicated direct investment area for many IFIs, they do finance projects that generate benefits related to biodiversity protection. Biodiversity protection is indeed an outcome of wastewater treatment projects which are often funded by IFIs. Rather than a decision driver, biodiversity is a positive side-effect of investments.

8.2 WHY ARE IFIS CHANNELLING FUNDS AND CO-FINANCING THROUGH NATIONAL PDBS?

Most IFIs in this study provide loans to PDBs for on-lending to municipalities and service providers. The rationale for this is that PDBs are able to reach a broader geographical scope and more beneficiaries than IFIs would be able to. PDBs can also target smaller municipalities and utilities, providing smaller loans while MDBs frequently may not provide loans under a certain amount. PDBs can also have credit lines in local currencies, which is often an issue for IFIs.

“The projects we can finance through PDBs can be very small actors that we would never normally be able to finance.” – IFI on national PDB

Water sector loans provided through PDBs are larger than other loans to the sector. For example, in Turkey, the World Bank has disbursed nearly US\$ 400 million via IIBank for the benefit of 14 municipalities over 10 years. CAF has disbursed US\$ 864 million to the water sector via BDE (Ecuador). Some IFIs are co-financing the water sector jointly with national PDBs. For instance, BANOBRAS and NADB co-finance when the size of an individual investment goes beyond what either of them can finance alone. The same goes for FONPLATA which may co-finance with IADB. IFIs shift some lending risks to PDBs which manage the currency risk since most water projects are financed in local currency while the IFIs will finance mostly in hard currency.

Investing in the water sector through PDBs provides value for money to IFIs in terms of the outcomes achieved relative to the size of loans. By working with PDBs, IFIs also invest less time and resources in water project preparation as they work upstream with finance institutions and regulators rather than directly with municipalities or service providers. The PDBs take on the responsibility for project preparation and ensure all sub-projects comply with IFIs standards and procedures.

PDBs are also a good solution when IFIs do not have local offices. PDBs can actively contribute to project origination, preparation and monitoring on behalf of IFIs. Furthermore, the collaboration with PDBs contributes to capacity reinforcement and increases the autonomy of the country's financial systems in terms of processes and international standards – which then benefits many other sectors.

From a PDB perspective, working with IFIs also has benefits. IFIs often have very good credit ratings and therefore attract cheaper capital, which allows PDBs to on-lend at lower rates.

Box 16 outlines other benefits of sourcing funds from IFIs from the perspective of one PDB, the IIBank (Turkey). Another benefit is that IFIs may be able to provide some grant or concessional funding for project preparation.

Box 16: Benefits of IFI funding: the perspective of IIBank (Turkey)

IIBank has a long history of accessing funds from IFIs and has a special department that deals with the management of international funds. IIBank’s access to IFI financing is backed by a sovereign guarantee. Although IFI finance comes with lower interest rates than locally sourced finance, it also comes with currency risks to which the Bank remains exposed, although it can lend in foreign currency. Other advantages of IFI finance for the Bank and other beneficiaries are that it:

- enables IIBank to diversify the loan portfolio by making additional capital available;
- provides long-term credits (up to 30 years) to local authorities with a five to seven year grace period;
- increases IIBank’s know-how and capacities;
- enables institutional capacity building of local authorities, especially where funds come with TA and grant components; and
- makes overall project management more efficient.

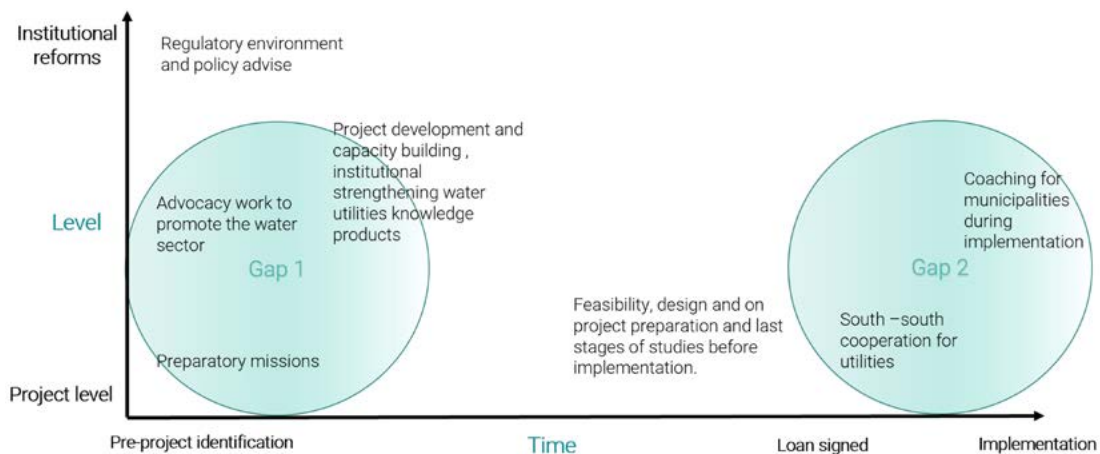
Source: IIBank

8.3 WHAT ARE THE SERVICE AND INCENTIVES IFIS USE TO CREATE DEMAND FOR NATIONAL PDBS TO WORK IN THE WATER SECTOR?

Technical assistance (TA) mechanisms are widely present and extremely diverse. The larger TA being made available by IFIs interviewed is focused on the regulatory environment (see Box 17). TA is also an important component of Water Project Preparation Facilities such as the AfDB’s African Water Facility or CAF’s Water Sector Pre-Investment Program (PPSA). The latter has assigned US\$ 20 million of non-reimbursable resources to water project preparation, benefiting many countries in LAC.

The largest financing gaps described by the IFIs are in the areas of pre-project identification, advocacy work to promote the water sector and project development and, after the loans are signed, the TA required through to project implementation (Figure 10). This type of TA falls under long term systems strengthening and the risk of failure (i.e. investment not leading to loans) is very high. According to one MDB representative, working in this area is the only way for MDBs to remain relevant in the next 15 years.

Figure 10: Technical assistance from MDBs to the water sector, an overview



Box 17: Examples of technical assistance provided by MDBs relevant for PDBs and the water sector

- Working with banks that want to develop a green bond framework. The MDB works with central banks and regulators concerned with climate.
- In Brazil, jointly with development banks, MDBs support the new regulatory framework that stimulates private sector engagement.
- In Kyrgyzstan, the MDB works with the regulator to ensure that the private sector can enter the water sector.
- In Tunisia, there is a large TA component in capacity building dedicated to ease project execution. Coaches work directly with 26 municipalities and support the municipalities with procurement, environmental assessments and reporting during implementation.
- In El Salvador, the MDB supported the development of a water sector trust fund.

All IFIs want to work more on the enabling environment to allow the water sector to develop, but some governments are reluctant even when technical assistance is offered as non-reimbursable. We do not know the reasons for the reluctance. However, on a positive note, the demand for policy-based loans is actually increasing (see Box 18). Here, governments are asking IFIs to support their sectoral frameworks and are requesting policy-based loans to improve governance and strengthen the regulator.

“Buying reforms has been the most effective mechanism to ensure sustainability” – IFI representative

Box 18: Policy-based lending in the water sector in Tunisia

Germany has been supporting Tunisia with investment projects in the water sector for many years. To ensure that these projects are even more sustainable, including in the context of sectoral policy, Germany has also extended promotional loans worth an estimated € 300 million over three years (2017-2019) to back reforms, with € 100 million disbursed so far. The measures fixed in the policy matrix provide sound support both to reforms in public financial management and to water sector development, working in close cooperation with an IMF programme running in parallel to them. The activities in the water sector have included the passing of a new water law, national wastewater standards, and tariff changes.

Policy based financing is mostly concentrated in middle-income countries which have a greater capacity to implement reforms. It is appropriate for lower income countries in exceptional cases. Peer experience with PBF include the World Bank, the Asian Development Bank, the French Development Agency and KfW Development Bank.

Source: Konig et al., 2020

Products mentioned by the IFIs include equity, guarantees, investment premiums and results-based lending although these may not necessarily be used with PDBs or in the water sector. Equity is marginal and seldom used in the water sector (except by MDBs' private sector arms). Most loans are sovereign so they do not need additional guarantees. The European Union (EU) is developing a guarantee mechanism and some IFIs are extending loan or/and payment guarantees to enable utilities to get private loans. The uptake of these guarantees is low and though obtained in the energy sector, they are not being obtained in the water sector.

Investment premiums were mentioned by one MDB. These are exclusive to funds provided by the European Commission where a percentage of the loan is reimbursed when the projects are fully implemented. Results-based lending is being used by two MDBs but have not yet been used in the water sector. One MDB mentioned that it is still early days for this type of instrument, and while the energy clients like it, it has high transactional costs and requires a lot of capacity in the countries. Another MDB has a payment for results instrument used for water in Vietnam and Benin, but it is not directly related to its work with PDBs.

8.4 RISK ASSESSMENTS AND SUSTAINABILITY

The answers to how IFIs do risk assessments and ensure the sustainability of the programmes they fund were very similar among the IFIs and do not specifically refer to investments in the sector through PDBs, but how the IFIs address these areas in their operations in general.

Currency and financial risks

Most IFIs provide loans in hard currency, but there are exceptions. Local currency is increasingly being used upon request. PDBs also request funds in hard currency. Local currency loans can become more expensive and the financial conditions discouraging for the clients. Most IFIs blend funds to soften the conditions that are passed on to PDBs.

For the lenders, there are limited financial risks overall as most IFI loans are backed by sovereign guarantees which covers loans to PDBs and in the water sector in general.

Risk assessments and coherence of investments

All the IFIs mentioned structured, standard processes with multi-disciplinary teams which look at environmental, institutional, social and financial risks. Due diligence ensures that investments in the sector are not detrimental to other sectors. As IFIs do not control the sectoral allocation of the funds, this will not affect PDBs that benefit from IFI funding. Climate risks have also started being included in financial assessments given risks associated with water scarcity, flood and projects' level of water resilience. In terms of coherence of investments, these are taken into account by the processes and terms described above. Internal compliance mechanisms try to resolve any incoherence in the investments. Again, if the funding is channelled through other intermediaries, due diligence needs to be implemented differently.

Sustainability and measurements of success

IFIs have their internal mechanisms, tools, scores and matrices to measure success and sustainability. Many do ex-post evaluations beyond the programme scope. However, most IFI representatives interviewed mentioned that there are still many problems with sustainability and impact in the water sector, as there are in other sectors.

One particularly difficult point mentioned was reaching low-income areas. Agreeing on particular measures to the loans is not enough to see real changes taking place in leaving no one behind and IFIs were requesting greater accountability and more ex-post evaluations on what is working well.

“We are not putting any incentives on the performance of service providers. Tariffs cannot increase, service standards don’t improve, there is poor financial sustainability and governments don’t look for additional funds. However, no loans are cancelled either. The business interest to provide loans is stronger than the development impact.”- IFI representative

There are two major challenges concerning sustainability of water sector financing. One is that some of the projects take five to 10 years for preparation and implementation. Within this time frame many things change, people change and the risks associated with sustainability also change. The second challenge

is that climate projections will need to be incorporated into sustainability assessments consistently within the water sector.

Covid-19 impact

There have been no changes in risk assessments due to Covid-19. All IFIs mentioned that they are redirecting funds and creating new short tenure (two year) credit lines to provide liquidity to SMEs and utilities that have less capacity to pay operational costs given the decrease of revenues from industrial and commercial activities. Other support is being provided directly to treasuries for emergency response and is not water sector specific.

8.5 LIMITATIONS FOR INCREASING INVESTMENTS IN THE WATER SECTOR THROUGH NATIONAL PDBS

In practice, the IFIs interviewed tend to collaborate directly with sector institutions rather than with PDBs in channelling funds to the water sector. There are many underlying reasons for this, including:

- that not all countries have well-established PDBs;
- that not all well-established PDBs have a mandate for water (and other municipal services);
- the water sector market structure and lack of credit worthiness. In these contexts there is limited lending opportunities for PDBs and is the case in countries where central government funding is predominant, decentralisation is not effective and private sector participation very limited.

Many banks in Latin America and Asia can get cheaper finance in the local capital markets (Brazil, Mexico, Philippines, Ecuador) and procedures and conditionalities to access loans through IFIs can be cumbersome. PDBs need IFIs when they need longer tenors and more concessionality.

The lack of IFI local offices limits the demand of water projects. IFIs with a local presence have higher demand from PDBs for the water sector. In most lower middle-income countries, governments need to be 'sold' the idea of the water and sanitation sector. It is a difficult area to work with and create demand for and is rarely a high level country priority. IFIs need to have country officers that constantly promote the sector issues, build cases, and do intensive advocacy work for financing the sector within the country. In contrast, for PDBs in LAC, sanitation in the form of sewerage and wastewater is actually a larger market than water supply, probably because this is where the biggest investment gaps are at the moment.

**PART 3
CASE STUDIES,
METHODOLOGY,
LITERATURE AND
REFERENCES**

ANNEX 1. CASE STUDIES

NATIONAL PDBS

Agence France Locale (France)

Agence France Locale (AFL) is a banking institution fully owned by French local authorities. Its mission is to 'embody responsible finance to strengthen the local sector's empowerment so as to better deliver the present and future needs of its inhabitants'. AFL was created in 2013 and followed the model of other local authority-owned banks that had been established around Europe (e.g. Kommuninvest in Sweden, KBN in Norway, MuniFin in Finland, and NWB in the Netherlands). AFL exclusively banks with local authorities who are also its sole shareholders. The Bank operates on a membership basis whereby eligible local authorities join and contribute to the bank capital according to a formula. AFL deals with all levels of local authorities, from municipalities, groups of local authorities to regional governments). Eligibility criteria include financial ratios related to solvency, indebtedness and budget sustainability. As of 2021, AFL had 430 local government members (covering 45% of the French population) and had provided EUR 4.5 billion in loans to local authorities since 2015. In addition to capital contributions from members, AFL sources funds from international capital markets (bond issuance). Its high credit rating (Aa3) makes it particularly attractive for national and international investors and in turn enables the institution to offer attractive interest rates to its borrowers. Its financial assets were estimated at EUR 5 billion in 2020.

In 2020, AFL issued its first sustainability bond. The Bank aims to use the proceeds for financing social services, the energy transition and sustainable infrastructure, which includes water and sanitation-related infrastructure.

Water sector financial product features. AFL only provides loans to its members and does not offer sector specific products. Loans are provided to support investment budgets and are not earmarked to specific sectors or activities. Loan proceeds can be used to finance a range of services and infrastructure. As a rule, AFL does not appraise loans based on their use or projects. It mainly considers local authorities' ability to repay based on their balance sheets. AFL only looks at loan proceeds – and the nature of the projects to be financed – when dealing with small local authorities who may be required to justify the project. As a general rule, however, loans are not earmarked for specific projects or sectors and the risk assessment is solely based on the borrower's financial position.

AFL's average loan size is EUR 4 million, but in practice it provides a broad range of loans – to date, as small as EUR 11,000 and up to EUR 50 million. Loan size depends on the local authority's needs and its debt capacity. Loan tenure also varies: to date, AFL has provided up to 42 year loans (17 year average).

AFL does not systematically track the nature of all investments realised by local authorities. It is therefore difficult to assess the size of water-related investments financed through AFL lending. However, water projects are likely to be significant since French municipalities are in charge of water services and have obligations related to ecosystem protection.

Banco de Desarrollo del Ecuador (Ecuador)

About the institution and its role in the water sector. The Banco de Desarrollo del Ecuador B.P. (BDE) is a financial institution that is part of the public development bank. It is an autonomous legal entity that falls under private law but with social and public aims. It has administrative, financial and budgetary autonomy. It provides financing for: 1) pre-investment, 2) investment in infrastructure and public services, 3) technical assistance and strengthening, 4) public-private partnerships and 5) social housing.

Historically, the sector called 'environmental sanitation' has played an important role in the targets and objectives of BDE, given its role in public health, social equity, economic development and environmental sustainability. Moreover, the environmental sanitation sector is a national government priority. It covers: drinking water supplies, sewers and latrine construction and solid waste.

Over the last five years (2016-2020), of the US\$ 2,571 million provided in loans by BDE, 37% went to the environmental sanitation sector. This includes 5,429 loans with a value of US\$ 926 million, or on average US\$ 185 million per year, with an average loan value of US\$ 170,000. Within this sector, 53% of the disbursements went into drinking water supplies, 40% to sewerage, and the remainder to solid waste, latrines and other minor investments.

There are two other sectors of relevance, but with a smaller loans: environment and natural disasters. These include investments in the reduction of deforestation and protection of recharge areas; and, irrigation and flood control. These two sectors saw disbursements of US\$ 139 million, or about 6% of all disbursements over this period.

Products and services in the water sector. Within the environmental sanitation sector, BDE provides the following products and services.

CrediBDE. This is a credit line for the Autonomous Decentralised Governments (Gobiernos Autónomos Descentralizados - GADs), as well as public utilities, for investments in different infrastructure sectors, including water. BDE provides the credit according to demand. GADs or utilities present requests for credit for the investments that they plan to undertake. BDE then assesses the request, initially from a technical point of view. BDE has a series of guidelines for the formulation and management of projects in different sectors, including the information required from the GADs and compliance with all relevant legislation and environmental regulations.

The conditions of the loan depend on the tenure and the GADs' risk classification which is based on their level of indebtedness. Current interest rates are between 7.11% and 8.95%.

Most demand comes from mid-sized GADs and public utilities. This segment of the sector prefers credit from BDE as its rates are more favourable than those of commercial banks. Furthermore, GADs and public utilities generally have solid institutional set-ups and are able to prepare projects and hence access credit. The very big utilities prefer to get loans directly from multilateral banks as they can get even better conditions there. Moreover, they need larger amounts, of the type of project finance, as identified in the national water and sanitation strategy.

Non-repayable funds. BDE can also provide non-repayable funds to the GADs. These are funds that come from the central Government budget. These funds are allocated according to an inter-ministerial committee that sets priorities using parameters such as population and unmet basic needs. BDE can provide up to 75% of the requests in non-repayable finance. The remaining 25% needs to be provided by the municipalities themselves, for which they can take out loans.

Technical assistance. BDE provides technical assistance through a programme called PATGES (Programa de Asistencia Técnica para la Gestión de Servicios de Agua y Saneamiento - Technical Assistance Programme for the Management of Water and Sanitation Services). The technical assistance is provided by a dedicated unit, and in close coordination with its regional branch offices. It is aimed at strengthening the capacity of the GADs and public utilities so that they achieve a higher performance and greater sustainability in service provision. It covers administrative, financial, commercial and operational areas. It consists of a performance assessment of these areas, and the development and implementation of an institutional development plan. It puts special emphasis on compliance with credit disbursement conditions, and tariff reviews. PATGES is funded by repayable and non-repayable sources.

There is a similar programme, financed by BDE, AFD, the EU and LAIF (Latin American Investment Facility) that covers both technical assistance and pre-investments. It specifically finances pre-investment studies in the most fragile municipalities. It also seeks innovation in management through a model of associations of municipalities.

Risk assessment. The Risk Department is in charge of the administration, management and use of loans. It calculates the level of debt that GADs can take on. Municipalities submit their annual accounts, tariff levels and revenue generation data, according to which the level of debt is calculated.

As a guarantee, BDE uses the earmarking revenue method. This consists of an agreement between the municipality, the Central Bank of Ecuador and BDE. The agreement stipulates that within the municipal budget, the amounts needed to repay loans are earmarked first, before any other expense can be incurred. This agreement is needed as public institutions like municipalities cannot provide fixed assets as collateral. So far, there have been very few cases of non-compliance with repayments.

Apart from financial risks, the Risk Department also considers other risk factors.

- Institutional sustainability. This consists of an analysis to determine if a public utility has a sufficiently solid enough structure, for example with dedicated departments for operations. In the case of GADM (Gobiernos Autónomos Descentralizados Municipales), it includes an assessment of whether it has a dedicated water department with sufficient personnel to take on supervisory or construction tasks.
- Environmental sustainability. Even though BDE doesn't have a dedicated environmental policy, it does have a system for environmental and social management to assess the level of social and environmental risks for investments. It includes compliance with certain requirements like environmental permits.
- Climate change adaptation. This is not yet being considered as a specific risk, but BDE is making the necessary institutional adjustments to cover this issue. It is in process of being certified to manage green climate funds and is the first in the country to do so.

Opportunities and challenges

- BDE has proven its ability to provide a package of products and services in the field of water and sanitation. Its main added value lies in providing technical assistance and supporting municipalities in actually accessing the finance. The combination of technical assistance and finance is key.
- The main limitation lies in the performance of service providers. Some are in a vicious cycle of not having the adequate infrastructure to provide a good service, and hence not being able to raise tariff revenue. But the tariff is the key to access finance under favourable conditions.
- There is a great need for efficient regulation so as to break vicious cycles such as the one above.
- Certification for green climate funds is a good opportunity to increase investments in the sector. But it requires a better understanding of what actually adapting to climate change in the water sector entails.

Banco do Nordeste do Brasil and Banco Nacional de Desenvolvimento Econômico e Social (Brazil)

Public Development Banks in the water sector in Brazil. The Finance in Commons database has 21 domestic PDBs from Brazil. This includes two federal banks and 19 that serve one or more states. Of the 21, 11 appear to work with water-related investments. These include: 1) the federal level BNDES; 2) the federally owned but locally operating BNB; and 3) nine state level banks. This case study of BNDES and BNB illustrates their roles.

	BNDES	BNB
Geographical area	Whole territory of Brazil	North-eastern region
Ownership structure	Fully owned by Federal Government	Mixed, with 90% owned by Federal Government
Total assets (US\$ billion)	206.7	15.1
Rating (standard and poor)	BB-	BB-

	BNDES	BNB
Main focus	Provides financial products, guarantees, programmes and fund management. Provides grant funding. Structures concessions in infrastructure.	Credit provision through specific sectoral and multi-sectoral financial products.
Types of clients	All types of businesses from micro to large; government entities (federal, state and municipality); infrastructure developers. Works via intermediary financial institutions.	All types of businesses from micro to large, and individual rural producers of all sizes.

BNDES

Products and services. BNDES can provide financing to 1) service providers, 2) states and municipalities, and 3) financial intermediaries for investments in basic sanitation. In particular, it prioritises sewerage and wastewater treatment, and rainwater harvesting. It also finances water resources management projects such as wetland recovery.

BNDES uses the following instruments.

Repayable finance. These are direct loans to utilities, municipalities and states, with only a small part going to smaller clients through financial intermediaries. The total volume of loan disbursements for basic sanitation has been around R\$ 800 million year (US\$ 153.5 million), which represents some 5%-6% of BNDES' entire loan portfolio. There is no target for the number of loans or the loan volume in the water sector. Rather, it is demand-based. However, in hindsight, the loans are linked to the SDGs so the Bank can see how much financing is linked to the various SDG targets.

The conditions for these loans include that projects need to be higher than R\$ 20 million (US\$ 3.8 million). The average size of loans is around R\$ 137 million (US\$ 26.3 million), but with large differences. Loans for solid waste and small and medium municipalities is R\$ 45-50 million (US\$ 8.6-9.6 million), while loans to state utilities can go up to R\$ 240 million (US\$ 46 million).

The loans are to be used primarily for developing physical infrastructure, but may contain a component of institutional capacity development. There are no loans for institutional capacity development alone.

The tenure period is up to 34 years, but typically is around 25 years. They charge the base interest rates, plus a ~1% fee for BNDES.

Grant funding. BNDES also channels non-repayable grant funding to special programmes. Examples of these are the rainwater harvesting programme and the funds for the Amazon. These are social funds which are fed out of the utilities of the BNDES. However, these funds are under review as they cover projects with high transaction costs which are not necessarily financially sustainable.

Funtec, a fund for technology development, also receives non-repayable grant funding from BNDES. Its main focus is on developing technologies that are appropriate in rural areas, reducing water losses and enhancing energy efficiency.

Equity funding. This type of funding is minimal in the basic sanitation sector. So far the strategy has not included equity funding in the sector. However, in view of recent regulatory changes, it may be adopted more widely in the near future.

Co-financing. Of the few cases of co-financing with IFIs in the sector, most involve very large loans to large state utilities. One of the challenges in co-financing is to reach agreement on risk sharing and guarantees.

What is more common is the co-financing with state level PDBs. As the investment requirements are so high, there is a need for complementarity in financing and above all risk sharing with the state level PDBs. It is mostly the clients themselves who seek that complementarity by approaching both BNDES and the relevant state level PDBs.

Risks and sustainability. The risk management unit does a sectorial risk assessment which is reviewed every two years. It assesses the overall governance of the sector and the risks it entails. Others then translate its findings into credit limits.

It then assesses the specific financial and environmental risks to the borrowers. This is done both prospectively and retrospectively. For the environmental part, there is a dedicated environmental impact assessment team that does the analyses and ensures compliance. On the financial side, borrowers need to provide a guarantee.

In general, the sector, is quite resilient. This was exemplified during the Covid-19 pandemic. The utilities depend on a reasonably constant household consumption of water. During the pandemic there were no cases of utilities not serving their loans. BNDES even provided the opportunity to postpone the payment of instalments, but utilities in the water sector did not use this facility. In effect, the main financial risk in basic sanitation is more related to major droughts and their effects on utilities' revenues.

BNB

Products and services. BNB's main products and services include the following.

Credit. BNB has a fund called Fundo Constitucional de Financiamento do Nordeste - FNE (Northeast Constitutional Finance Fund of the Northeast), which has a number of credit lines for rural areas. Two of these have a water component.

- FNE Agua. This is geared to companies of all sizes and sectors, rural producers, families, cooperatives and associations. It covers a wide range of types of infrastructure to promote efficient water use such as: household level water supply (rainwater harvesting); on-farm irrigation facilities; catchment works; and PPPs for large-scale water supply and treatment infrastructure.
- FNE Proinfra. This is geared to different kinds of public infrastructure, including energy and basic sanitation. For 2020, R\$ 7.9 billion (US\$ 1.5 billion) was programmed for infrastructure, of which 20% for basic sanitation (R\$ 1,580 million or US\$ 303 million). The limit is really the amount of money in the Fund which is fed by annual transfers from the Federal Government and by the returns on the loans. The borrowers are either private enterprises or public utilities, but only if these are autonomous (corporatised) and financially sustainable.

BNB thus provides varying levels of credit to different clients ranging from micro-finance to individual farmers to large-scale finance for utilities for major sanitation and treatment works, as well as the middle segment in between.

BNB extends demand-based credit. That is, there is a broad programme of the amounts available for infrastructure in the FNE. Part of this is an earmark for financing of sanitation. This is not an upper limit and if there is demand, it would finance more. However, in reality, demand is often below the earmark.

BNB can reach these clients, amongst others, by its widespread presence in the Northeast region, with over 300 offices and agencies.

The conditions for financing depend on the scale and type of borrower. For the larger-scale finance, tenure periods are up to 34 years, with grace periods of up to eight years. The size of loans ranges from R\$ 20 million to R\$ 1 billion (US\$ 3.8 to US\$ 191 million).

As BNB does not work with guarantees, borrowers need to bring in their own finance, and possibly co-finance. For large companies, BNB can only finance up to 50% of a project, and at least 20% of the costs of the project needs to be covered by the borrower's own capital. For these reasons, co-financing is crucial. In the water sector, this is usually with BNDES and with IFIs such as the WB and IDB.

Structuring finance. The need in the northeast is for structured finance for large and complex investment projects, particularly sewerage and wastewater treatment. BNB helps structure the finance for these kinds of operations.

Research and development funds. BNB also offers repayable and non-repayable funding for research and development. The amount of funding through this window is between R\$ 10-20 million a year (US\$ 1.9 to 3.8 million a year). This financing is available for research proposals, assessments and studies.

Risks and sustainability

Financial risk assessment for large-scale loans (e.g. to utilities) is done at two levels: 1) the clients' overall finances, and 2) the specific project. In addition to the financial risk, BNB assesses projects' social and environmental risks. All the assessments need to be done before BNB's Board approves large projects. BNB does not run any currency risk. This is only run by IFIs when they provide co-financing.

Opportunities and challenges

BNDES and BNB incur similar opportunities and challenges in their water and sanitation loan portfolio. These relate to the sector's legal, regulatory and institutional framework.

- Changes in the legal and regulatory framework, requiring utilities to invest. Last year the legal framework was changed and now obliges utilities to show that they have the investment capacity to expand their services and reach universal coverage. One of the key conditions is that projects need to be regional, covering more than one municipality. This is intended to create more economies of scale and potential for cross-subsidies. There are already regionalised figures in the form of state utilities and in some metropolitan and urban regions, but they may need to be developed elsewhere. If states don't do this voluntarily, the Federal Government may create the structures required. This process will take time as it implies that states (or Federal Government) need to establish a regionalisation structure and municipalities need to join these structures. This is not obligatory for the municipalities, but should a municipality not do so, it loses access to federal resources including financing by BNDES or BNB. Whereas in the longer term regionalisation should lead to greater capacity to take on finance and have more financially sustainable utilities, in the short term it may actually lead to a temporary reduction in investments in regions where this process incurs obstacles. This will be a key risk and opportunity for BNDES in the coming years. Many states have already established a regional structure, such as Alagoas, São Paulo, Bahia and Ceará.
- Concessions and contracts between utilities and states and municipalities. The new legal framework also opens up concessions to private enterprises. However, these concession contracts require specifying utilities' investment responsibilities, which can sometimes be a bottleneck. For example, Alagoas state had no investments at all in basic sanitation and BNDES is currently supporting the structuring of the concession contract to make the investment obligations more explicit.
- Mismatch between demand and availability of budgets. The demand for loans is skewed. Many utilities are financially unsustainable or do not have incentives to invest in expansion, and demand for financing is thus not forthcoming. The regulatory changes and structuring of concessions contracts and investment is thus key. At the same time, some of the larger players – state utilities – have very high financing needs and they can structure projects, but the size of the investments is sometimes higher than what is available at the banks. Co-financing between development banks is then needed.
- Limitations of fiscal rules. There is a general limit to credit to the public sector as a whole. It can only take on so much debt, and that even gets transferred to public utilities.
- Multitude of institutions at different levels when compared to other sectors like energy. The water sector includes a multitude of institutions at different levels: municipal, state and federal. This implies a major need for coordination and alignment of responsibilities in financing. This makes it much more difficult to come to financing agreements, at least compared to other sectors.
- Coordination and competition with other development banks. The investment needs of the water and sanitation sector are so high that there is no real competition between BNDES, state level banks, and IFIs. Rather, there is often a need for co-financing agreements between them whereby each has its own niche, advantages and disadvantages. For example, IFIs can provide larger amounts of finance, but leave the currency risk entirely to the borrower. BNDES has a very large portfolio and greater financing capacity, and state owned banks have more coverage on the ground. Together, they can therefore come to co-financing agreements.
- Environmental sustainability compliance. There is a clear need to comply with environmental sustainability standards, but this is complex due in part to gaps in the regulatory framework and environmental information, and differences in legislation between states.

Banco Nacional de Obras y Servicios Públicos (Mexico)

About the institution. BANOBRAS was founded in 1933. It is currently the fifth largest bank in the country according to the size of its assets. It finances and refinances projects that are directly or indirectly related to public or private investment in infrastructure, and to public services. At the same time it contributes to the institutional strengthening of the federal, state, and municipal governments so as to contribute to the sustainable development of the country.

BANOBRAS provides two financing flows. The main one is in its role of development bank through which it provides debts, leases, guarantees and non-repayable finance to states and municipalities. The second one is providing financing to the private sector through project finance structures in which public-private partnership works as well as productive public works are funded.

Products and services in the water sector. BANOBRAS has a series of financial and technical products and services that it provides in the water sector. These include repayable and non-repayable finance directed at public and private entities to cover investments in infrastructure and performance improvement. Some of these are managed in the form of programmes. The main finance schemes include the following.

Social Infrastructure Contribution Fund (Fondo de Aportaciones para la Infraestructura Social, FAIS).

This is a multi-annual finance scheme to support the development of physical works, basic social activities and investments that favour the parts of the population that are in extreme poverty, and settlements with a high or very high level of social lag. It is a credit line through which 25% of the resources to which municipalities are entitled are paid up front. The financing can only be used for certain expenditure items such as water, sanitation and drainage. However, in practice there is little demand for this fund from small municipalities.

Direct credit. This is a direct credit line to municipalities or utilities called Organismos Operadores (OO), or operating entities. Contrary to FAIS, it can also be used for productive public works. Moreover, the specific conditions in terms of tenure, interest rate and use are tailored to the needs of each client. In recent years, the percentage of all direct credits for the water sector has been minimal, close to zero.

Programa para la Modernización de Organismos Operadores de Agua (PMOOA), or programme for modernising OOs (PMOOA).

This programme provides non-repayable funds to OOs to undertake projects to modernise infrastructure and improve performance so that OOs can increase their tariff revenue levels. It consists of both technical assistance to OOs and infrastructure investments to reduce physical losses. PMOOA is funded by a trust fund created by the Ministry of Finance, public credits and BANOBRAS. The Ministry of Finance made initial contributions to the trust fund after which BANOBRAS has replenished it from its own profits.

BANOBRAS has entered into an agreement with the Mexican Institute for Water Technology (IMTA), which is responsible for guaranteeing that all the activities are duly executed, thereby meeting the modernisation objective. Once a modernisation project has been concluded, IMTA will issue a technical statement, based on which 40% of the investment costs in any infrastructure that was developed as part of the modernisation is paid by back by BANOBRAS.

To qualify for the PMOOA, an OO needs to meet various criteria.

- The duration of the modernisation trajectory is between 12 and 18 months.
- The number of users served by the OO exceeds 15,000 so that it focuses on medium and large OOs.
- It needs to have the formal approval of the municipality or state government to execute the project.

Since its start, some 48 OOs have joined the programme, of which 31 have concluded it successfully. Currently, a pilot is being planned to show that the programme can also work in smaller municipalities.

Project finance. This is the provision of finance based on a project's expected revenue flow. This is different from direct credit which is based on an institution's expected revenue flow. In general, a Special Purpose Vehicle is created which has a long-term concession from an OO, often for a treatment plant for wastewater treatment, drinking water treatment or desalination for example. One key condition is that

the project is co-financed with a commercial bank or other financial institutions. Apart from the financial product – long-term credit – other elements may be added such as guarantees, re-financing and a second floor financing.

Project finance's main requirements include:

- a robust revenue flow;
- long-term credit exceeding 20 years;
- a trust fund;
- collateral over shares and assets;
- guarantees (credit letters or corporate guarantees) during the construction period;
- contractor guarantees in case of non-compliance; and
- 20% own capital contribution.

There is no minimum size, but because of the complexity of these forms of finance, no projects worth less than US\$ 15 million have been approved.

PROMAGUA of FONADIN (National Investment Fund). FONADIN is a trust fund established by the Ministry of Finance within BANOBRAS and managed by BANOBRAS. The fund is replenished with the profits from toll roads and can be used for concessional finance, junior debt, guarantees and risk capital. It can also be used to provide subsidies and non-repayable finance to projects with high social returns. Above all, it is used for projects with financial risks that the market is unable to take on. One of the programmes under FONADIN is PROMAGUA, which does the following.

- Provides concessional and non-repayable finance of up to 49% of projects under PPPs.
- Provides non-repayable finance of up to 50% of the costs of project preparation, studies, document tendering and project closure. Despite these conditions, only 20% of the projects financed through PROMAGUA have concluded successfully.
- Still under consideration is using PROMAGUA to earmark the modernisation of the commercial departments of utilities.

Recipients of non-repayable finance from PROMAGUA include states and municipalities, as well as OOs. One of the main advantages of the programme is that it reduces the pressure on local public finance as it combines this with private capital.

The fund has been used for some 33 projects in the water sector. With the equivalent of € 420 million in non-repayable finance, it has generated an investment total of € 937 million. It has approved some 47 grants for studies and project preparation.

Risk assessments

As part of its due diligence process, BANOBRAS does a risk assessment for the various types of finance. In terms of financial risks the following applies.

- For credits to local governments, the laws on fiscal discipline apply which govern the level of debt a local government can take on.
- For credits to OOs, the OOs need a certain revenue flow from tariffs to cover both operational costs and the repayment of the credit.

BANOBRAS also assesses the environmental and social risks as part of its Environmental and Social Policies. One point of attention in this is climate change mitigation and adaptation. BANOBRAS is in the process of being accredited as a Direct Access Entity for the Green Climate Fund (GCF). The objective of the GCF is to catalyse climate change mitigation and adaptation projects, in alignment with the SDGs, through concessional finance channelled through accredited entities. BANOBRAS is supported by the World Bank, IDB and GIZ and others in this accreditation process.

Opportunities and challenges

Over the last few years, loans to the water sector have reduced for a number of reasons.

- Budget allocations to CONAGUA have reduced. The reduction in public finance also means a reduction in ability to provide co-financing on loans.
- The laws on fiscal discipline cap local government debt. These same laws also restrict the transfers that local governments can make to OOs.
- The OOs' limited financial and operational sustainability brought about by the combination of low tariff levels and high non-revenue water levels. This low financial sustainability means that OOs are not in a position to take on loans.

The combination of these factors may lead to two opposing results.

- Greater self-sufficiency of the OOs. If the OOs receive less municipal funding, they may be incentivised to increase their tariff revenue to fill the financial gaps. They may eventually access loans.
- A reduction in service levels. Without municipal funding, the OOs may be unable to either make any investments or improve their tariff revenue. This may eventually lead to a reduction in service levels.

In order to ensure that the first scenario unfolds and avoid the second, there is need to push and support a water sector reform process which focuses on improving the sustainability of the sector.

Cassa Depositi e Prestiti (Italy)

About the institution. The Cassa Depositi e Prestiti (CDP) was established in 1850 by the then Kingdom of Sardinia with the main purpose of mobilising private savings managed by the state for financing public works. The institution, then 100% owned by the state, mirrored the French CDC which had been introduced by the Napoleonic Government in Milan. Following national unification, the CDP model was extended to the whole Kingdom. Other key developments for CDP were the creation of Post Office Savings Banks that operated as branches of the central savings bank guaranteed by the state, and the extension of CDP municipal and provincial credit services to all municipalities. Since its creation, CDP has played a major role in financing local development, especially through the provision of debt to municipalities (Box A 1)

Box A 1: CDP: a partner in infrastructure development since the late 19th century

Historically, CDP has offered attractive lending terms to municipalities. Compared with other commercial financial institutions, CDP offered better interest rates, time-spread drawing according to the nature of works and long tenures of up to 50 years. As a result, CDP has been a key financial partner for Italian municipalities looking to expand basic infrastructure, including water and sanitation services. Archives of the city of Milan's water and sanitation accounting chapters show CDP involvement dating as far back as 1906 when it provided 35-50 year payback period loans to the city of Milan for multiple sectors, including water. At that time, the Italian central government did not provide any transfers to municipalities who had to finance infrastructure development from their own resources (primarily local taxes) and repayable finance. CDP also provided short-term debt to municipalities to cover interest rate payments from loans contracted from commercial banks.

Source: (Crespi Reghizzi 2012)

In 2003, CDP became a joint-stock company and opened up to private sector participation in its capital. As of 2020, 83% of its share capital is owned by the Italian Ministry of Economy and Finance, 16% is held by various banking foundations, and the remaining 1% is in Treasury shares. CDP is also the third largest Italian bank according to the value of the total assets owned by the group (around EUR 425 billion in 2019). The institution continues to source its funds from postal savings in addition to bond issuance.

CDP involvement in water sector. CDP's 2019-2021 business plan's strategic and operational approach is in line with the principles of sustainable development. It recognises SDG 6.2 as a key area of focus for promoting public infrastructures. It aims to 'lead the development of Italian infrastructure as an advisor and promoter, not only as a financier'.

Its clients in the water sector include government institutions such as municipal and regional governments and corporate water utilities (including those under public ownership). Italian law encourages the regionalisation of water service provision, delegated management via concessions and PPPs. Today, most Italians are served by 201 water and sewerage companies operating in 91 basins under concession contracts with regional governments. These utilities can be publicly or privately owned or under mixed ownership. Direct municipal provision does still exist in many areas of the country.

A testimony of CDP's long-term engagement in the sustainable development of Italy's infrastructure is the Sustainability 'Hydro' Bond issued in 2018. It was the first of its kind launched on the international capital market by an Italian issuer. The bond was dedicated to help finance the construction, development and modernisation of Italy's water infrastructure which was characterised by significant infrastructural gaps and a substantially lower average annual per capita investment than those recorded in other European countries. The Sustainability 'Hydro' Bond is worth EUR 500 million and the proceeds were used to finance water-related public infrastructure projects through debt to 1,212 public entities. The Sustainability 'Hydro' Bond has helped streamline the water system. It has reduced water dispersion by over 40 million cubic metres and boosted employment by creating and retaining about 10,000 full-time jobs.

Water sector financial products features. When dealing with private sector borrowers (or commercial public utilities) CDP provides either corporate finance or project finance in the form of loans or bonds. Whilst corporate finance is based on the borrower's balance sheet, project finance is based on the project's future cash-flow. Accessing corporate lending therefore requires a strong balance sheet which is why smaller utilities cannot easily access this type of finance. Corporate loans to utilities are generally unsecured and have a relatively short tenure (less than 10 years). Project finance transactions require stable projected cash flows, are commonly secured and have a longer tenure (with a buffer from concession maturity). CDP also plays an important role in enabling Italian water operators to attract international investors, as in the case of SMAT's 2017 bonds (Box A 2).

Box A 2: Viveracqua and SMAT: two recent water finance operations facilitated by CDP

The Viveracqua Hydro Bond 2020. Viveracqua is a consortium of six water operators serving 320 municipalities with 2.3 million inhabitants in the Veneto region. In 2020, the consortium issued a EUR 248 million bond to finance the construction and renewal of 27,000 km of pipelines in a project costing over EUR 623 million. The EIB subscribed 50% of the bond, providing EUR 124 million, whilst CDP invested EUR 30 million and Kommunalkredit Austria AG EUR 74 million. The operation was coordinated by Banca Finint. The consortium had previously issued bonds.

SMAT bonds 2017. SMAT is the public company that manages water services in the Turin Metropolitan Area of 2.2 million inhabitants across 291 municipalities. CDP acted as the anchor investor of the bond issuance operation to attract other international institutional investors. The operation was SMAT's debut on the international bond market with proceeds planned to be used to finance water and sewerage networks and plant expansion and modernisation. The bond issuance secured EUR 135 million with Cassa Depositi as the principal subscriber.

CDP, as the reference institution for financing Italian public entities' investments, has granted loans for interventions in the water sector such as aqueducts, extraordinary maintenance and construction of water networks and other water works. Specifically, CDP finances: i) local authorities for interventions in the water sector; and ii) regions that allocate financial resources to grant capital expenditures to public entities. Consorzi di Bonifica¹ also benefited from loans granted by CDP for interventions in soil protection and irrigation water.

Caisse de Dépôt et de Gestion Capital (Morocco)

About the institution. CDG Capital is a wholly owned subsidiary of Caisse de Dépôt et de Gestion (CDG), itself a 100% publicly owned financial institution.

Founded in 2006, CDG Capital was formed from the consolidation of all the business lines dedicated to the financial markets within the CDG Group. Since its inception, the bank has honed its business expertise. It services institutional clients, corporates, and public companies, and is now positioned as a major player in Morocco's banking sector.

CDG Capital's strategy is to contribute to sustainable economic development by structuring financial solutions, mobilising financial resources toward valuable projects and acting as a major player in responsible investing. Thus, CDG Capital aims to:

- be a leader in the asset management business and a key reference in the investment banking sector in Morocco;
- contribute to the development of financial markets and the effective management of domestic savings.

The financial institution offers a wide range of services: debt & equity finance; structured finance; capital markets activities and brokerage; asset management; and asset servicing.

The bank is committed to finance climate change mitigation and adaptation projects in line with Morocco's National Determined Contributions, and is supported in this by Green Climate Fund (GCF) accreditation. CDG Capital aligns its interventions with the following priority sectors: general infrastructure (water, energy, transport, solid waste management etc.); social infrastructure (health, education); and, industry (agri-business). The bank supported the preparation and financing of a desalination project in Agadir (Box A 3).

1. Consorzi di Bonifica (Land Reclamation Consortium) are Italian public local entities that take care of the operation and maintenance of public land reclamation works and control the activities of private entities in their area of competence.

Box A 3: The role of CDG in the Agadir desalination project

In 2017, the National Office of Electricity and Drinking Water (ONEE) signed a public private partnership contract with Société d'Eau Dessalée d'Agadir (SEDA), a joint venture set up by InfraMaroc and Abengoa, a Spanish company specialised in desalination, with 49% and 51% shared ownership respectively. The joint venture was in response to a call for tenders by ONEE. CDG Group provided equity through InfraMaroc, an investment fund sponsored by CDG, and advisory services for structuring the transaction through CDG Capital Infrastructures, the fund's management company. The MAD 4 billion (EUR 365 million equivalent) project with two components (drinking water and irrigation water) raised debt financing from a consortium of local banks led by BMCE and including CDG Capital.

Under the contract, SEDA is responsible for constructing and operating the desalination plant for the drinking water component. The total production capacity of the plant will eventually be 400,000 m³/day, including 200,000 m³/day for drinking water supply. The project is expected to benefit about 1.2 million water users and about 3,000 farmers.

Source: CDG Capital (2020); Agadir desalination plant and La ViéEco (2017) Interview with CDG Investment Director; <https://www.bankofafrica.ma/fr/conventions-pour-la-r%C3%A9alisation-de-la-plus-grande-unit%C3%A9-mutualis%C3%A9e-de-dessalement-de-leau-de-mer-pour-lirrigation-et-l'alimentation-en-eau-potable-de-la-r%C3%A9gion-de-souss-massa>

Caisse des Dépôts Groupe (France)

About the institution. The Caisse des Dépôts Groupe is a public institution founded in 1816. It operates through subsidiaries and departments (directions), including the Banque des Territoires which specialises in financial products for local governments. Caisse des Dépôts Groupe's mission is to 'Act for more attractive, more inclusive and more sustainable territories thus contributing to the United Nations Sustainable Development Goals'. Caisse des Dépôts is a development institution with deep pockets as it manages 'Livret A' savings, a financial product whose interest rate is reviewed and fixed by the French Minister of Economy and Finance twice a year. As of September 2020, Livret A deposits reached EUR 324.3 billion. The institution also sources funds from bond issuance and manages funds from international financial institutions such as EIB.

With overall financial assets worth EUR 459 billion, Caisse des Dépôts' activities are controlled by a Supervisory Board (Commission de Surveillance) that includes members of Parliament and the Director General of the Treasury or his/her representative. The surveillance committee oversees all major decisions, including strategic direction. Caisse des Dépôts provides loans via the Banque des Territoires and equity finance via its subsidiary, Bpifrance. Banque des Territoires prioritises two strategic development areas: social housing and local development. Caisse des Dépôts Groupe clients are predominantly social housing organisations and local authorities, but it also provides loans and equity to private companies. In 2019, 41% of Caisse des Dépôts' financial assets were loans, the majority of which were allocated to social housing and urban development.

Current involvement in water sector. A long-term local development financial partner, including in water services, Caisse des Dépôts started becoming more involved in the water sector in 2017. Under a presidential decree, France embarked on national consultations (Assises de l'Eau) to assess water availability and quality in the face of climate change, and provide concrete solutions on the way forward. Its main objectives were to: identify the necessary behaviour changes related to water use (drinking water and wastewater reuse); improve sanitation services; and preserve water resource ecosystems (Box 1). As a main actor in local development financing, Caisse des Dépôts actively contributed to the consultations.

The consultations led to the creation of a dedicated financial offer by Banque des Territoires called the Aqua Prêt (aqua loan). As CDC collects Livret A deposits, Banque des Territoires proposes the Aqua Prêt

at the unique interest rate of 0.5% (rate of the Livret A since February 2020) with a financial margin of 0.6% to various beneficiaries, including local authorities. The product has been allocated an envelope of EUR 2 billion by the French Treasury to be spent by the end of 2022.

Other Banque des Territoires loan offers are for water investments and have different terms and conditions. These include: Prêt au Secteur Public Local, Prêt Projet Urbain and Prêt Renouvellement Urbain Aménagement. The Banque des Territoires' Private Equity Department can also provide corporate investments in the water sector.

The institution does not provide subsidies for project preparation, although it may finance project-related engineering studies. The Banque des Territoires works in partnership with water agencies (Agences de l'Eau) on many projects, combining technical expertise and financial skills.

Water sector products features. Aqua Prêt loans are granted under certain conditions related to water supply and sanitation asset management, for example if prospective borrowers have carried out a diagnostic of their assets and have defined a five year water investment strategy. These conditions were introduced to improve the sustainability of water sector investments in line with directives that emerged from the Assises de l'Eau. Other key features of Aqua Prêt are:

- it targets construction and rehabilitation of water and sanitation services, flood prevention and water ecosystems preservation projects;
- it lasts from 25 to 40 years, up to 60 years for water and sanitation networks; and
- its Livret A interest rate is set at 0.5% per year (as of February 2020) + 0.60% per year.

Risk assessment. Caisse des Dépôts considers financial risks related to water investments as very limited. French local authorities, its main clients, have strong balance sheets with low default risk. Risks are related to whether municipal projects align with CDC development objectives such as, in the case of Aqua Prêt, whether the project will enable sustainable water asset management. Finally, the institution recognises the SDGs as essential objectives and is committed to aligning its reporting to the SDG framework.

Box A 4: French Assises de l'Eau: national conferences gathering all stakeholders in water management including financial institutions.

In November 2017, the French President decided to hold consultations involving various national level water stakeholders. The Ministry of Ecology and Sustainable Development mobilised elected officials, local authorities and service providers as well as other stakeholders such as financial institutions, including Caisse des Dépôts. The consultations were initiated to address the emerging issue of water quality and availability. One significant objective was to induce behaviour change in water management and consumption practices.

The consultations were carried out in two phases. The first phase, from April to August 2018, dealt with public water and sanitation services. Based on on-site inspections and consultations with local actors, this phase resulted in new measures to reinforce the water sector's investments. The measures focused on reducing water leakage, especially in rural areas, improving the quality of water services and enhancing customers' trust in public utilities.

The second phase, from November 2018 to July 2019, addressed water resources management, particularly water catchment, water sharing and preservation, and aquatic ecosystems protection.

Following the consultations, the French government committed to providing additional resources and support to local communities, including via CDC.

Source: www.ecologie.gouv.fr

Development Bank of Southern Africa (South Africa)

About the institution. The Development Bank of Southern Africa (DBSA) is a development finance institution owned by the Government of South Africa. Established in 1983, it seeks to play a pivotal role in delivering developmental infrastructure in South Africa and the rest of the African continent. The DBSA's focus areas are the energy, water, transport and telecommunications sectors, with a secondary focus on health and education. As of 2019/2020, DBSA helped deliver ZAR 66.3 billion worth of infrastructure, catalysing ZAR 43.1 billion of investments from third parties (e.g. commercial banks). DBSA provided ZAR 15.4 billion in loans and extended ZAR 1.4 billion to under-resourced municipalities.

DBSA boasts an integrated approach to infrastructure development. It intervenes across the infrastructure value chain, from the planning of infrastructure projects up to maintaining and improving project performance. At planning and preparation levels, DBSA provides support with project identification, carries out feasibility assessments and financial structuring services. It provides vanilla (fixed rate borrowing) and boutique financing (specialised and personalised investment management or niche financial services) opportunities and can mobilise expertise for construction supervision.

DBSA clients include municipalities, state-owned enterprises, the private sector and PPPs. It can also directly collaborate with national and regional governments in project management support.

As a development finance institution, DBSA aims to deploy innovative products and instruments to address market failure. It seeks to play a key role in credit enhancement together with other DFIs and MDBs. As such it can provide first loss capital and tenor extension products that can crowd in private sector investment.

DBSA predominantly provides long-term loans, with tenures up to 25 years. It can also channel grants, mostly for planning (e.g. master plans) and small investments. It finances municipalities according to their balance sheets. For smaller municipalities with weaker balance sheets, finance can be provided on a project basis. DBSA also explores alternative financing structures, including via the private sector.

DBSA works across sectors in a programmatic manner. As highlighted in Box A 5, this enables the institution to develop specific expertise in that sector and offer tailored advisory and financial services.

Box A 5: Benefits of a programmatic approach to tackle infrastructure challenges

The primary objective of the programme approach is to prepare projects, facilitate and mobilise funding for the implementation of projects at scale. Each programme will have different funding options, structures and solutions. The approach presents multiple benefits, including:

- the ability to address complexities associated with infrastructure planning and delivery;
- the enabling of a group of projects to achieve benefits that would not have been realised had the projects been undertaken independently (for example, policy and regulatory changes);
- the deploying of services and solutions in a standardised manner so as not to 'reinvent the wheel' for each project and thus gain efficiencies;
- providing customised funding solutions to support the implementation of specific assets;
- better positioning to attract private and/or donor capital for infrastructure development; and,
- having a balanced portfolio and strong pipeline of projects in terms of risks profile, which is often more effective in attracting investment from the private sector.

A programmatic approach is enabled by centralised sector expertise. Programme specific management offices are in charge of project preparation, procurement, incorporating best practice, vetting new technologies, monitoring and reporting on implementation.

DBSA is very proactive in project sourcing. Its ability to work across the infrastructure value chain, from planning to implementation, facilitates project origination. It often works with municipalities from project concept up to the formulation of a bankable project. It can provide funding for project preparation which is eventually capitalised in loans contracted by municipalities/utilities. DBSA seeks to work with any municipality, including those in weaker financial positions, and accompany them towards project formulation.

DBSA is increasingly looking to playing a key role in enabling private sector participation via blended finance. South Africa's infrastructure sector has predominantly been funded through central and local government funds. However, the scale of needs is pushing the Government to crowd in private sector investment. This comes at a time when there is an increased appetite from the private sector for SDG and ESG compliant projects. In this context, DBSA's role is to support project preparation (including via grants, other forms of project preparation funding and technical assistance) and enhance project creditworthiness (e.g. through the provision of credit enhancement products).

DBSA can also play a role to influence policies and regulations. As a government institution, it plays a critical role in sector dialogues and can provide the rationale and data required for policy and regulatory changes where relevant. DBSA participates in sector initiatives such as the Government's SIDS Technical Working Groups which supports public and private sector sponsors to create a pipeline of bankable and progress projects to investment readiness.

Current involvement in water sector. DBSA's operations in the water sector are historically limited compared with other sectors. The water sector is traditionally more difficult to finance compared to the energy sector, for example. Factors accounting for this relate to the sector's social nature and human rights expectations and include the following.

- Willingness to pay: expectations from consumers that water is a basic human right and needs to be provided as a free service.
- Revenue management: challenges related to cost-recovery due to factors such as service provision inefficiencies (South African water utilities have high NRW) and capacity challenges within municipalities.
- Lack of cost reflective tariffs: low tariffs, as many municipalities lack knowledge of the actual costs of services.
- Project preparation: lack of shovel ready projects and the extent of preparation needed to secure bankable projects.

However, the sector is one of the DBSA's key priority areas going forward and the institution is developing strong sector expertise. DBSA is responding to the call to action in the National Water and Sanitation Master Plan and is designing a National Water Programme which will comprise various sub-programmes including a:

- Non-revenue Water (NRW) Programme;
- Water Reuse Programme (WRP); and a
- Private Sector Participation (PSP) Model.

These three programmes have been positioned as blended finance programmes under the Infrastructure Fund, a fund managed by DBSA to attract private sector investment in infrastructure in South Africa.

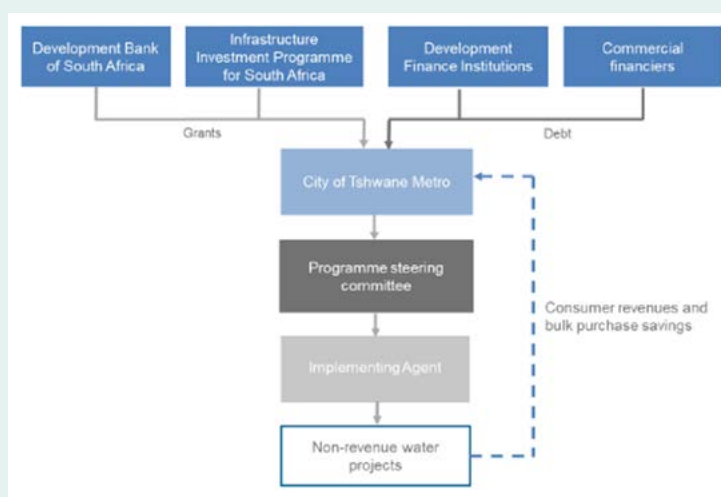
In parallel to the design of the National Water Programme, DBSA is assisting in the preparation of projects within the sector. Projects are being prepared with a view to creating innovative funding mechanisms and instruments to support the funding and implementation of these projects. A key aspect includes the design of operating and maintenance solutions, innovative and alternative technology to respond to the challenge of climate change, and the involvement of the private sector.

Box A 6: The municipal water conservation project in Tshwane

DBSA has developed a project to fund large-scale municipal water conservation, water demand management (WCWDM) and cost recovery programmes for the city of Tshwane. At project inception, the city was losing millions of rand annually as a result of water losses in the network and poor cost recovery due to poor maintenance (e.g. neglected water meters). A turnaround of the status quo was required, which also required significant capital.

To address this, DBSA and the Infrastructure Investment Programme of South Africa provided grant funding for pre-feasibility and feasibility studies that assessed and proposed mitigations to technical, institutional, legal and financial risks. DBSA also assisted with the design of programme financing. It combines conventional debt financing with structured finance characteristics. The aim is to enable the city to borrow the money required to conduct infrastructure improvements while strengthening its balance sheet over the implementation of the programme by using the proceeds to invest in projects that lead to savings through reducing water losses. The savings and improved levels of cost recovery from the sub-projects implemented will allow the city to finance future sub-projects through a combination of debt, own funds and grants. As the programme is rolled out, less debt will be required to finance the new sub-projects as the city will be able to fund a larger portion through own funds generated from the savings and improved revenues (Figure 11).

Figure 11: Tshwane WCWDM programme funding structure



Source: DBSA and OECD (2019)

Iller Bankasi (Turkey)

About the institution. Iller Bank – now known as IIBank – was founded in 1933 as a municipal bank. The institution is 100% owned by municipalities/local governments and exclusively provides financial and advisory services to the nearly 400 municipalities in the country and municipal corporations such as utilities. IIBank’s objectives are to: meet the financing needs of local governments; support the development of projects for municipal services; and, provide local governments with relevant consultancy services. It provides its clients with loans, grants and guarantees. Another function of IIBank is to transfer monthly national fiscal revenues to local governments. As of 2019, IIBank’s total assets amounted to TRY 36 billion (EUR 3.99 billion), including TRY 28.4 billion (EUR billion 3.1) in loans.

IIBank sources its funds from its own funds (interest rates received on loans), consultancy services and a 2% annual contribution from local governments from their share of fiscal revenues from the central Government. IIBank also has a long history of accessing funds from IFIs and has a special department dealing with the

management of international funds. IIBank's access to IFI financing is backed by a sovereign guarantee. Although IFI finance comes with lower interest rates than locally sourced finance, they also come with currency risks to which the bank remains exposed, even if it can lend in a foreign currency. IFI finance also presents additional advantages for IIBank (and other beneficiaries) as it:

- enables IIBank to diversify its loan portfolio by making additional capital available;
- provides long-term credit (up to 30 years) to local authorities with a 5-7 year grace period;
- increases IIBank's know-how and capacities;
- enables institutional capacity building of local authorities, especially where funds come with TA and grant components; and
- increases the efficiency of overall project management.

Current involvement in water sector. Financing water and sanitation projects is a significant part of IIBank's activities. Of the 366 projects IIBank financed and completed in 2019, 57 were related to water and 34 to sanitation. Water and sanitation-related loans represented 19% of IIBank's outstanding loan portfolio in 2019. Lending capital for these projects are sourced from both IFIs and locally sourced funds. However, the share of IFI finance allocated to water is estimated at about 75% of total international financing.

The bank finances infrastructure related to municipal services (drinking water, sanitation, drainage and flood control) rather than large multi-purpose water projects that do not fall under municipalities' financing responsibilities. In most projects, IIBank combines financial services with the provision of engineering and works procurement and supervision services. In order to channel this assistance, IIBank relies on its 18 regional directorates staffed with engineers that cover the whole country. This support throughout the project cycle facilitates the channelling of funds to municipalities that may lack technical competencies in the sector and are not familiar with IFI procedures. Some of these services may be provided as part of the grant component of the project financing. This capacity to channel support for project implementation across the country makes IIBank particularly attractive for IFIs. Indeed, IIBank has a long history of collaboration with several IFIs including World Bank, JICA, EIB, AFD, IsDB, UNDP and EU. With the World Bank, IIBank implemented the Municipal Services Project between 2005-2016, a project comprising a significant water and sanitation component (Box A 7).

Box A 7: The World Bank - IIBank municipal services project (2005-2016)

The Municipal Services Project is the first project financed by IIBank with IFI finance. Approved in 2005 for an initial financing amount of EUR 212 million, the Municipal Services Project benefited from additional financing of EUR 178 million in 2010 after high demand from municipalities. IIBank borrowed the funds under guarantee from the state and acted as a financial intermediary between the World Bank and municipalities. The project emerged in the context of high urbanisation rates and Turkey's ambition to join the EU, which made environmental services a priority for the Government of Turkey. The objectives of the project were to support the development of municipal infrastructure to improve the environment and quality of water, wastewater, and solid waste management service, and to support municipalities to strengthen their financial position. It also included an institutional strengthening component for IIBank itself. In line with these objectives, the project has three main components:

- physical investments in building and rehabilitating water and wastewater networks, constructing new treatment plants and solid waste management;
- support to sub-borrowers for carrying out feasibility studies, urban planning, the preparation of design and bidding documents and other projects documents; and
- strengthen IIBank's institutional capacity as this project was the first of its kind for the bank.

IIBank implemented the project by on-lending World Bank loan proceeds to qualifying municipalities. Criteria to identify eligible sub-borrowers included: no overdue payments to the Treasury; sector debt service ratio coverage of at least 1:2; and satisfactory institutional arrangements for sub-project implementation.

In total, 14 municipalities benefited from the project; 2.95 million people benefited from access to improved water sources in urban areas; 3.5 million people benefited from industrial and municipal waste disposal capacity; and 1.5 million people were provided with access to improved sanitation.

One main reason for the successful completion of the project was the existence of a strong pipeline of sub-projects at municipal level. Feasibility studies were carried out prior to project approval to confirm demand. In addition, IIBank's long-standing relationship with municipalities reduced the risk of insufficient demand.

Source: World Bank (2017): Municipal Services Project. Implementation Completion and Results Report.

Water sector financial products features. There is no specific loan range related to water sector investments. Loan size depends on the project (loans are sometimes allocated for multipurpose projects) and municipalities' borrowing capacity.

Risk assessments. In terms of risk assessment, IIBank carries out economic and financial due diligence of projects as part of feasibility studies. These can inform project redesign. However, risks of non-repayment are estimated to be very low as regulations authorise the IIBank to retain part of fiscal transfers due to municipalities should the latter default on their loans. As a result, IIBank has no non-performing loans.

Nederlandse Waterschapsbank (The Netherlands)

About the institution. The Nederlandse Waterschapsbank (The Netherlands Water Authorities Bank – NWB Bank) was established in 1954 by the Dutch water authorities. Initially, its focus was on financing the investments that water authorities needed to make, especially after the North Sea flood of 1953, to protect the country, given that 2/3 of the Netherlands is below sea level. Even though the water authorities are still majority shareholders (81%), NWB Bank also provides financing to other public and semi-public institutions such as municipalities, provinces, social housing associations, drinking water companies and health care institutions. The bank is also actively involved in financing public-private partnerships and renewable energy projects. Through its activities, the bank helps public entities achieve their policy goals and offers them appropriate financing at highly favourable terms.

According to its 2020 annual report (NWB Bank, 2021), it had a balance sheet of € 107 billion, provided € 10.3 billion in lending, and made a net profit of € 81 million.

The bulk of the bank's loan portfolio comprises loans to local authorities or institutions guaranteed by local or regional governments. This is one of the reasons why the bank has the highest credit ratings: AAA/Aaa, the same credit rating as the country itself (AAA).

Overview of the Dutch water sector and the way it is financed. There are five entities with responsibilities for different parts of water management in the Netherlands, each with their own sources of funding.

- Rijkswaterstaat. This is the national water agency and it is responsible for managing the main rivers and water bodies, particularly in terms of flood management and navigation. It is also responsible for coastal protection. It is largely funded out of national taxes and large projects (e.g. sea locks, sea barriers) are partially financed through public private partnerships.
- Water authorities. These are regional authorities, responsible for the local and regional water bodies in terms of water quantity and water quality, and wastewater treatment and disposal. There are 21 water authorities that have the status of local authorities under the Dutch Constitution, in a similar way as municipalities. They levy their own taxes, which is their main source of income. They also receive about 5% of their revenue from the national government for specific projects that are part of the national flood management programme.

- Drinking water companies. These utilities are responsible for the production and distribution of drinking water in the Netherlands. With the exception of the utility of Amsterdam, the utilities have no role in sewerage or wastewater treatment, and focus solely on drinking water. The 10 utilities are public limited companies whose shares are fully owned by municipalities and provinces. They levy tariffs which finance their operational and maintenance costs, as well as the costs of investments.
- Municipalities. Apart from being shareholders in drinking water companies, the only direct responsibility of municipalities with respect to water is the management of the sewerage network (both for sewage and rainfall drainage). As part of the municipal taxes, there is a dedicated sewerage tax, which is ring-fenced for sewerage works.
- Provinces. Provinces have a regional planning and oversight, and groundwater management role. These functions are in part funded from central taxes and in part from groundwater abstraction fees.

There is no central registry of all the expenditures on water management in the Netherlands (Dekker and Havekes, 2013). However, combining different accounts, the total expenditures is estimated to have been € 6.7 billion in 2012 (Dekker and Havekes, 2013), or about € 420 per person. OECD (2020) comes to a similar figure and estimates it to have been € 6.25 billion per year over the period 2011-2015. These amounts are equivalent to about € 400 Euro per person per year.

In another study, Dekker and Havekes (2012) break down these amounts by institution instead of by function. For this report, the relevant information is that water authorities account for about 42% of the expenditure, utilities for 21% and municipalities for 20%. This means that more than 80% of expenditure is incurred by local authorities (water authorities and municipalities) and publicly-owned utilities. As mentioned above, their main sources of revenue are dedicated and ring-fenced taxes and tariffs.

The residual is financed through bank debt which accounted for about 6% of the investments made over that period. A small fraction of the investments came from the EIB, but the vast majority through finance from the two public sector banks – including NWB Bank – in the Netherlands.

The OECD has projected the need for increases in funding for: 1) dealing with population growth; 2) compliance with EU regulations; and 3) making operations more efficient. For these purposes, the OECD estimates that the Netherlands will need to increase its spending on water supply and sanitation by about 28%. This does not include an as yet unestimated amount for flood protection. In its assessment, it believes that the Netherlands is well positioned to cover that increase as it has scope to increase both tariffs and public finance. It is also well positioned to attract bank financing.

The role of NWB Bank in the water sector. Although debt financing is a relatively small amount of the total financial flows in the Netherlands' water sector, it is a crucial one. NWB Bank plays a leading role here.

Of the € 10.3 billion in lending NWB Bank provided in 2020, 12% went to water authorities and 2% to drinking water companies, so about € 1.4 billion went into water-related investments. NWB Bank loans are a key source of financing for the water authorities and utilities. The € 1.2 billion of financing the water authorities received in 2020 is equivalent to 30% of their annual expenditure. NWB Bank is almost the sole provider of financing to the water authorities, accounting for an over 90% market share. In absolute amounts, the amount of financing to water authorities has increased significantly over the years to cover the costs of climate-adaptation investments.

NWB Bank is also a major financier of drinking water companies that are long-standing clients. Drinking water companies are publicly-owned limited companies that fall under private law. The Drinking Water Act (Drinkwaterwet) precludes the privatisation of drinking water companies, making them part of the public sector. In addition, the Act protects drinking water activities and regulates the rates and associated capital costs. This makes drinking water companies the perfect client group for NWB Bank. In 2020, financing to drinking water companies amounted to € 231 million, which further increased NWB Bank's market share in this sector. The increased financing of drinking water companies is in line with the bank's mission to be the bank of and for the public water sector. Of the loans provided to municipalities, it is not known how much goes to sewerage as all lending is in the form of balance sheet financing.

NWB Bank does not provide financing to the central Government other than indirectly through financing of PPPs. PPP is project finance for infrastructure in the Netherlands and includes waterways (e.g. sea locks,

dykes). NWB Bank finances several of these projects including the landmark project, the Afsluitdijk. In addition, part of water authorities' investments are done together with ministries (i.e. central government).

In providing financing, NWB Bank works on a client enquiry basis. It does not prioritise water authorities and drinking water companies geographically. Some water authorities or drinking water companies may need to invest more in climate change adaptation and hence may request more financing than others.

Instruments

NWB Bank provides almost all its loans in the form of balance sheet financing. So it does not require water authorities or water utilities to request funding for specific projects. NWB Bank is able to provide this type of financing as:

- risks are deemed to be very low as the counter party is a governmental body. Historically there has never been a credit loss;
- water authorities and water utilities have steady and secure revenue flows from earmarked water authority taxes and drinking water company tariffs;
- the water authorities and water utilities are democratically controlled with strong internal governance systems, which foster trust that all their projects have been duly scrutinised;
- water authorities and water utilities have a long track record in technical expertise, hence the capacity to define strong projects.

Over the past decade, there is a small but growing trend towards direct and indirect project finance. Two of the drivers behind this are outlined below.

- Requirements of IFIs, particularly EIB. The EIB provides loans (so called Global Loans) to NWB Bank on favourable financial terms, and NWB Bank passes these loans on to eligible clients. One of the conditions is that the loans are used by NWB Bank's clients for specific projects. In practice, the water authorities/drinking water companies then pick some investment projects out of their pipeline and label those as being financed through the EIB funds.
- NWB Bank's sustainability requirements. NWB Bank works towards the Netherlands' sustainability targets, particularly around greenhouse gas emissions and biodiversity. Under balance sheet financing, it is more difficult to account for specific contributions towards those targets. By financing specific projects, NWB Bank would be in a position to better steer on sustainability targets.

NWB Bank recently established a dedicated water innovation fund (NWB Waterinnovatiefonds) to which it will make contributions from its own reserves. The fund uses these funds to help and encourage the water authorities to continue to innovate and combat sustainability related challenges. The fund can, for instance, help develop innovative approaches and technologies for dealing with climate change in the water sector.

Mobilisation of capital

NWB Bank finances itself on the international capital market. It is able to raise funding at very favourable conditions given its very high credit rating. NWB Bank is rated as the fifth most stable bank in the world. It can thus attract investors that are willing to take relatively low but very secure interest rates. To ensure that water authorities have sufficient resources and to be able to provide them with long-term sustainable, NWB Bank has issued water bonds since 2014. The proceeds from these bonds have been used to finance water authority projects in climate mitigation, climate adaptation and biodiversity. In 2020, it issued dedicated water bonds with a value of € 503 million. These bonds attract finance at favourable financial conditions, in part because they have the Green Bond label. The proceeds of these bonds are solely used to finance water authorities' sustainable activities (climate mitigation and adaptation and biodiversity). NWB Bank is the largest Dutch issuer of ESG bonds.

NWB Bank also works with the EIB and the Council of Europe Development Bank (CEB) to provide even more attractive financing to the water authorities. In 2019, it mobilised € 100 million from the EIB/CEB, which it then doubled, for water authority water-related investments.

Risk assessment. Financial risks related to water investments are considered limited. So far the bank has never suffered a credit loss. The water authorities and drinking water companies have strong balance sheets with low default risk.

As it borrows on international capital markets, NWB Bank faces currency risks. These are not passed on to the clients since the bank only lends in euros. The bank hedges all of its currency risks one on one.

Sustainability. Sustainability is strongly anchored in NWB Bank's strategy. NWB Bank was established by the water authorities to finance their climate adaptation activities to protect the country from flooding. The strategy of the bank is best summarised in the Sustainable Water Bank Strategy.

The sustainability agenda is first and foremost understood in terms of the Netherlands' contribution towards the mitigation goals of the Paris Agreement. The Dutch Climate Agreement calls for a 49% reduction in carbon emissions compared to 1990 levels. In July 2019, NWB Bank, along with virtually the entire Dutch financial sector, committed to the Government's climate targets by 2030. By 2022 at the latest, the bank will have action plans in place to reduce CO2 emissions.

The second, and most recent, element is around biodiversity. This is understood to permeate some of the water authorities' core tasks, including water quality management. NWB Bank has committed to charting its impact on biodiversity by 2024 and setting targets for biodiversity loss reduction and reporting. NWB Bank is also Chair of the Working Group Biodiversity that is part of the Platform for Sustainable Finance of the Dutch Central Bank.

The SDGs are also an important frame of reference. As can be seen in its annual report, NWB Bank links its lending activities to the SDGs. It has selected six relevant SDGs where it believes it can have the most impact. SDG 6 is of course one of these.

PT Sarana Multi Infrastruktur (Indonesia)

About the institution. PT Sarana Multi Infrastruktur (Persero) or PT SMI is a state-owned enterprise (SOE) established in 2009 to deliver financial and advisory services on the development of national infrastructure. It is 100% owned by the Government of Indonesia through the Ministry of Finance. PT SMI's mandate is to be a catalyst in accelerating infrastructure development in Indonesia, including supporting the implementation of the Government and Business Entity scheme. According to the Financial Services Authority (OJK) Regulation POJK No. 46/POJK.05/2020 on Infrastructure Finance Companies, PT SMI is eligible to finance a number of infrastructure sectors, including roads and bridges, transportation, drinking water supply, water resources and irrigation, waste and wastewater management, telecommunications, electricity, oil and gas, renewable energy, energy conservation, urban infrastructure, education facilities, arts and sports facilities, estate facilities, tourism, health facilities, correctional facilities, public housing, state buildings and other infrastructure that has obtained the OJK's approval. Its international rating as the Government of Indonesia was BBB/stable in 2020. Its total revenues in 2020 amounted to IDR 5,781 billion (US\$ 400.5 million) and total assets IDR 100,740 billion (US\$ 7.14 billion).

The financial institution sources capital from the Government, capital markets (bond issuance), loans and grants as well as asset sales and Sharia funding. PT SMI's business model consists of three main pillars:

- financing and investment, through the provision of commercial, Sharia and public sector financing;
- advisory services, including financial and investment advisory services, and financing arranger;
- project development, including PPP projects, municipal finance project preparation, capacity building, technical assistance and geothermal infrastructure development fund management.

Compared with other financial institutions, especially commercial financial service providers, PT SMI brings advantages to infrastructure financing.

- The ability to provide long-term financing.
- Competitive interest rate.

- Flexible financing scheme by providing innovative and unique financial products to close the financing gap and complement banking products. To this end it provides cash deficiency support, take-out financing, promotor financing, subordinated loans, mezzanine, shareholder's loan and equity investment.

PT SMI has been accredited by the Green Climate Fund (GCF) to support the Sustainable Development Goals (SDGs) and Climate Change Programme. It is also a pioneer in issuing corporate green bonds in Indonesia.

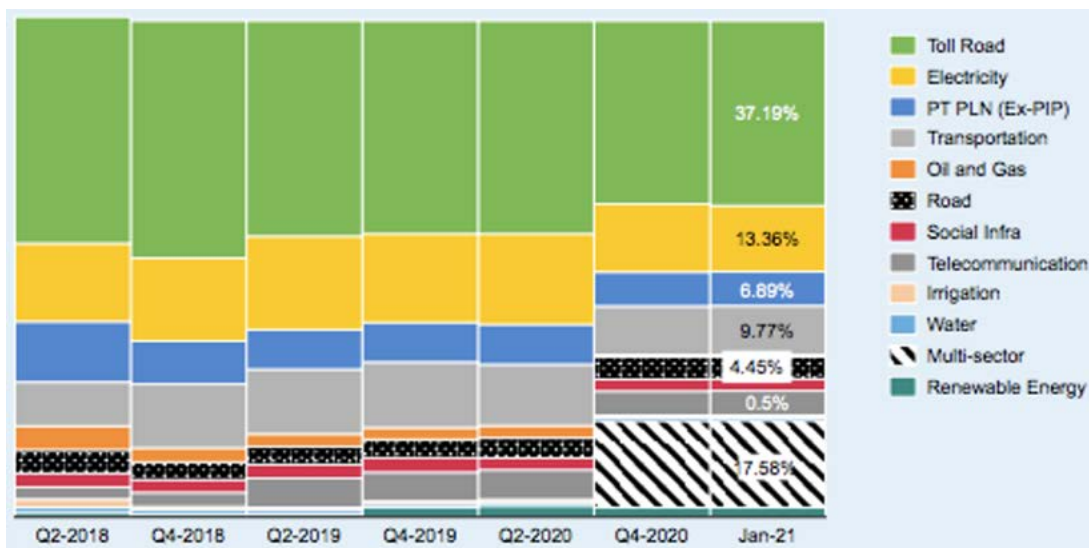
PT SMI operates throughout the country, although 70% of total financing committed in early 2021 benefits Java and Sumatra islands.

In 2020, PT SMI had US\$ 8.2 billion in commitments and US\$ 4.9 billion outstanding loans and equity investments. In total, it contributed US\$ 49.4 billion in project financing. Investment loans is its most important product, representing 66% of commitments and 68% of outstanding products.

PT SMI also manages a municipal finance portfolio dedicated to the provision of financial services to local governments. Indonesia is one of the most decentralised countries in the world, with several levels of local governments, including provincial governments, districts and villages who all receive shares of Government revenues and can levy local taxes. To date, projects related to roads and bridges constitute the majority of projects financed under this municipal finance window, followed by hospitals and traditional markets. In total, PT SMI has committed US\$ 350 million under this financing window.

Current involvement in water sector. As of 2021, roads and electricity are the two largest sectors financed by PT SMI, representing 37% and 13% of total financing, whilst water represents a relatively small amount of PT SMI financing compared to other sectors (Figure 12).

Figure 12: PT SMI Financing Sectors



PT SMI's involvement in the water sector mainly relates to project preparation and advisory services, on behalf of the Government of Indonesia, in PPP schemes for bulk water supplies. Figure 13 presents an overview of recent and ongoing water PPP projects supported by PT SMI. In all these projects, PT SMI is directly assigned by the central Government to assist with project preparation and the tendering of the PPP. To date, only the Umbulan project has benefited from PT SMI financing and no local government has entered into a loan agreement with PT SMI (under the municipal finance window) for investments in water supply and sanitation. Box A 8 provides details of the West Semarang water PPP project.

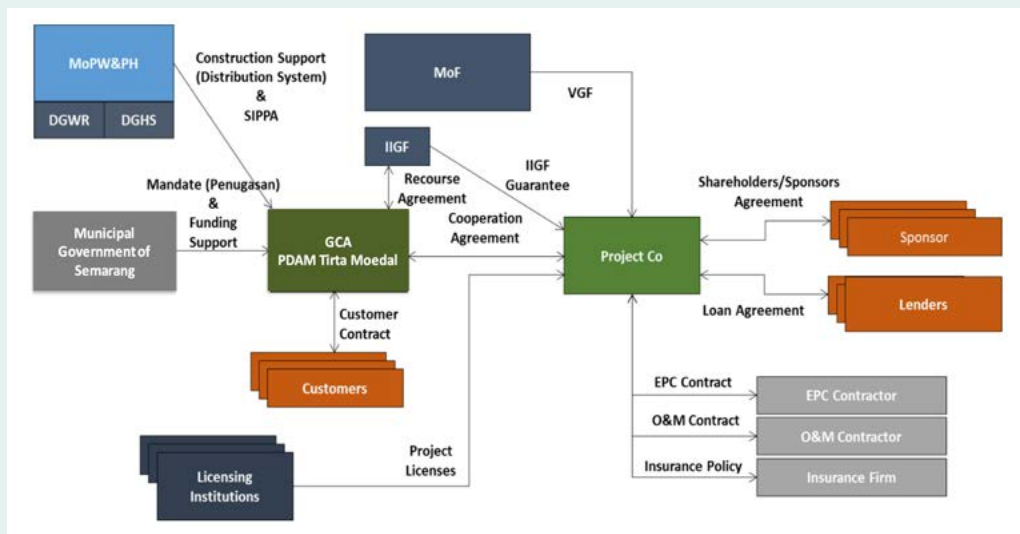
Figure 13: Recent and ongoing water PPP projects supported by PT SMI

Umbulan Water Supply PPP	Bandar Lampung Water Supply PPP	West Semarang Water Supply PPP	Pekanbaru Water Supply PPP	Kamijoro Water Supply PPP
Location	Location	Location	Location	Location
Pasuruan – Gresik, East Java	Bandar Lampung, Lampung	Semarang City, Central Java	Pekanbaru, Riau	Kulonprogo & Bantul Regency, Yogyakarta
Project Cost*	Project Cost*	Project Cost*	Project Cost*	Project Cost*
Rp 2 trillion (~USD 133.3 million)	~ Rp 750 billion	Rp 417 billion	Rp 510 billion	~ Rp 200-347 billion
Project Status	Project Status	Project Status	Project Status	Project Status
Construction	Operation August 2020	Construction (Target COD = May 2021)	PPP Agreement signed on December 2020	Pre-feasibility study
Role of PT SMI	Role of PT SMI	Role of PT SMI	Role of PT SMI	Role of PT SMI
<ul style="list-style-type: none"> Project Development Facility Financing 	<ul style="list-style-type: none"> Project Preparation and Transaction Advisory 	<ul style="list-style-type: none"> Project Preparation and Transaction Advisory Capacity Building 	<ul style="list-style-type: none"> Project Preparation and Transaction Advisory Capacity Building 	<ul style="list-style-type: none"> Project Preparation and Transaction Advisory
Social-Economic Benefits	Social-Economic Benefits	Social-Economic Benefits	Social-Economic Benefits	Social-Economic Benefits
<ul style="list-style-type: none"> Clean water supply with distribution of ±93,7km Access to clean water to ±1.3 million population (260,000 households) in 5 areas Capacity of water production up to 4,000 liters / second 	<ul style="list-style-type: none"> Clean water supply with distribution of ±22 km Access to clean water for 60,000 customer connections Capacity of water production up to 750 liters / second 	<ul style="list-style-type: none"> Access to clean water covering 5 service areas at Tugu, Ngaliyan and West Semarang Capacity of water production up to 1,000 liters / second Main reservoir with a capacity of 3,500 m³ 	<ul style="list-style-type: none"> Improve clean water service coverage from 3.4% in 2018 to 14.8% in 2028 Access to clean water for 48,500 customer connections Optimum water production capacity of 750 liters/ second 	<ul style="list-style-type: none"> Access to clean water to Kulon Progo Airport, Sentolo Industrial Area, Pajagan – Sedayu Industrial Area, and its surrounding communities Total capacity for water production up to 500 liters / second

Box A 8: The West Semarang water PPP project

As a National Strategic Project (Presidential Regulation Number 3 of 2016 on Acceleration of National Strategic Projects Implementation), West Semarang Water Supply PPP is intended to enhance production, access to drinking water and expand the service coverage of the local water supply utility (PDAM) while reducing land subsidence from excessive groundwater abstraction. The Project is planning to provide an output capacity of 1,000 litres per second to fulfil the clean water demand of one third of the population of Semarang City (300,000–350,000 inhabitants) in five zones in three districts of West Semarang, Ngaliyan, and Tugu. Government Contracting Agency will deliver the PPP project under the Build Operate Transfer agreement. The private sector’s role is to: 1) build and operate a water treatment plant, transmission pipeline, main reservoir, and distribution reservoir; and 2) operate and maintain these facilities and raw-water unit facilities (intake) and related facilities. The total cost of the Project was estimated at IDR 1.19 trillion (about US\$ 85 million) with the PPP scope equating to IDR 417 billion (about US\$ 29.78 million) including the viability gap fund (VGF) of IDR 147 billion (about US\$ 10.5 million) provided by the Ministry of Finance. Private sector revenues are to come from the bulk water sales to PDAM. Besides fiscal support from the Ministry of Finance, the Indonesia Infrastructure Guarantee Fund, an SOE providing guarantee for contingent liabilities, also provided a guarantee to serve as credit enhancement for the implementing business entity or special purpose vehicle in the face of the PDAM’s default risk. PT SMI, through its Project Development Facility, assisted the Semarang City PDAM in project preparation and transaction to reach financial close. The project financially closed in 2019, and the asset is targeted to start operations in May 2021. Due to prudent project preparation, PT SMI successfully increased the competition level by encouraging the winning bidder to limit their return in order to win the Project. This resulted in an IDR 0 VGF (no VGF) and an additional tariff discount proposed by the winning bidder. This proposal was a precedent for a PPP water project in Indonesia (i.e. no VGF and a tariff discount). Aside from the VGF IDR 0, with a total duration of 19 months from official assignment to financial close, the Project is also considered as one of the fastest PPP projects.

Institutional and financing arrangements under the West Semarang Water Supply Project Scheme.



MoPW&PH; Ministry of Public Works and Housing
 DGWR: Directorate General of Water Resources
 DGHS: Directorate General of Housing Provision
 IIGF: Indonesia Infrastructure Guarantee Fund
 Source: PT SMI

In its role as transaction advisor, PT SMI can suggest tariff increases to increase the financial viability for projects to take off. However, final decisions always rest with local governments.

Vietnam Development Bank (Vietnam)

About the institution. The Vietnam Development Bank (VDB) was established in 2006 with the mandate to execute state development investment and export credit policies. VDB is a policy bank with 100% state-owned charter capital. VDB operates for non-profit purposes.

VDB's functions and missions include:

- fund mobilisation, including bond issuance, borrowing from credit institutions and take deposits;
- credit activities: loan provision, credit guarantees for small and medium sized enterprises (SMEs), on-lending of foreign capital; and
- entrustment and trust fund management.

In 2018, VDB mobilised VND 23,691 billion (US\$ 1.02 billion) of term capital, of which bond issuance represented VND 16,545 billion (US\$ 0.71 billion). Its total assets amounted to VND 293,373 billion (US\$ 12.7 billion).

Documentation published by VDB does not show which specific sectors are eligible for VDB financing. However, according to Decree 32/2017/ND-CP issued by the Government of Vietnam, water and sanitation projects are included in the list of projects eligible for funding by VDB with concessional loans.

Current involvement in water sector. VDB is very involved in the water sector. In December 2020, VDB was managing 165 water and sanitation projects of a total of 1,055 active projects. Outstanding loans related to the water sector represented 6.3% of its total portfolio. VDB mainly provides funds for water supply plant construction and water supply network development projects. Water sector operations benefit all geographical areas, including urban, rural and mountainous (hard to reach) areas. VDB only

finances fixed assets of water and sanitation projects. It is not involved in activities related to the enabling environment or other soft components.

VDB's clients in the water sector include private companies as well as local governments (Provincial People's Committees). The most common instruments VDB uses are concessional loans and credit guarantee. The typical term for concessional loans is 12-20 years. Credit guarantee terms are based on those of loans funded by commercial banks.

In terms of challenges for expanding water and sanitation related operations, VDB highlights the financial efficiency of projects and the capacity of project owners/potential borrowers.

REGIONAL PDBS

Council of Europe Development Bank (CEB)

About the institution. The Council of Europe Development Bank (CEB) is a multilateral financial institution with a social mandate. The CEB invests in social projects that promote inclusive growth and provide support for the most vulnerable populations across Europe while fostering environmental sustainability. The CEB provides loans and guarantees to its 42 member countries to finance projects meeting certain criteria. Potential borrowers include governments, local or regional authorities, financial institutions, public/private financial institutions and any other public/private legal entity approved by a CEB member state.

The CEB raises the funds for its financing on the international capital markets. It also receives resources entrusted to it by various member and non-member donors. Its high credit enables the CEB to raise funds on competitive terms, enabling its borrowers to significantly reduce the cost of the loans they take out to finance social projects. As of 2020, the Bank had EUR 17.4 billion in outstanding loans.

The focus of its 2020-2022 Development Plan is on promoting inclusive growth and providing support for vulnerable groups, while integrating environmental sustainability as a cross-cutting line of action.

Channelling finance towards water and sanitation services and water ecosystem protection fits within these priorities.

Current involvement in water sector. Water projects account for about 10% of CEB's portfolio in amount. CEB provides loans for investments in drinking water and sewerage as well as water resources protection and flood risk management. As with all sectors it deals with, CEB primarily targets Eastern Europe and the Balkan countries ('target countries'). Most of its clients in the water sector are public institutions, whether national or sub-national governments or public utilities. CEB also provides loans to financial institutions for on-lending and part of this on-lending is directed to the water sector, usually at local level. However, these loans represent a small portion of its lending activities in the sector.

Water sector products features. CEB can mobilise multiple financial instruments for water sector investments, including the following.

- Direct lending: these are 20-25 year project-based loans for specified infrastructure and services improvement projects.
- Programme loans: these loans are provided for multi-project programmes without ex ante identification of all the sub-projects but usually with a sectoral or multisectoral approach.
- Public Sector Financing Facility (PFF): these loans cover temporary financing gaps in the public sector and facilitate the continuation of investment programmes. This facility, which is relatively new at CEB (2017), can be useful to push forward water and sanitation in target countries. The first PFFs for the water sector (notably for the renovation-rehabilitation programmes of water supply and sanitation networks) were approved in Lithuania and Finland. The PFF can be a useful tool to finance the typical investment programmes of utilities, which cover investments in various locations and of different

sizes, where priorities may at times need to be redefined over time. PFFs define overall programmatic objectives and areas of activities, but do not need to clearly pre-identify activities to be financed (as in project or programme loans), and provide more flexibility in the use of funds. Utilities can find this type of finance particularly useful as they deal with evolving investment requirements to manage their water and sanitation systems.

- European co-financing facilities: anticipated, transitory or complementary loans complementing EU financing.
- Intermediate finance (to financial institutions) for on-lending.

In addition, CEB can mobilise grants to:

- finance guarantee schemes;
- fund project preparation, capacity building and institutional strengthening;
- subsidise interest rates; and
- finance specific investment components that may otherwise be difficult to prioritise or may impact service affordability.

Grants are only allocated to target countries, with the exception of funding from the Green Social Investment Fund (GSIF).

Box A 9: The Green Social Investment Fund (GSIF)

The CEB established the GSIF in March 2020 to help accelerate CEB member countries' transition towards low carbon and climate resilient economies. It has been endowed with an initial contribution of EUR 5 million, allocated from the Bank's annual profit. CEB member countries have also been invited to provide grant contributions to the Fund. The Fund is used to:

- scale up the decarbonisation and climate proofing of social infrastructure; and,
- make climate action measures more socially affordable and accessible to vulnerable groups.

It can finance technical assistance and investment grants for projects with high social benefits which enhance climate resilience and aim for climate neutrality. Projects must be aligned with the countries' commitments to Agenda 2030 for Sustainable Development and the Paris Agreement.

Risk assessment. CEB's credit risks department assesses operations' financial risks. These can be mitigated by a state guarantee where necessary – most municipalities and utilities still benefit from a state guarantee, especially in target countries. CEB also considers the sustainability of the investments from the service provider's cost-recovery perspective and can enter into policy dialogues with their clients. CEB can also help clients address currency risks by lending in currencies other than the euro where necessary.

Environmental and social sustainability, including climate-related considerations. In line with its Environmental and Social Safeguards Policy, the CEB promotes environmental and social sustainability of its investments, including climate-related issues. CEB climate experts screen all investments for climate-related risks with the objective to support resilient infrastructure and services. If available, the climate change vulnerability and risk assessment of the infrastructure is reviewed. In addition, the CEB seeks to finance projects that enhance overall resilience of urban and rural areas and communities to climate change. As an example, in Cyprus CEB supports investment in safe and reliable water supply to the capital in a context of increased frequency and intensity of droughts. Grants funded by the GSIF can help strengthen project components to make them more climate resilient or enhance social acceptability.

Fondo Financiero para el Desarrollo de la Cuenca del Plata – Development Bank

About the institution. FONPLATA was established in relation to the Treaty of the La Plata River Basin, which sought economic development in the sub-region and whose member countries are Argentina, Bolivia, Brazil, Paraguay, and Uruguay. FONPLATA was initially established as a development fund, but it evolved into its current status of a multilateral public development bank.

FONPLATA is owned by the five riparian countries of the La Plata River and it lends to national or sub-national governments (municipalities, provinces and states) in the five countries. In addition, it has a financing line of mostly public capital for non-sovereign risk operations which is intended for national development banks, national and sub-national institutions, public or mixed companies.

It has an A- rating, and in 2019 (FONPLATA, 2020), it had about US\$ 1.3 billion in assets; approved loans to a value of US\$ 460 million; and disbursed US\$ 221 million in loans. Since becoming a multi-lateral development bank, its portfolio has grown over the past few years by an average of 30% annually.

FONPLATA's mission is to support the member countries to bring about the harmonious and inclusive development within and across the La Plata River Basin's areas of influence. It does this by financing small and medium-sized projects (typically up to US\$ 30-60 million) in particular areas to help one or more countries achieve greater integration at a sub-regional, regional and global level. It therefore focuses on projects in border areas and transboundary infrastructure.

Role of FONPLATA in the water sector. FONPLATA operates from the perspective of a river basin. Water-related investments currently represent a relatively small percentage of the loan portfolio. This is explained by the fact that up to 2013, FONPLATA worked exclusively on regional infrastructure, particularly transport. Since then, the institution has sought to diversify and expand its portfolio to other sectors, including water. While it intends to grow its water portfolio, it is still developing a sector strategy to guide its work in water. It currently finances projects in two sub-sectors.

- Water supply and sanitation, including wastewater treatment. This is reported as a sub-sector in its own right. The 2019 annual report states that it represented 2% of FONPLATA's entire loan portfolio.
- Water resources management, including urban drainage, flood protection and catchment protection. This is reported under the broader sector of environment, which represented 3% of FONPLATA's 2019 loan portfolio.

Water sector products and services. FONPLATA provides the following types of financial services, including in the water sector.

- Nationally guaranteed credit to sub-national entities, such as municipalities, provinces and states for infrastructure development. This is demand-based credit whereby sub-national entities request financing. The requests are prioritised by the national liaison agency and subsequently critically reviewed with due diligence and risk assessments. In some cases, project preparation may be included in the loan.
- Credit, without sovereign guarantee, to national development banks. These banks then pass the credit on to their clients. This type of credit may or may not be used in the water sector.
- Technical assistance. FONPLATA has a relatively small fund for technical assistance which it established out of its profits. The fund's turnover is around US\$ 1 million a year. This fund mainly covers strategic studies, strengthening of intellectual, technical and institutional capacities, and project preparation.
- Co-financing with other IFIs. Other larger IFIs such as AFD, IDB, CAF and EIB tend to structure their projects and programmes by sector. But many sub-national governments need financing for multi or cross-sectoral projects. FONPLATA is able to take on different parts of sectoral programmes of other IFIs, and bundle them as multi or cross-sectoral projects.

Risk assessment. Risk assessments are always project-based. An integrated analysis is done of technical, financial, economic, environmental and social aspects of the project. It also includes an assessment of the borrower, in terms of both its institutional performance and its creditworthiness. National criteria on the level of borrower debts are fixed as ultimately the country is the guarantor of the loan.

Opportunities and limitations. While FONPLATA is seeking to expand its portfolio in water-related investments, it is facing several limitations, mainly related to demand. The main ones – and the ways it seeks to overcome them – are outlined below.

- Governments usually reach out to FONPLATA to obtain financing for other infrastructure projects. Last year, prospective borrowers did not reach out to FONPLATA for water-related financing at all. Since FONPLATA works as a demand-driven institution, it takes time to build up the awareness among prospective clients that it is willing to provide finance for water-related investments.
- Limited financial space for financing projects in the water sector in the member countries and overlapping efforts to finance the same projects. To address this, FONPLATA has a particular niche by: 1) having a clear geographic focus on medium-sized towns in border regions and on catchment or river-basin projects; 2) providing better financial conditions than national PDBs, as its credit rating is higher than the member states. It also provides Green Financing which allows better financial conditions. FONPLATA has a strategic advantage in water related projects in the La Plata River Basin and the Amazon Basin. Exploring water financing options in these regions is one of FONPLATA's foci for the next years.
- Limited project preparation. Many local governments in the region have limited know-how and a limited workforce with the knowledge of the specificities needed for this kind of project preparation. This results in either no projects coming forward, or projects that are poorly designed. FONPLATA has a limited grant-funded facility and means to address this on its own. On occasion, project preparation can be included in the loan. By partnering with other IFIs, who may provide grant or loan funding for project preparation, extra financing can be made available.
- Unable to provide loans to public utilities. In most member countries, water-related investments are not made by sub-national governments but by public and private companies, particularly water and sewerage utilities. Currently, FONPLATA does not provide loans to private companies but expects to do so at the end of 2021, and provide loans to private companies in the near future.
- As one of the interviewees said, "there is a general concern by borrowers that green projects and water-related projects will have additional costs and require complicated studies". These concerns are being tackled with explanatory presentations and technical cooperation with key partners.
- Attractiveness of water resources management projects. The sizes of water resources management projects, such as catchment protection works and macro-drainage, is too high and financially less attractive at federal level. Nevertheless, there is growing demand for financing of these types of projects. FONPLATA is currently addressing water resources management at town and city level, focusing on urban catchments as part of urban projects.

North American Development Bank (NADB)

About the institution. NADB is a binational financial institution established in 1994 by the Governments of the United States and Mexico to provide financing to support the development and implementation of infrastructure projects, as well as to provide technical and other assistance for projects and actions that preserve, protect or enhance the environment. It is authorised to serve communities located within 100 km north of the international boundary, and within 300 km south of the border.

In doing so, it supports the development and implementation of environmental infrastructure projects, as well as technical and other assistance for projects and actions that help preserve, protect and enhance the environment of the border region. The sectors covered include water, energy, waste management, air quality and basic urban infrastructure.

By December 2019, NADB had contracted close to US\$ 3.3 billion in financing to support 262 environmental infrastructure projects. Of these funds, US\$ 2.5 billion were in the form of loans and US\$ 762 million in grants, mostly provided by the US Environmental Protection Agency (EPA).

Role of NADB in the water sector. The water sector – which includes drinking water supply, treatment and distribution; wastewater collection, treatment and reuse; water conservation; and storm drainage and flood control - is the most important sector for NADB. Of the 262 projects it has financed since 1995, 178 were in the water sector. In 2019, some 75% of the disbursements went into the water sector.

Within the water sector, most efforts and results were obtained on sewerage and wastewater treatment. This has been the main area of need, particularly on the Mexican side, over NADB's 25 years of existence. Most of the Mexican side of the border now has high levels of access to basic sewerage and wastewater treatment. Investments were also made in water supplies and the expectation is that these will need to be rehabilitated as the infrastructure is ageing. Stormwater drainage has received less financing, partly because institutional responsibilities are less clearly defined and there are no dedicated utilities.

Due to the nature and size of these investments, and their capacity to take on debt, most financing has gone to intermediate sized towns and cities.

Water sector products and services. NADB extends the following types of financial and technical services.

- **Loan Programme.** This consists of providing financing to public (local governments and public utilities) and private (PPPs) entities operating within the border region to support the implementation of environmental infrastructure projects. Financing may be provided in a number of ways, depending upon the characteristics of the project and financing needs. These include: direct loans, corporate loans and participation in municipal bond issues. The conditions of the loan depend on the project characteristics.
- **Border Environment Infrastructure Fund (BEIF).** These are grant funds provided by the EPA for co-financing high-priority municipal water and wastewater infrastructure projects. As these are for co-financing, these funds can be used to finance up to 50% of the investment on the Mexican side, with the other financing needing to come from other sources.
- **Community Assistance Program (CAP).** This is grant financing for environmental infrastructure projects, including water, in low-income-communities. It is geared to public entities with limited capacity to incur debt. These are grants of up to US\$ 500,000 and hence are typically geared towards smaller communities.
- **Technical Assistance Program.** This is also grant support to help strengthen the financial performance of prospective clients. Funding goes to three types of activities.
 - **Project development.** This entails the necessary studies for a specific infrastructure project. The funds should help the project achieve funding approval within one year, or help the prospective project become operational within three years of completion of the study.
 - **Sector studies.** These studies are intended to help identify environmental infrastructure needs, promote sound public policy or generate knowledge about a new sector or technology.
 - **Capacity building.** To help potential clients improve their financial or technical capacities or to facilitate access to knowledge. This includes forums and training programmes, as well as knowledge management and information sharing.
- **Project Development Assistance Program.** Technical assistance grants from EPA to support communities develop EPA prioritised water and wastewater projects. These projects can then receive a BEIF grant for their implementation.

Risk assessment. Risk assessment focuses in the first instance on the financial risk of the borrower. For public entities, this entails assessing their overall financial risk as dictated by national legislation covering the level of debt they can assume. For private entities, the risk assessment is done at project or corporate level. For PPP projects, the risk assessment focuses on the source of payment from the public entity. In these cases, the public entity that supports it needs to provide a guarantee.

Given the types of projects financed, NADB also reviews technological risks. For example, it looks at the efficiency and costs of certain technologies, particularly high-end technologies.

Finally, environmental risks – or rather environmental compliance – plays a key role. EPA (USA) and CONAGUA/SEMARNAT (Mexico) compliance needs to be followed. Given the geographic conditions in the border region, there is a strong need to diversify, and create redundancy in, water resources accessed by utilities to deal with the arid conditions.

Opportunities and limitations

- In general, there is a regular demand for water project financing. The local governments and utilities in the border region are aware of the NADB, and also know the types and sizes of projects that NADB finances, and the type of financing that can be obtained from other banks. In the case of projects in Mexico seeking grants from the BEIF programme, the projects need to be selected and prioritised by EPA and CONAGUA.
- There is generally also a high demand for the CAP programme. NADB is able to prioritise according to the needs of the beneficiary communities.
- Some of the limitations that apply to Mexico as a whole – as seen in the case study on BANOBRAS - also apply to the areas in which NADB operates. These are: 1) the law on fiscal discipline; 2) low tariff levels and utility revenues; and, 3) lower institutional capacity to formulate and execute projects.
- NADB has long co-financed projects with development banks, multilateral banks and commercial banks, including the IDB, IFC and the U.S. International Development Finance Corporation. Though BANOBRAS could be seen as competition, in practice they are close partners, particularly where larger investments are needed that go beyond the capacity of the two individual banks.

OTHER AGENCIES

Water Agency Rhone Mediterranean Corsica (Agence RMC)

About the institution. The Rhone Mediterranean Corsica Water Agency (Agence RMC) is a public establishment regulated by the Ministry for the Environment, dedicated to water protection. It collects fees based on the ‘polluter pays’ and ‘taker pays’ principle. Every euro collected is re-invested by local authorities and economic and agricultural stakeholders to fight pollution and improve the use of available water through a multi-annual intervention plan. Agence RMC has budgetary autonomy and is administered by a board (conseil d’administration) which brings together the whole range of stakeholders in the basin: the Government (which does not have majority representation); local authorities; water user representatives (service providers, farmers, domestic users, industries); and NGOs.

Agence RMC is one of six water agencies in France created to manage water resources. A key function of the water agencies is to collect fees (redevances) from all water users/polluters. Any water user who alters its quality and availability must pay fees. RMC operates in the Rhone-Mediterranean and Corsica basins.

Most of the fees levied come from household water bills (tax on domestic use amounting to 10% of the water bill). Households pay according to the quantity of water that they use. Local authority water departments collect the fees on behalf of the water agency.

Economic stakeholders (industries, energy companies, farmers and breeders, and distributors of phytosanitary products), fishing federations and water storage facility operators also pay fees over any polluting practices, water storage or water abstraction that has a potential impact on water and aquatic environment quality.

Agence RMC provides financial aid as part of its six year action programmes to support the execution of water master plan (Schéma directeur d’aménagement et de gestion des eaux) priorities, European and national directives. These programmes, drawn up after a consultation process, direct fund allocation towards activities that improve water and aquatic environment quality and the management of water quantity and availability in the Rhone-Mediterranean and Corsica basins. Financial support is used to: fund research and works; contribute to territorial adaptation to climate change; introduce water saving measures; recover drinking water quality; restore the natural functions of rivers; and, promote biodiversity. Priorities are not only determined according to local authorities’ financial needs, but also on water agencies’ intervention programme policy priorities.

Water sector financial products features. Like all water agencies, Agence RMC supports water sector investments by local authorities in multiple ways.

- Subsidies for projects: this is the main form of support and the major part of Agence RMC's programme. Subsidies finance up to 70% of the project.
- Bonus grants for efficient wastewater treatment: Agence RMC spends about EUR 50 million annually in bonuses to local authorities for this purpose.
- Repayable advances (i.e. loans at zero interest rates).

In developing projects that are in line with its policies, Agence RMC actively engages in consultation with local authorities during which it presents its programme priorities. It also launches calls for projects to stimulate investments in certain areas that local authorities have under-prioritised. For example, in 2020 it launched a call for wetland restoration projects with an up to 70% financial contribution.

Added value of Agence RMC in financing water.

- It is a way of implementing a river basin based financing scheme where levies collected from users at the river basin level are used to finance sustainable investments in the river basin. The financing takes the form of grants and loans at zero interest rates.
- Ability to channel subsidies and other types of financial support.
- Strong technical capacity to advise on investments.
- Capacity to reach small local authorities and develop common projects.
- Vested interest to work on biodiversity and ecosystem protection and link it to water resources. These areas receive little attention from local authorities or other investors.
- Scope of intervention is water sector wide (with the exception of water supply networks), including drinking water protection and leakage reduction.
- Ability to push innovation, such as boosting investments in energy efficient wastewater treatment solutions.

ANNEX 2. METHODOLOGY FOR THE STUDY

OBJECTIVES AND RESEARCH QUESTIONS

The main objectives of the study are to: analyse the current role, experience and practice of existing PDBs in financing the water sector; and, provide policy recommendations to guide their future actions to enhance the mobilisation of more financing to reduce the current sector funding gap.

The study was guided by two overall research questions.

- What are the past and present roles of PDBs in financing water related projects that achieve both the water related SDGs and Paris Agreement goals?
- What are the strengths and limitations of PDBs in financing water related projects that achieve both the water related SDGs and Paris Agreement goals?

OVERALL APPROACH

To answer the research questions, the research team conducted a literature review, analysed datasets on PDBs, conducted interviews and reviewed PDB documents.

The study is largely based on a grey literature review and an analysis of PDB datasets commissioned by AFD (2020a and 2020b). The databases give quantitative insights into the number and nature of PDBs around the world, the size of their assets and an indication of whether they are involved in SDG 6 related financing. They were also used to identify PDBs in the regions covered in the study and in the regional analysis.

In addition, the study included in-depth interviews with technical staff of PDBs and IFIs known to operate in the water sector. Representatives from 13 national PDBs from 11 countries and 16 DFIs and MDBs were interviewed (see below). The selection was based on geographic spread, the level of their involvement in water, and their availability to take part in the study. In total, 67 national PDB staff and IFIs were interviewed.

The interviews were complemented with a documentation review that included PDBs' annual and strategic reports as well as documents on the overall financing of the water sector in the relevant countries. In the case of some countries, discussions were held with AFD water and sanitation and financial services specialists to better understand the constraints PDBs face that may explain their limited involvement in water.

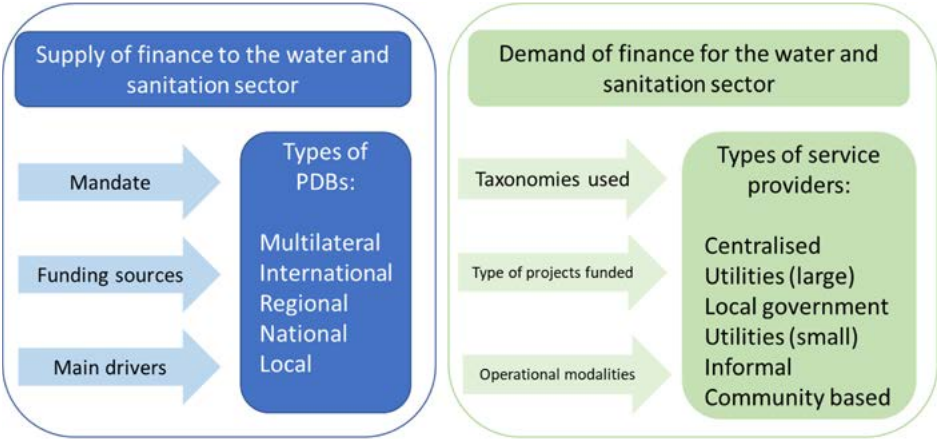
For more in-depth information, case studies were compiled on national and regional PDBs and other financial institutions. The context in which they operate and their operations in the water sector were also reviewed. These case studies are presented in Annex 1. A separate report on PDBs in the water sector in Latin America is also available as this region has some of the best-known cases of PDBs involved in the water sector.

FRAMEWORK FOR RESEARCH TOOLS AND ANALYSIS

To guide the selection of PDBs and IFIs, develop the interview protocols, guide the datasets analysis, and review PDB documentation and the literature, the team developed a framework for analysis (Figure 14).

The framework was used to guide the study. The box on the left shows the supply side of finance for the water sector and is the focus of this study (i.e. the various types of PDBs). The box on the right shows the demand side for finance (i.e. the water sector entities seeking finance from PDBs).

Figure 14: Summary of the analysis framework



Identify and explore the Public Development Banks involved in the sector

To answer the research questions on the current role of PDBs and identify their strengths and limitations in financing the water sector, the study:

- identified which institutions are considered PDBs at different levels;
- identified the areas of the water sector that PDBs are involved in to varying degrees;
- examined how PDBs are involved, for example whether they have a specific mandate in the sector or a broader mandate related to climate mitigation for example, and the scale of their involvement;
- identified their funding sources and access to capital markets; and,
- identified the main drivers for PDBs to engage in water and sanitation finance. The study looked at whether it is driven by their mandates, demand from clients, earmarked percentages of their portfolio, alignment with national targets etc.

Identify and explore the demand for funding from Public Development Banks

On the demand side, the most relevant water sector entities include local governments who invest in water as service authorities, and service providers such as utilities and others who may sometimes access finance directly. For the latter, the study looked at what taxonomies are used to mark the finance flows, the types of projects that get funding from PDBs, and the operational modalities.

To identify the water sector areas that do and do not receive PDB support, a first step was to understand what taxonomies and/or targets PDBs use for deciding on financial allocation to the different sectors.

The study also looked at the type of projects funded. Namely:

- the type of infrastructure receiving/not receiving financing;
- the sub-sectors receiving/not receiving financing;
- any related project preparation and software activities that are financed.

Finally, the study aimed to understand PDBs' operational modalities and the scale of their involvement. PDBs' role in the water sector was analysed according to the following indicators.

- The type of entities receiving PDB finance.
- The relative size of their operations in the sector:
 - at the level of a single PDB, water-related financing vs. overall portfolio size;
 - nationally, the amount of water sector finance from PDBs compared to other sources.
- The type of financing instruments PDBs deploy including: debt financing tools; through their balance sheets; through mobilising additional funds, notably from private sector; and, grant instruments, including blended debt instruments.
- Any currency and other risks.

In addition, the analysis aimed to understand the relevance and adequacy of PDB roles regarding sector needs and commitments.

SELECTION OF PDBS AND INTERVIEWS

A large number of international, regional, national PDBs were initially contacted by AFD to ensure geographic balance. As not all the PDBs were able to be involved in the study, the study started with a skewed sample from mostly Europe and Latin America – which have the most established PDBs working the water sector – divided between national PDBs and IFIs. To ensure representation from Africa and Asia, additional contacts were made, but not all were successful. We are aware that this study is missing key national PDBs and IFIs from Asia.

Ultimately, the following 29 national PDBs and IFIs were part of this study (Table 6).

Table 6: PDBs and IFIs that are part of this study

Country/Region	Bank	Acronym	Assets (mln US\$)	National PDB or IFI?
Western Europe	European Investment Bank	EIB	636,687	IFI
Western Europe	Kreditanstalt für Wiederaufbau (KfW)	KfW	560,899	IFI
Italy	Cassa de Depositi y Prestiti	CDP	486,953	PDB
Multi	International Bank for Reconstruction and Development	IBRD	403,056	IFI
Brazil	Banco Nacional de Desenvolvimento Econômico e Social	BNDES	206,787	PDB
Multi	International Development Association/World Bank	IDA/WB	201,591	IFI
Multi	Asian Development Bank	AsDB	191,860	IFI
France	Caisse des Dépôts et Consignations	CDC	186,727	PDB
Latin America	Inter-American Development Bank	IADB	129,459	IFI
Netherlands	Nederlandse Waterschapsbank	NWB	95,900	PDB
Western Europe	European Bank for Reconstruction and Development	EBRD	70,853	IFI
Western Europe	Agence Française de Développement	AFD	49,107	IFI
Multi	African Development Bank	BAD	46,960	IFI

Country/Region	Bank	Acronym	Assets (mln US\$)	National PDB or IFI?
Mexico	Banco Nacional de Obras y Servicios Públicos	BANOBRAS	42,918	PDB
Latin America	Banco de Desarrollo de América Latina	CAF	40,014	IFI
Western Asia	Islamic Development Bank	IsDB	30,658	IFI
Western Europe	Council of Europe Development Bank	CEB	27,892	IFI
Morocco	Caisse de Dépôt et de Gestion	CDG	26,255	PDB
Brazil	Banco do Nordeste do Brasil	BNB	15,107	PDB
Vietnam	Vietnam Development Bank	VDB	14,018	PDB
Latin America	Banco Centroamericano de Integración Económica	CABEI	10,850	IFI
South Africa	Development Bank of Southern Africa	DBSA	6,202	PDB
Turkey	İller Bankası	İİBank	6,093	PDB
West Africa	Banque Ouest Africain de Développement	BOAD	4,485	IFI
Indonesia	PT Sarana Multi Infrastruktur	PT-SMI	4,344	PDB
France	Agence France Locale	AFL	3,623	PDB
Ecuador	Banco de Desarrollo del Ecuador	BDE	2,371	PDB
North America	North American Development Bank	NADB	1,959	IFI
Latin America	Fondo Financiero para el Desarrollo de la Cuenca del Plata	FONPLATA	1,043	IFI

Interviews were conducted between December 2020 and April 2021 with 67 PDB and IFI representatives (Table 7). The interviews were conducted online and took between 60 and 120 minutes to complete and were followed by additional document requests and clarification questions. To read the interview protocol, please contact the research team.

Table 7: List of interviewees

Organisation	Name	Function
ADB	Berlgacem Bensassi	Development and service delivery regional office for North Africa
AFD HQ	Bastien Trombetti	Responsable d'équipe projet – systèmes financiers
AFD PDBs	Mathilde Moulinou	Project manager urban development division
AFD PDBs	Sebastien Sayen	Urban division specialist on fiscal issues
AFL	Lou Lamure-Guigard	Chargée du développement
AFL	Philippe Rogier	Directeur du crédit
Agence RMC	Laurent Roy	Directeur general
Agence RMC	Nancy Yana	Responsible communication
AsDB	Allison Woodruff	Senior urban development specialist
AsDB	Christian Walder	Water supply specialist
BANOBRAS	Carlos Puente	Director water, energy and environment
BANOBRAS	Carlos Roldán	Assistance and financing to governments officer
BANOBRAS	Danielle Cuéllar	International affairs
BANOBRAS	Delia Sánchez	International affairs officer

Organisation	Name	Function
BANOBRAS	Victor Montiel	Project finance officer
BCIE	Angel Murillo	Environmental specialist
BCIE	Carlos Quintanilla	Supervision unit
BCIE	Olaf Gámez	Specialist in supervision
BCIE	Pablo José Brizuela	Specialist in supervision
BCIE	Randall Chang	Head of credit
BDE	Myriam Elizabeth Puebla	Environment and biodiversity officer
BDE	Raisa Botto	Director infrastructure
BDE	Xavier Vidal	Deputy director business / interim director
BNB	André Mascarenhas	Corporate business and operations structuring department
BNB	Irenaldo Rubens	Development policies department manager
BNB	Valdir Machado	Development policies department executive manager
BNDES	Leticia Barbosa	Manager of the environmental sanitation department
BNDES	Marcelo Iterhof	Environmental sanitation department
BOAD	Komiste Edoh Agbo	Ingenieur du genie civil principal/ Direction du Développement Rural et des Infrastructures (DDRI)
CAF	Fabiana Bianchi	Water specialist
CAF	Franz Rojas	Coordinator of the Water Agenda -
CDC	Anne-Marie Iltis	Direction des prêts, Chef de projet du secteur public et projets complexes
CDG	Ghislaine Rammaoui	Project finance & advisory director
CDG	Laila Mikou	Sustainable development director
CDG	Marwane Mansouri	Directeur du développement humain, durable & de la communication
CDG	Meryeme Laraich	Head global coverage
CDP	Alessia Masitto	Infrastructure financing - Head of energy, utilities & TLC
CEB	Evdokia Davou	Technical advisor
CEB	Jérôme Costanzo	Technical advisor
CEB	Monica Scatasta	Director - Technical assessment and monitoring directorate
CEB	Sara de Pablos	Sustainability advisor
DBSA	Konstant Bruinette	Investment officer
DBSA	Lubbe Johann	Disruption specialist
DBSA	Olympus Manthata	Head climate finance
DBSA	Tshepo Ntsimane	Head metros, intermediate cities and water boards
EBRD	Claudia Neuschulz	Associate, sustainable water investments, green economy and climate action
EBRD	David Tyler	Associate director, water & wastewater sector specialist
EIB	Juan Bofill	Senior water engineer
FONPLATA	Henrique Pissaia	Head of department
FONPLATA	José Lupo	Head of technical cooperation

Organisation	Name	Function
FONPLATA	Marina Dockweiler	Head of environment
GIZ	Daniel Nordmann	External advisor KfW and GIZ policy advisor
IADB	Henry Alberto Moreno	Financial specialist water
IADB	Lucio Javier Merino	Financial specialist
IADB	Maria Eduarda Berto	Especialista em agua
IIBank	Gamze Aslan	Technical manager
IIBank	Şevket Altuğ Taşdemir	Head of department
ISDB	Hala Hamed	Water sector global practice
ISDB	Nizar Zaied	Global lead water
KfW	Stefan Gramel	Senior technical advisor water sector
NADB	Salvador López	Chief environmental officer
NWB	Merel Hendriks	Sustainability officer
PT SMI	Fakhrul Aufa	Team leader strategic partnership and business development
PT SMI	Made Cynthia Rini	Senior staff strategic partnership and business development
VDB	Nguyen Thuy Ha	Foreign loan department
World Bank	Aileen Castro	Financial specialist South Asia

ANNEX 3. BANKING AND FINANCE TERMINOLOGY²

Balance sheet borrowing. The amount that an entity has borrowed from external sources.

Bankable projects are those which a financial institution deems to be within its tolerance for risk over the term of a financing intervention, e.g. loan.

Blended finance is defined by the OECD and World Economic Forum (2015) as ‘the strategic use of development finance and philanthropic funds to mobilise private capital flows to emerging and frontier markets’. According to Goksu et al. (2017), blended finance is the strategic use of public taxes, development grants and concessional loans to mobilise private capital flows to developing markets.

Bonds are a debt instrument bought by investors. When buying a bond, an investor lends money to the borrowing entity (which can be a government, a municipality or a corporation) for a defined period of time at a variable or a fixed interest rate (WSP, 2015).

Climate finance covers all activities related to greenhouse gas emission mitigation and climate adaptation.

- **Adaptation.** Adaptation financial flows refer to investments that contribute to reducing the vulnerability of goods and persons to the effects of climate change (IDFC, 2019).
- **Mitigation.** Mitigation financial flows refer to investments in projects and programmes that contribute to reducing or avoiding greenhouse gas emissions (IDFC, 2019).

Commercial finance is repayable finance often in the form of a loan with an interest rate determined by capital markets rather than by governments and other regulatory bodies. Commercial banks are the most common lenders of commercial financing. Commercial bank finance is less attractive than bonds as it typically has a shorter maturity (typically 5-10 years) and higher and more volatile interest rates.

Concessional finance/loans are loans with lower interest rates than loans available on the capital market. This type of loan comes with longer maturity periods than the ones offered by commercial loans and a grace period of up to 10 years until the loan needs to start being paid back (WSP, 2015).

Credit guarantees ‘encourage lending by reducing the losses a lender experiences when a borrower defaults or by reducing the risk of default on a loan. They are designed to give commercial lenders greater comfort in lending to new sectors and can encourage more lending, extend loan tenors, and reduce collateral requirements. Guarantees usually cover part of the risk (partial credit guarantee) and often require a fee and certain project requirements or commitments’ (WSP, 2015).

Credit rating ‘is a formal assessment by an independent agency of a potential borrower’s relative creditworthiness that indicates the borrower’s ability, capacity, and willingness to repay its debt. A shadow rating is a non-public assessment rating that provides an internal estimate of what a company or company’s bond would be rated’.

Creditworthiness indexes depend only on a ‘ratio analysis to benchmark the financial strength and credit risk of the market players’ (WSP, 2015).

Development cooperation grants: Financing of development projects and programmes by international organisations, NGOs, national and local governmental agencies and development banks with the purpose of promoting economic cooperation with developing countries (OECD, 2008).

Equity. A stock or any other security representing an ownership interest.

2. Source: Mostly Pories L., Fonseca C. and Delmon V. (2019)

Equity investment is money that is invested in a company by purchasing shares of that company on the stock market. These shares are typically traded on a stock exchange.

First loss guarantee is a form of credit enhancement in which an investor has additional recourse to a third party for a stated percentage of any obligation or a percentage of any losses.

Grants. Grants are transfers made in cash, goods, or services for which no repayment is required.

Green Finance is a broad term that can refer to financial investments flowing into sustainable development projects and initiatives, environmental products, and policies that encourage the development of a more sustainable economy. Green Finance includes, but is not limited to, climate finance. It also refers to a wider range of other environmental objectives such as industrial pollution control, water sanitation, and biodiversity protection (IDFC, 2019).

Guarantee. Formal assurance that a debtor's liabilities will be met if the debtor fails to settle the debt.

Junior debt or subordinate debt is when debt providers have subordinate status in relation to the normal debt or more senior debts (see below).

Loan tenor is the length of time until the repayment of a loan must be completed in full.

Microloans are small loans often taken by low-income borrowers who lack full employment and/or a credit history. Collateral is often waived. The practice of providing microloans is often associated with national objectives to increase financial inclusion (i.e. bringing more people into the formal financial system). For these reasons, microloans are considered higher risk loans.

Public finance refers to government finance which comprises expenditures of public entities including the central bank, taxes, public debt and borrowing at the national, regional and local level (districts and municipalities) (OECD, 2014).

Revolving fund is a fund or account that remains available to finance an organisation's continuing operations without any fiscal year limitation, because the organisation replenishes the fund by repaying money used from the account.

Risk sharing facility is a bilateral loss-sharing agreement between a development finance institution (DFI) and an originator of assets in which the DFI reimburses the originator for a portion of the principal losses incurred on a portfolio of eligible assets. The originator may be a bank or a corporation.

Senior debt is the debt that has priority for repayment (interest and principal) over other classes of debt. Senior lenders are theoretically (and usually) in the best position because they have first claim to unsecured assets. In the event the issuer goes bankrupt, senior debt theoretically must be repaid before other creditors receive any payment. It is often secured by collateral.

Sovereign loan or debt means debt incurred by a government. A sovereign loan is a loan made by a financial institution to a government.

Sub-sovereign loan is a form of debt obligation issued by hierarchical tiers below the ultimate governing body of a nation, country, or territory. This form of debt comes from bond issues made by states, provinces, cities, or towns to fund municipal and local projects.

ANNEX 4. LITERATURE REVIEW

A4.1 RESEARCH ON PUBLIC DEVELOPMENT BANKS

Given the limited time for conducting an in-depth literature review, the research team focused on the most recent research and existing literature reviews on Public Development Banks.

Research on national PDBs

At present, little is known about development banks in the finance sector, but there are several ongoing research activities.

“From the post-World War Two era to the beginning of the structural adjustment period, development banks were regarded as the centerpiece of a development strategy even if they were often providing mixed results.” (Wagner, 2020).

“There is no finance sector with such substantial assets about which we know so little.” (McDonald et al., 2021)

In 2017, the World Bank conducted the second survey of national development banks (DBs) which concludes that ‘after many decades in which negative or sceptical views prevailed about the role and performance of DBs, their importance is being reassessed. During the global financial crisis of 2008-09, when lending by private financial institutions declined sharply, DBs played an important countercyclical role in various jurisdictions and helped to partially mitigate credit crunches in the market niches in which they operate. This has led policy-makers and academics to reassess the relevance of these institutions during economic downturns’ (World Bank, 2018).

Within the past decade there have been a few initiatives to understand their role and scope. More recently AFD has taken the lead in funding a research programme to fill the knowledge gap. The objective of the research programme is to ‘deliver concrete recommendations on how to scale up PDBs’ potential at achieving the Sustainable Development Goals (SDGs) and supporting structural transformations towards a more responsible and sustainable global economy’ (AFD, 2020c).

The academic research brings together 20 institutions organised around thematic working groups. The research questions include the following.

- What are comparative advantages of DFIs in financing SDGs? Compared with other alternative options such as commercial banking, capital markets and official development assistance, what is the unique comparative advantages of DFIs in financing SDGs? Can DFIs act as a game changer in financing SDGs? Do such comparative advantages differ among DFIs at different development stages?
- Are DFIs effective to achieve SDGs? Given the roles and sectors identified above, are DFIs effective in fulfilling their mission to achieve SDGs? How to measure the effectiveness of DFIs? What accounts for variation in their performance? Specific areas of research include regulation, governance, SDG compatible investments, business models and global development finance architecture.

AFD and Peking University’s Institute of New Structural Economics developed the first exhaustive database on PDBs, using their annual reports (AFD 2020a and AFD 2020b).

The paper by the World Bank and the papers produced by the research teams under the AFD initiative (AFD 2020c), as well as the dataset have been used extensively in this study and the literature review.

Research on national PDBs and the water sector

Public development banks have been largely invisible the water sector as a relevant source of water and sanitation financing (McDonald et al., 2021; Marois, 2021). There is an ongoing pilot study of the SOAS Municipality Services Project by the EAPB (European Association of Public Banks) and APE (Aqua Publica Europea) on public bank funding of public water services. The goal of this partnership is to produce and mobilise comparative research on the role that public banks can play in advancing water-related SDG targets by financing public water operators and highlight the need to improve equitable access to water and sanitation. The partnership's objectives are to:

- advance theoretical and empirical knowledge by assessing the diverse experiences of public bank financing of public water;
- identify best practices to support policy development and implementation;
- strengthen the finance-water interface by facilitating knowledge sharing to help bridge the largely divided research and policy arenas; and,
- train and mentor students, emerging scholars and practitioners to build capacity for policy-relevant interdisciplinary research on the topic and for knowledge mobilisation beyond the grant period.

The recent literature produced by the SOAS Municipality Services Project research team has also been used as a basis for the literature review.

A4.2 WHAT ARE PUBLIC DEVELOPMENT BANKS?

Historical background

Public banks have been around for centuries. The first modern public bank was the Bank of Barcelona, founded in 1401. Public banks flourished during the Industrial Revolution in the 18th and 19th centuries. They played an important role in the development of essential infrastructure in high-income countries. During the 20th century, public banks became an important tool for economic reconstruction and enabling prosperity. For a rich history on the birth of many public development banks see Schmit et al., 2011; Wruuck, 2015 and Marois, 2021.

Definitions

Most of the research done on public banks between 1990 and 2010 sought to compare and measure the performance of private banks versus public banks, without setting a clear definition of public development banks besides the 'ownership' criteria (Schmit et al., 2011).

In this study we have used the dynamic definition proposed by McDonald et al. (2021) where the focus is on what public banks do, how they function, and why: 'Public banks are financial institutions that are owned and controlled by the state or some other public entity, governed under public law, or function according to a public mandate; they operate at a municipal, national and international level' (Schmit et al., 2011; McDonald et al., 2021).

National public development banks are those controlled or supported by central or local governments. They enjoy independent legal status and financial autonomy and most importantly, execute a public mandate and address market inconsistencies. They are notably used for the financing of small and medium enterprises, essential infrastructures, local financial markets, housing, small agriculture, and regional and international trade. They are not engaged in commercial banking, individual bank accounts or consumer credit (Finance in Common, 2020; World Bank, 2018).

How many public development banks are there and where are they?

There are public development banks in practically every country, regardless of the country's stage of development (World Bank, 2018). Overall, public banks do not seem to specifically target regions where access to finance is more difficult (Wagner, 2020).

According to Marois (2021), based on the Orbis 2020 assessment, there are over 900 public banks in the world, with US\$ 49 trillion in assets. In total, public banks account for about 17% of global banking resources, which is equal to about 34% of the 2019 global GDP.

Finance in Common (a global network of public development banks which held its first summit in late 2020), has identified 452 PDBs worldwide (AFD 2020a) of which 80% is fully government owned. They finance US \$2.3 trillion annually representing 8% to 10% of global public and private investments (UN, 2021). Thirty per cent of PDBs were founded after 2000 (Finance Development Club, 2020), and they continue to grow in size and number on all continents (McDonald et al., 2021).

Their sizes vary, but the average assets for both multilateral and bilateral banks are US\$ 149 and US\$ 139 billion respectively. For regional PDBs this is US\$ 12 billion, national US\$ 15 billion and subnational US\$ 12 billion (WWF et al., 2021).

Main purpose and mandate of public development banks

Development banks mostly have a dual purpose. They aim to maximise a sustainable and inclusive development impact (including economic, environmental and social impacts), while maintaining some financial profits or avoiding financial losses (Griffith-Jones et al., 2020b).

“The ideal outcome that DBs pursue is to maximise development impact, whilst at the same time minimising financial engineering risk.” (Griffith-Jones et al., 2020b).

Development banks were historically established to address scarcity of financing and other market failures and promote growth through investments in important but neglected areas. They were also established in countries with a low level of financial intermediation to complement the credit that existing financial intermediaries provide. In countries with large, sophisticated financial systems (e.g. United Kingdom), new DBs (e.g. Scottish National Investment Bank and the Development Bank of Wales) were established to promote specific market niches (e.g. green finance) (World Bank, 2018).

Schimt et al. (2011) identified the underlying rationale that has justified public intervention in financial markets. Namely:

- ‘mitigation of negative externalities (such as systemic or export risks);
- reduction of information asymmetries (with respect to SMEs, innovation and municipal financing);
- maximisation of positive externalities (i.e. the promotion of socially desirable but financially unprofitable projects);
- compensation for short-sightedness on the part of the private sector (e.g. the construction of transport and energy infrastructure); and
- jump-starting financial and economic development in less privileged regions.’

There are development banks with broad mandates and development banks with narrow mandates. DBs with narrow mandates specialise in a specific target market and track their performance over time. DBs with broad mandates have the flexibility to finance a wide range of activities and sectors that the government deems important. They can also reduce their risk by diversifying their loan portfolios. However DBs with broad mandates can also be subject to competing demands from government institutions and lose focus and effectiveness. Most DBs are not subject to periodic mandate reviews and some risk becoming obsolete as the financing gaps that they were supposed to fill become narrower (World Bank, 2018).

Eurodad (2017) further expands on the main roles that PDBs can play and the business models of different PDBs.

Categorisations of public development banks

Public development banks are highly diverse in terms of size, mandate, objectives, governance, business models, performance, funding arrangements and the services and products they offer.

Some can only operate in a given country or region (BNDES in Brazil), others are owned by a college of member states and intervene in a region-wide economic area (Trade and Development Bank in East Africa, BOAD in the West African Economic and Monetary Union zone, CABEL in Central America etc.). For simplification, PDBs are classified according to the following categories (CPI, 2019).

- Multilateral and regional, where the institution has multiple shareholder countries and directs finance flows internationally.
- Bilateral, where a single country owns the institution and directs finance flows internationally to other countries.
- National or local, where a single country or local authority owns the institution and directs finance domestically.

The AFD database (2020a) identifies six types of mandates that PDBs may have.

- Agriculture: this would typically include financing of agricultural projects. Some of these may include broader rural development, which in turn could potentially include rural water projects.
- Export-import: this includes PDB financing and/or providing guarantees for export and import stimulation.
- General development: this gives PDBs a broad development mandate. It is likely that this may include water-related projects.
- Housing: PDBs provide finance both to individuals for mortgages for housing and to public housing developers. Though at first sight this may be outside this study's scope, some of this may include financing sanitation, sewers and the extension of water services to new housing developments.
- Local government: PDBs provide financing to local and regional authorities. This is likely to be of high relevance for this study. Local authorities often face difficulties in accessing commercial finance as their small scale makes the cost of borrowing high. In local government banks, the state provides a sovereign guarantee which can reduce the costs of borrowing.
- Medium and small enterprises: these are PDBs providing finance to enterprises.

PDBs with mandates for general development and local government support are of most interest to this study. They are also in line with the historic role that they played in financing public infrastructure in Europe for example. But PDBs with other mandates – housing and agriculture – may have also elements of water-related investments in their portfolios.

Public development banks also operate very differently from each other. Some are there to provide resources to the commercial banking sector, others provide loans to projects that do not have access to the traditional banking sector (AFD, 2018).

Their business models also vary. There are public banks with explicit profit-maximising mandates, there are others for whom the provision of 'patient' finance is more important (several Brazilian, Indian and German public banks) and others need to balance both social and financial returns (e.g. the Banco Popular in Costa Rica or the Council of Europe Development Bank) (Marois and Gungen, 2016; Marois, 2021).

Even in advanced economies where private financial institutions and capital markets satisfy the financial needs of the economy, development banks continue to play an active role in providing financial services to strategic economic sectors. More recently, development banks are being established to finance green projects and accelerate the adoption of the digital economy (World Bank, 2018).

A4.3 HOW DO PDBS OPERATE?

The best sources of literature to answer this question are the World Bank 2018 report and Schmit et al. (2011). The latter most focused on European public financial institutions. This section therefore provides a short summary from these two sources.

Who are PDBs' main clients?

A World Bank report (2018) of a survey of 64 respondents shows that development banks serve varied borrowers. They primarily target small and medium enterprises (SMEs), large private corporations, local governments and private financial intermediaries which borrow funds from DBs to on-lend to end borrowers or use guarantees that DBs issue to mitigate credit risk in their lending. More than half the DBs in the report also lend to state-owned enterprises. DBs in lower to middle-income countries lend more to state-owned enterprises than those in middle to high-income countries.

The report also mentions that it was not possible to analyse which of the borrowers does not have access to other sources of financing. This would be relevant to understand any 'additionality' that DBs bring to the markets in which they operate.

What are the main sources of funds of PDBs?

Sources of funds available to the majority of DBs include borrowing from international capital markets and other financial institutions, obtaining official development assistance through international financial institutions (MDBs and DFIs) and issuing debt in local debt markets. 'Many DBs have a sovereign guarantee on their liabilities, which enables them to enhance their risk profile and access capital markets or borrow from banks on the same terms that their governments do' (World Bank, 2018). Very few are dependent on government transfers.

Further, 'seventy-seven percent of DBs in the sample are allowed to receive official development assistance from official agencies or multilateral institutions. Funding from official agencies or multilateral institutions is long term (usually more than 20 years) and is granted at concessional terms (below market interest rates with a grace period, depending on eligibility). Historically, national DBs have been among the main recipients of loans and grants that multilateral DBs provide. DBs borrow funds from multilateral agencies and disburse them to end-clients, directly or indirectly through other financial institutions. Given that DBs usually borrow internationally in foreign currency and lend domestically in local currency, they absorb the currency risk associated with their borrowing activities.' (World Bank, 2018).

A large percentage of DBs take deposits from government agencies, but only very few take deposits from the general public. These are institutions with a specific mandate to provide financial services to unserved or underserved households such as the Vietnam Bank for Social Policies, Banco do Nordeste (Brazil), Savings and Social Development Bank (Sudan), and Caisse de Dépôt et de Gestion (Morocco).

What type of products and services are provided for infrastructure investments?

For the DBs that provide infrastructure finance instruments, the top three instruments are loans, followed to a much smaller degree by guarantees and public-private partnerships (World Bank, 2018).

Loans

Lending is the core business of most development banks. They provide (World Bank, 2018; Griffith-Jones et al., 2020):

- retail lending (first tier) directly to end borrowers;
- wholesale lending (second tier) where other financial intermediaries borrow from DBs and then on-lend funds to end customers, usually commercial banks but also cooperative banks, sub-national development banks and others; or
- a combination of these two models (the most common).

There are differences between the lending activities of lower, middle and higher income countries' PDBs. From the World Bank survey respondents (World Bank, 2018), development banks based in lower income countries appear to focus more on the retail-only lending while a greater share of PDBs in middle and higher-income countries provide either wholesale loans or a combination of both (See Box A4.1 for the advantages and disadvantages of each of these models). DBs in lower income countries also lend more to start-up activities than DBs in higher income countries.

The DBs in the World Bank study (2018) sample were mostly using long-term loans (90%), loans for working capital, bridging or short-term loans, and syndicated loans. In addition, public banks approve loans to firms that would have not been able to access one from a private bank as they do not own enough collateral to back the loan (Wagner, 2020).

Box A4.1: The advantages and disadvantages of wholesale vs retail lending

'There are various advantages and disadvantages of first (retail) and second-tier (wholesale) lending.

Under the first-tier (retail) lending model, DBs interact directly with end-customers, which can require the DB to have many branches to access its target customers. This can impose enormous operating costs on agriculture, housing, and SME banks, which usually have a large clientele dispersed throughout a country. Other things being equal, the interest rate offered to end-customers can be lower with this model because resources are not channelled through other financial institutions. In addition, the credit risk stays completely with the DB.

Under the second-tier (or wholesale) lending model, DBs tend to have lower operating costs because they provide financing to private financial institutions that then select and assess loan applications of end-customers. Under this model, the DB can reach more end customers and cover more locations without incurring high operating costs. This model also promotes the growth of private financial intermediaries that become the arms of DBs and reach underserved sectors and clients. Moreover, the private financial institution that intermediates the DBs' funds partially absorbs the credit risk. Second-tier DBs tend to report lower nonperforming loan ratios than first-tier DBs, although interest rates for end-customers tend to be higher because private financial institutions pass on their cost of financial intermediation plus any other margins.'

Source: World Bank, 2018

Most national develop bank loans are provided on a non-concessional basis, but they are somewhat cheaper than loans provided by commercial banks, 'in part because the funding costs for DBs tend to be cheaper than those obtained by commercial banks due to the guarantee of the publicly owned capital. [...] Concessionality of loans may be carried out by either subsidising the principal or the interest payments, with the former being better in many cases, as it implies lower transaction costs.' (Griffith-Jones et al., 2020).

Guarantees

The other common product offered by development banks are credit guarantees, for instance those providing accessible financing to small and medium enterprises, including export credit guarantees from those involved with trade finance (World Bank, 2018). National development banks are more likely to use guarantees as countries move to more advanced stages of development (Griffith-Jones et al., 2020).

Guarantees are typically used for projects considered too risky to attract finance and investment on regular market terms. The guarantees reduce the risk to the lender to an acceptable level and are therefore useful to reduce the gap between perceived and actual risk. Guarantees can strengthen domestic capital markets by supporting local currency bank lending and long-term infrastructure financing; and lengthen loan maturities and reduce collateral requirements for small enterprises (Konig et al., 2020).

There are different types of guarantees.

- Where the guarantor pays part or all of the outstanding value of the loan.
- Where the guarantor makes payments of third-party obligors when that obligor does not meet its payment obligation.

Guarantors are typically:

- government and government agencies (e.g. EU Commission, USAID, AFD, SIDA);
- MDBs/DFIs (e.g. KfW, EIF, IFC, MIGA); or
- specialised guarantee organisations (e.g. GuarantCo, African Guarantee Fund, CGIF) (Konig et al., 2020).

The case for public guarantees is made by spreading risk in small amounts over large numbers of investors, meaning that the state's borrowing capacity gives it a unique ability to spread risk across large populations. Guarantees are also useful in mature markets to crowd in private investment on a temporary basis when financial systems are underdeveloped. They have also been useful in times of high uncertainty such as after the 2008/09 financial crisis or during the COVID crisis (Griffith-Jones et al., 2020).

However, 'when there is extreme uncertainty, guarantees may not be sufficient to overcome bankers' heightened risk aversion, unless governments/development banks are willing to assume most or all of the risk, which could subject them to potential unacceptably high losses. Indeed, the level of guarantee needed to catalyze private lending in conditions of high uncertainty may be close to 100%' (Griffith-Jones et al., 2020).

Non-financial products

There are also many non-financial products being offered by development banks. These include consulting and training, advisory and technical assistance activities and networking and business matching. They can also play an important role in helping to structure complex deals and creating and disseminating knowledge (World Bank, 2018).

A4.4 BENEFITS AND CHALLENGES OF PDBS

This section summarises recent literature reviews on the benefits and challenges of public development banks.

Benefits of PDBS

Governments use public development banks to provide financial services in sectors or regions that private financial intermediaries do not serve sufficiently (World Bank, 2018). Development banks can cover some of the political and economic risks that private investors are not willing to take. 'It has been argued for example, that development finance institutions achieve high additionality in complex, high risk and high impact projects in fragile, low-income countries and regions' (Konig et al., 2020). See Figure A4.1 and Table A4.1 (both in Konig et al., 2020).

Using firm-level data for 127 countries over 2006-2018, researchers (Wagner, 2020) found that national development banks tend to provide more finance in less developed localities relative to private commercial banks without necessarily selecting less productive firms. 'In vulnerable areas, national DBs provide means to overcome first-mover disincentives and obstacles to risk-sharing and distribution while also playing a useful catalytic role in developing financial products and services.' (Wagner, 2020).

More recently, public banks have also acquired other public functions such as to be able to catalyse decarbonisation, play a counter cyclical role during financial crises and the capacity to respond to emergencies like the Covid-19 pandemic (World Bank, 2018; Wagner, 2020; McDonald et al. 2020; Marois, 2021). 'The objective of state-owned banks is not only to maximise profits given risks, but also to stabilise

and promote the recovery of the economy. Thus, given that their objective functions differ, public banks are more willing to take on more risks and expand lending during a crisis period than private banks’ (Wagner, 2020). See also OECD/WB/UN Environment, 2018 and Fernández-Airas et al. 2019.

Box A4.1: Where IFIs have high additionality

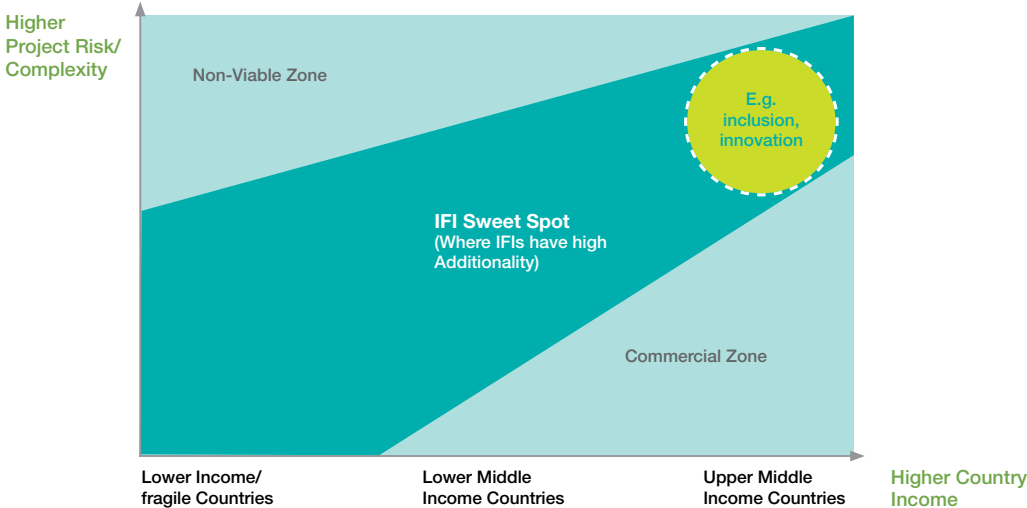


Table A4.1: Types of additionality

Types of additionality	Examples
Financial	Offering better terms, longer maturities, countercyclical finance, lower price, subordination, holding riskier portfolios, providing smart subsidies, guarantees and other to enhance returns and reduce risks.
Aggregation	Supporting projects at regional or global level for aggregation of opportunities, diversification of risk and cross boundary sharing of experience.
Signaling	Providing a stamp of approval, providing credibility, attracting other investors, acting as honest broker.
Knowledge	Strengthening the quality of the investment model and technology; sharing knowledge building the capacity of local partners, facilitate technology transfer, publicly share experiences and learning (beyond project boundaries).
Demonstration	Support innovative pacesetter to de-risk new business models; attracting capital in lower income, fragile countries and frontier markets that are not (yet) able to attract significant level of commercial capital.
Poverty	Influencing design to reach lower income market segments; reduce inequalities, improve local participation, generate employment of BoP.
Standards	Promoting high environmental, social and governance standards in investee companies, financial institutions, funds and at industry level.
Market building	Strengthening policy environment, build eco-systems and support market infrastructure, generate market data and support industry research.

Source: Based on König, A. Jackson, E. (2016): Mobilising private capital for sustainable development (DANIDA).

Ferrari, Mare, and Skamnelos (2017) in World Bank (2018) show that all state-owned financial institutions in Europe and Central Asia have expanded their loan portfolios faster than did the banking sector overall after the global financial crisis. Half of the DB respondents to the survey have indicated that they increased their lending or guarantees during the global financial crisis of 2007/08 to compensate for the temporary reduction in lending by private sector banks and financial institutions. National PDBs seem to be able to manage more risks related to the local context (Wagner, 2020).

The balance-sheet structure of public development banks is more suited to granting long-term loans, which makes them important stakeholders contributing to and driving structural change. They also have the capacity to develop a broader range of financial tools tailored to the needs of each project. Also, their size and their close ties with national governments often enable them to mobilise international financing under favourable conditions (AFD, 2018) and therefore reduce the costs of borrowing and generating cost savings for governments (ALIDE, 2018 in Marois, 2021).

In Africa even if development banks are numerous and growing in number, they remain small because of their low levels of capitalisation. However, recent research on 33 national DBs (Attridge et al., 2020) found that nearly all of them have grown their balance sheets and lending portfolios, and that there is an appetite from governments to support and expand their national development banks' operations.

Challenges of PDBs

The largest challenge of development banks is to strengthen their own risk management capacity given the nature of their business activities where their clients are those that the private financial institutions are not willing to serve given the risks involved. 'Some development banks might not have the power or flexibility to adjust the interest rates of their lending products to reflect the risk profile of their customers' (World Bank, 2018).

The second related challenge financial sustainability. This means there might be a tension between their development impact objectives and the need to adjust the price of lending to the risks they face. There are many cases of banks with 100% government shareholding with strong financial performance. In the 2018 World Bank report, only 5% of surveyed development banks generated a high amount of nonperforming loans, that is, they exceed more than 30% of the total loan portfolio.

More recently, a study of 33 African national DBs found that financial performance varied significantly among banks, with one third of the banks not being profitable. 'About half our sample banks have issues with asset quality with high non-performing loan ratios and this problem seems to be more pronounced in the Africa region compared to wider samples of development banks from different parts of the world. These weaknesses in financial performance undermine the ability of DBs to deliver on their mandate, their ability to fund their operations, and their attractiveness to international and private partners' (Attridge et al., 2020).

Another challenge is not having a well-defined development mandate and competing with private financial intermediaries or even crowd out other market participants. 'If poorly designed and implemented, public sector engagement with private investors or companies may result in:

- crowding out market players which otherwise could provide needed finance, financial or technical services more effectively and efficiently at prices reflecting the true market rates;
- subsidising selected private investors or companies, resulting in an unfair competitive advantage for them vis-à-vis other investors or companies;
- wasting public resources by supporting an activity that would have happened anyway or by providing concessions at a higher level than originally required to mobilise the private sector;
- mission drift in favour of private sector objectives and away from development objectives.' (Konig et al., 2020).

There is also limited evidence of additionality of PDBs in practice mostly because of the lack of ex ante additionality assessments, confidentiality of data to make ex ante and post assessments and overall lack of a supportive quantitative basis (Konig et al., 2020).

Undue political interference stifles the autonomy of some development banks which are pressured to lend to borrowers with excessive risk. In weakly democratic countries, it appears that public development banks are more politically driven (Frigerio and Vandone, 2020 in Wagner, 2020).

The study from Attridge et al. (2020) found strong evidence that governance structures of the bank itself condition performance. 'Greater political influence in bank governance is unambiguously negative for the financial performance and profitability of DBs. Additionally, we find this effect is stronger in countries where

the enabling environment is weaker. We find that the political appointment of executive management is one of the most salient predictors for poor financial performance of all the metrics of governance we tested. [...] Our findings make the case that internal governance of the bank matters more than who or what owns it.'

Future research agenda

The most important question seems to be on how to combine the development results expected of public development banks with portfolio performance (Wagner, 2020). This can be articulated with the concept of additionality of public development financing.

Additionality means that PDB interventions to support private sector operations should make a contribution beyond what is available in the market and should not crowd out the private sector. It raises questions such as do interventions increase the development impact and sustainability of a project with positive implications for achieving the SDGs and climate goals that otherwise would not happen? (Konig et al., 2020). It is therefore important to determine additionality and identify the minimum amount of concessional capital needed to attract private capital and achieve development impact. More guidance is required in this area.

Related questions emerging from the recent AFD literature include (Griffith-Jones et al., 2020b) the following.

- How can grants/concessional resources channelled to DBs be used most effectively?
- To what extent should they subsidise new activities with potential major sustainable development impact?
- To what extent should they support poorer regions and smaller companies?
- Should they be given upfront or reduce the cost of credit?
- To what extent should they directly subsidise activities?
- To what extent should they provide guarantees against specific risks to encourage private investors and lenders to increase their activity?
- Are there cases where longer-term subsidies are warranted?

A4.5 PDBS IN THE WATER SECTOR

Literature specifically on PDB operations in the water sector is more scarce, as mentioned in section A4.1.

Public development banks with an explicit mandate to finance water services

Many public banks have explicit mandates to finance water services, with some having done so for decades. This section provides two examples from the literature: the Dutch Water Bank and PT SMI in Indonesia. Annex 1 provides several case studies of other PDBs with mandates on water.

In the 1950s, regional water authorities in the Netherlands (the Dutch Water Authorities, DWA) jointly established the world's first and, thus far, only Water Bank. The DWA's financial challenges rapidly worsened after World War Two. Important water investment was desperately needed, but capital was scarce during the post-war reconstruction period. In addition, commercial banks mostly provided short-term loans. In an effort to avoid the stagnation of the water infrastructure investment, the Association of Regional Water Authorities issued two long-term bonds in the early 1950s, guaranteed by several large DWA. While this temporarily alleviated the DWA's financial crisis, the Association did not have the capacity to continue lending activities on a large-scale. In consultation with several ministries and commercial banks, the Association transferred the financial interests of the DWA to a separate legal entity: the Dutch Water Bank (NWB Bank).

The NWB Bank was officially established as a public limited liability company in 1954 with a mandate to provide the DWAs with funding at the lowest possible cost. In its first five years, the Bank issued 323 long-term and 919 short-term loans. The Bank was capitalised mainly through private loans provided by institutional investors and banks, allowing the DWAs to attract resources on relatively favourable terms.

The NWB Bank provides the DWA with: i) long-term loans; ii) financial services; iii) centralised financial expertise; and iv) low interest rates. Its focus goes beyond the water sector: 63% of its investments are in social housing, 13% in municipalities, 7% in healthcare and 2% in other public entities.

The Bank continues to be very important for the DWA, holding the large majority of their long-term loans. The DWA invest € 1.3 billion each year, 34% of which is invested in flood protection infrastructure, 32% in water systems, 26% in wastewater treatment and 8% in other investments.

The NWB Bank has AAA/Aaa ratings from the credit-rating agencies Standard & Poor's and Moody's. The Bank is also under the direct supervision of the European Central Bank (ECB). In 2006, the NWB Bank established the NWB Fund to finance the DWA's international projects and support water management projects in developing countries (Acioly et al., 2016).

Established in 2009, PT Sarana Multi Infrastruktur (PT SMI) seeks to catalyse infrastructure development in Indonesia by providing finance products to projects that are largely originated in the public sector but financed by the private sector. The Government of Indonesia's need to significantly increase infrastructure investment after several years of low investment led to the establishment of PT SMI. 'The mandate focuses on two main objectives, specifically (i) optimising the social and economic benefits of infrastructure for communities; and (ii) supporting the achievement of the Sustainable Development Goals, including supporting climate change mitigation efforts. (GIH, 2019: 80).

PT SMI is 100% owned by the Government of Indonesia and has a single focus: infrastructure. It is a limited liability company that falls directly under the jurisdiction of the Ministry of Finance. PT SMI supports the infrastructure component in the following sectors: (i) transport (roads, rail, ports, maritime infrastructure and airports); (ii) water and wastewater; (iii) energy (including electricity, oil and gas); (iv) telecoms; and (v) other sectors only with the approval from the Minister of Finance. (GIH, 2019).

On the relevance of PDBs investments in the water sector compared with other sources

New estimates from the World Bank suggest that achieving SDG targets 6.1 and 6.2 will cost low and middle-income countries US\$ 198 billion a year, with a further US\$ 103 billion required for flood protection (World Bank, 2019).

In the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) 2018/2019 country survey, 35 countries, representing 1.3 billion people, categorised their 2016 to 2018 WASH expenditure by revenue source. The proportion of WASH expenditure derived from household sources was 66% of the US\$ 52 billion in total WASH expenditure for these countries, followed by 22% of government spending, 9% repayable finance and 3% external sources. Compared to the previous GLAAS report of 25 country respondents, repayable finance increased only 1% (WHO/UNICEF 2019).

Are PDB investments in the sector part of the answer to fill the finance gap? What is their potential? Most of the research and literature in this area is quite recent and was conducted by Marois (2021) and McDonald et al. (2021). Public banks may not be the silver bullet for resolving the finance gap, but their historic role, the literature which looks at their overall role and their role in building infrastructure, demonstrates that they could play a much larger role in the water sector (McDonald et al., 2021).

On the role of PDBs in coping with the risks of the water sector borrowers³

After two years of USAID's Water, Sanitation and Hygiene Finance (WASH-FIN) programme across seven countries, the team concluded that repayable finance is abundant and available - provided its risk-versus-reward terms are met - and there is no shortage of finance globally. Excess funds are available for investment through both simple and sophisticated private financial systems and instruments.

To stimulate the uptake of commercial investment in the water sector, investors need assurances that the sector and service providers are not too risky and that their investment will be paid back and yield

3. This section has been adapted from Pories et al. (2019)

returns. However, the reluctance of a commercial bank to invest in the WASH sector may go beyond a bank's perception of sector risk. In some countries, commercial banks are not allowed (e.g. Ethiopia) or are limited in how much they can provide loans at the sub-national level.

It may be also be difficult for lenders to take collateral over WASH assets - in some countries this is illegal. Even if they can do this legally, they would be constrained from enforcing the collateral and selling the assets. It is difficult for private lenders to exercise step-in rights over assets deemed to be public, and water assets are often categorised this way. Frequently, the only collateral service providers have is the regular cash-flow coming from consumers paying their tariffs. So if revenues from tariffs do not generate a surplus, securing tariffs as collateral will be difficult. For small private service providers, this can lead to lenders requiring collateral from the service provider owners' other assets such as vehicles, real estate and other fixed transfers from national government. Finally, in some markets, the lack of clarity between the role of sub-government authorities and service providers also undermines investment opportunities.

WASH sector assets are expected to last a long time and so projects are amortised over a long period (ranging from 10 to 40 years). However, most capital markets in emerging markets cannot lend beyond seven to 15 years, showing a mismatch between the financing and the asset life. In addition, most providers, even small ones, need more money than they can realistically borrow. They are building 'backbone' infrastructure and strictly financing this through commercial debt is costly, demonstrating another mismatch between the demand for money and the supply that can be provided.

At the same time, financing requests from service providers are often either not large enough or too complex to be attractive for the large development banks who need economies of scale to make the cost of doing business worthwhile. "There are very high transaction costs of pushing forward projects that are interesting but complicated in set-up," observes Nick Marchese of the European Investment Bank.

The question is if the PDBs are willing to step in where the commercial banks have not, given all the risks and difficulties mentioned above.

When considering capacity building in the WASH sector, the focus tends to be on the demand side of finance: on assisting service providers to build their operations and business cases to be more attractive to commercial lenders. Helping the domestic finance suppliers – the investors – see the opportunities for financing WASH and how small adjustments to making transactions can improve the risk profile for these loans is an equally critical aspect of the enabling environment.

An interesting example is Findeter in Colombia that does not lend directly to municipalities and utilities, but through commercial banks. They thus avoid competing with commercial banks and instead improve the conditions (particularly the tenure) that the latter provide (McDonald et al., 2021).

Grants can be used to build the skills of public and commercial banks, pension regulators and securities commissions so that they better understand how investments in the water sector can match their long-term liabilities. In Kenya, a set of tools has been developed to help banks evaluate investments in the WASH sector, and this has been rolled out successfully to the extent that banks are now extending finance to service providers.

Can PDBs support the water sector become more climate resilient?

A holistic approach to building resilient WASH systems encompasses aligning water resource management with climate impacts. This means improving access to water and sanitation while ensuring the protection of water resources and the ecosystems they rely on.

Many PDBs have made significant progress to integrate climate risk assessments in their investments. However, there is a lack of a single goal for biodiversity as there is for the climate in the 1.5C warming limit and 'biodiversity is poorly integrated into the strategies of most larger banks, and is not even on the radar for most smaller ones.' (Basu et al., 2020)

The French Development Agency (AFD) has set a target to commit 30% of its climate finance for projects that favour biodiversity by 2025. Some 15% of AFD climate finance and 10% of its financial commitments are in projects that support biodiversity. It invested € 470 million in global biodiversity in 2019.

Climate finance mostly refers to the finance made available by global funds. A recent assessment by ODI/WaterAid (Manson et al., 2020), shows that water programmes have received less than 3% of global climate finance and basic access to WASH received just 0.3%. It also shows that the top 20 recipients of climate-related development finance for water are middle-income countries. Only Bangladesh, is a lower income country.

Accessing climate funds requires measures that PDBs might be willing and able to support:

- ‘supporting country-level processes and assessment of climate risks;
- supporting wider efforts to strengthen the enabling environment for productive investment of climate finance alongside all finance flows;
- brokering access to the most appropriate types of finance for each purpose.’; and,
- supporting integration across sectors.

Integration is vital because access ‘to water is also affected by disaster events and for this reason, livelihoods, ecosystems and disaster risk are an important feature of water security. Furthermore, many of the impacts on water supplies often stem from upstream, and wider issues and concerns related to other sectors. For example, intensive farming can have negative effects on water quality in areas where nitrate-based fertilisers are used. These sectors may not even realise the problems they are creating, nor the potential impact of climate change on their own activities’ (Manson et al., 2020).

The same report also concludes that ‘ultimately only national governments can (and should) lead these interventions [...] In the absence of this political will, it will be hard to resolve the challenges faced by this nascent sector’.

A4.6 OPPORTUNITIES FOR PDBS IN THE WATER SECTOR

As the performance of water utilities improve and local capital markets develop, there should be more opportunities for local financing – including repayable finance from public and commercial banks. With this trend in mind, this section focuses on the:

- transition to financing the water sector with repayable local finance;
- ability to cope with increasing demand from remunicipalisation trends; and,
- ability to take on more risk in the water sector compared with other financial institutions.

Increasing repayable local finance as a source of financing to the sector

‘The long-term financing goal of the water sector should be to raise capital in local currency at good terms from domestic (and international) capital markets to match the currency of borrowing with the currency of water revenues’ (Rebel Group, 2019).

Many IFIs agree that the transition to local finance is desirable, and many have programmes to strengthen local capital markets and the regulatory environment to invest in the water sector. ‘But pressure and targets to disburse large amounts of funds and loans means that national-level, hard currency and sovereign loan operations can be more straightforward for investment officers. And can also suit some treasuries and national government more broadly.’ The South African Treasury does not allow IFIs to lend in foreign exchange, forcing the IFIs to work with local currencies (Manson et al., 2020).

Donors are well-placed politically to facilitate policy dialogues with national governments and with DFIs (see box A4.2). The Rebel Group report (2020) mentions two ways of doing so.

- 'With Treasury: support drafting of transition strategies, support (development of) legal regulatory frameworks and programmes that support sustainable sector financing strategies'.
- 'With DFIs: design of blended finance solutions that enable local banks to participate in the water sector, and review internal incentive structure of DFIs'.

Box A4.2 AFD Group strategy to strengthen financial systems

'AFD Group has established financial and technical partnerships with a number of public development banks in Africa and Latin America. In Latin America, AFD Group will continue to support these actors in order to speed up the shift in development models.

It will encourage them to consolidate their pioneering role chiefly in the fight against climate change. It will promote the incubation of pilot initiatives by providing them with the technical assistance required to grow innovative financing operations, not only in terms of their financial structure but also their intended targets (modernisation of urban infrastructure, climate change adaptation programme, sustainable agriculture etc.). AFD Group will organise peer exchanges with these institutions, which, in many respects, have built approaches and tools that could usefully serve as inspiration for AFD. The Agency will thus confirm its partnership approach with the IDB and ALIDE, the network of the continent's national development banks.

In continental Africa, the mandate of the major public development banks is focussed more on regional economic integration. AFD will provide support to the institutions wanting to build an investment policy focused on the Sustainable Development Goals and will contribute to financing projects with a high regional value-added. For institutions whose economic and financial model still shows certain vulnerabilities, a targeted capacity-building programme will enable them to strengthen their internal governance and consolidate their positioning as a lead financial actor.'

Source: AFD. 2018 Financial Systems 2018-2022 Strategy.

Increasing demand for financing from remunicipalisation trends

Another issue which may present an opportunity is the response of public banks towards the growing remunicipalisation trend. 'Over the past 20 years, in more than 40 countries, there have been at least 311 cases of water supply and sanitation remunicipalisation, affecting more than 100 million people' (Kishimoto et al., 2017, 2020 in McDonald et al., 2021).

This trend and the ability of development banks to meet the increasing demand at municipal level requires that governments put structural policies and reforms in place to allow domestic capital markets to develop (World Bank, 2018).

The ability to take on more risk in the water sector

The main segment that national PDBs seem to cater for in the water sector are intermediate utilities. Large metropolitan utilities can get loans from commercial banks or IFIs and smaller utilities may never be creditworthy.

Annex 1 contains case studies that illustrate some of these points, but there is no research yet on the 'additionality' aspects of PDBs in the water sector.

Moving forward would entail deepening the dialogue with potential investors in the water sector to identify the main barriers that prevent them from investing – whether through issuing loans, guarantees, or other mechanisms.

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