

Background Study on Funding and Financing of Transboundary Water Cooperation and Basin Development



Abstract: This report analyzes the key opportunities and challenges related to the financing of transboundary water cooperation and basin development. It investigates different financial needs for the development and the maintenance of joint bodies and the development and implementation of basin management and development projects. It contrasts those needs against potential sources of funding and financing, from both public and private entities. It therewith aims to provide a comprehensive overview and typology of sources of funding and financing potentially available for those involved in the management and development of transboundary basins. With this, the report works to cultivate a sound understanding of the opportunities and challenges that come with each type of funding and financing. It also hopes to encourage a dialogue between basin managers and developers on the one hand and representatives of the financial sector – both public and private – on the other.

This background study has been developed under the framework of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) in 2020 and its programme area on facilitating the financing of transboundary water cooperation, whose main aim is to support countries and River Basin Organizations in understanding and identifying sustainable financing mechanisms for transboundary water cooperation and management. This work started on 9 October 2018, with a high-level workshop on financing transboundary basin development which UNECE organized in partnership with Switzerland, the Netherlands, the World Bank, the Global Environment Facility International Waters Learning Exchange and Resource Network (GEF IW:LEARN), the Asian Development Bank (ADB), the European Investment Bank (EIB).

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Acronyms

AF	Adaptation Fund
ADB	Asian Development Bank
AfDB	African Development Bank
AFD	French Development Agency (Agence Française de Développement)
BEL	Bujagali Energy Limited
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CEMAC	Central African Economic and Monetary Community (Communauté Economique et Monétaire de l'Afrique Centrale)
CICOS	International Congo Basin Commission (Commission Internationale du Congo-Oubangui-Sangha)
CIDA	Canadian International Development Agency
CRBMF	Core River Basin Management Functions
CTMS	Comision Tecnica Mixta de Salto Grande
CUFW	Finnish Russian Commission on the Utilization of Frontier Waters
DEG	Deutsche Investitions- und Entwicklungsgesellschaft (German Investment and Development Society, part of KfW)
EAC	East African Community
EIB	European Investment Bank
EPC	Engineering, Procurement and Construction
ERFMNI	Regional School for Vocational Training in Inland Navigation (Ecole Régionale de Formation aux Métiers de la Navigation Intérieure)
EU	European Union
EUR	Euro
FMO	Dutch Development Bank (Financierings-Maatschappij voor Ontwikkelingslanden)
GCF	Green Climate Fund
GDBWC	German-Dutch Boundary Water Commission
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	German Development Cooperation Agency (Gesellschaft für Internationale Zusammenarbeit)
GLC	Great Lake Commission
GWh	Gigawatt-hour
IBJC	Indo-Bangladesh Joint Rivers Commission
IBWC	International Water and Boundary Commission
ICPDR	International Commission for the Protection of the Danube River
ICPE	International Commission for the Protection of the Elbe
ICPR	International Commission for the Protection of the Rhine
IDA	International Development Association
IFC	International Finance Corporation
IFI	International Financial Institutions
IKI	International Climate Initiative (of Germany) (Internationale Klima Initiative)
ISC	International Scheldt Commission
ISRBC	International Sava River Basin Commission
JICA	Japan International Cooperation Agency
KfW	German development bank (Kreditanstalt für Wiederaufbau)
LCBC	Lake Chad Basin Commission

LDCF	Least Developed Countries Fund
LKTC	Binational Autonomous Authority of the Lake Titicaca
LTA	Lake Tanganyika Authority
LVBC	Lake Victoria Basin Commission
MIGA	Multilateral Investment Guarantee Agency
MRC	Mekong River Commission
MW	Megawatt
NAPA	National Adaptation Programs of Action
NBA	Niger Basin Authority
NBI	Nile Basin Initiative
NBTF	Nile Basin Trust Fund
NDCs	Nationally Determined Contributions
NT2	Nam Theun 2 Hydropower Project
NTPC	Nam Theun 2 Power Company
ODA	Official Development Assistance
OKACOM	The Permanent Okavango River Basin Water Commission
OMVG	Organisation for the Management of the Gambia River (Organisation pour la Mise en Valeur du Fleuve Gambie)
OMVS	Organisation for the Management of the Senegal River (Organisation pour la Mise en Valeur du Fleuve Sénégal)
ORASECOM	Orange-Senqu River Basin Commission
OSS	Sahara and Sahel Observatory
PIDACC	Programme for Integrated Development and Adaptation to Climate Change in the Niger Basin
PJTC	Permanent Joint Technical Committee
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PRG	Partial Risk Guarantee
RBO	River Basin Organization
SCCF	Special Climate Change Fund
SDAGE	Framework for the Development and Management of Water Resources (Schéma Directeur d'Aménagement et de Gestion des Eaux)
SDG	Sustainable Development Goals
SDC	Swiss Agency for Development Cooperation
SPV	Special Purpose Vehicle
TA	Technical Assistance
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
USAID	United States Agency for International Development
VBA	Volta Basin Authority
WASH	Water, Sanitation and Hygiene

Glossary

- **Assets:** A resource with economic value that an individual, corporation, or country owns or controls with the expectation that it will provide a future benefit.
- **Blended finance:** Blended finance is the strategic use of development finance for the mobilization of additional finance towards sustainable development in developing countries.
- **Bond:** A type of debt instrument, under which the bond issuer/borrower (e.g. a country, municipality, public organization, company) owes the bondholders/lenders (e.g. individuals, institutional investors) a debt and (depending on the terms of the bond) is obliged to pay them interest (the coupon) and to repay the principal at a later date, termed the maturity date. Interest is usually payable at fixed intervals (semiannual, annual, etc.). Bonds can often, but not always, be traded publicly, making them a liquid investment instrument.
- **Credit guarantee:** Promise by a third party to repay debt obligations should the borrower be unable to do so.
- **Debt:** Refers to debt instruments, such as loans and bonds.
- **Debt-to-equity ratio:** Indicates the proportion of equity to debt used to finance a project. This concept is also referred to as gearing or leverage.
- **Demand risk:** Risk created by potential shortfall between forecasted demand and actual demand, for example in the context of a toll road.
- **Disclosure requirements:** Rules that must be adhered to when submitting disclosure statements in the context of raising capital.
- **Due diligence:** Process undertaken by financiers and others to evaluate the merits of an investment by reviewing relevant financial records, past company performance, forecasts, plus anything else deemed material.
- **Equity:** Equity refers to the residual value of a company or project net of its outstanding debt. As such, it reflects the value of the company for its owners. It also refers to the investment made by equity investors to develop or acquire the project. To compensate equity investors, they are entitled to receiving dividends, which are distributions of a company's or project's earnings.
- **Financing:** Funds made available to pay for upfront capital costs that require repayment in the future, typically in addition to some compensation for time and risk (interest payments or dividends).
- **Funding:** Funds made available to pay for upfront capital or ongoing operating costs without a repayment obligation. For example, government grants and user fees (e.g. tolls and electricity tariffs) are considered funding.
- **Grants:** A source of funding, often provided by bilateral donors, multilateral organizations, trust funds, and nonprofits. Grants do not have a repayment obligation.
- **Green bonds:** Debt instrument used to finance climate and environmental projects.
- **Impact Investing:** Impact investments are investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return. Impact investments can be made in both emerging and developed markets and target a range of returns from below market to market rate, depending on investors' strategic goals. Green bonds and social impact bonds are examples of impact investment instruments.
- **Interest rate:** Amount charged, expressed as a percentage of the debt principal amount, by a lender to a borrower for the use of the borrowed funds. Interest rates can be either fixed or variable.
- **Loan:** A type of debt instrument, under which the loan issuer/borrower (e.g. a country, municipality, public organization, company) owes the holders/lender (e.g. banks) a debt and (depending on the terms of the loan) is obliged to pay them interest and to repay the principal at a later date, termed the maturity date. Individual loans cannot be traded publicly, making them less liquid when compared to bonds. Other key differences with bonds include

potentially increased flexibility in terms of the drawing and repayment of the loan as well as the possibility to negotiate terms directly with the bank.

- **Non-recourse/limited recourse project finance:** Financing structure under which debt is repaid solely from the cash flow generated by the project; lenders do not have recourse to the sponsor's other assets in case the Project Company defaults.
- **Pension funds:** A fund from which pensions are paid, accumulated through contributions from employers and/or employees. Their long-term investment objectives make infrastructure projects often attractive investment opportunities for pension funds.
- **Private financing:** Financing provided by private entities, such as commercial banks, insurance companies, corporates, and individual investors as well as International Financial Institutions (IFIs) with a private sector mandate. Note that the latter refers specifically to IFIs financing private sector projects at approximately commercial terms and rates.
- **Private placement:** Sale of bonds or stocks directly through a private offering to a small number of chosen investors (for example pension funds and insurance companies) rather than as a part of a public offering.
- **Political risk insurance:** Insurance taken out by financiers to protect against specific political risk, such as transfer restriction (including inconvertibility), expropriation, war and civil disturbance, breach of contract, and non-honoring of financial obligations. Political risk insurance does not cover commercial or technical risks, for which a developer may or may not obtain separate insurance.
- **Risk transfer:** Strategy for risk management which shifts risk from one party to another, in an attempt to assign the risk to the party that can best manage the risk and/or its potential impacts at the lowest cost.
- **Social impact bonds:** Debt instrument used to finance projects which augment social and community focused outcomes. Alternatively called "pay-for-success."
- **Special Purpose Vehicle:** Separate legal entity created to develop and finance an infrastructure project. Using a Special Purpose Vehicle construct helps isolate risks associated with a transaction from the parent company, thus protecting investors from liabilities beyond their investment. Similarly, a Special Purpose Vehicle construct helps protect the project and government agency against the risk of default by the parent company. Also called Special Purpose Entity or Project Company.
- **Tax revenue:** Income that is gained by governments through taxation. Governments may impose a variety of taxes, including income tax, corporate tax, capital gains tax, property tax, consumption tax, import tax, etc.
- **Technical assistance:** Targeted support provided to an organization with development need or problem. It is considered non-financial assistance and can range from information sharing and expertise to capacity building.
- **Water fund:** Organizations that design and enhance financial and governance mechanisms which unite public, private, and civil society stakeholders around a common goal to contribute to water security through nature-based solutions and sustainable watershed management.

Executive Summary

The sustainable and cooperative management and development of transboundary water resources is crucial for access to water, economic growth, sustainable development as well as regional stability and peace. The different elements and stages of sustainable and cooperative management and development of transboundary water resources require funding. This element is often overlooked when discussing the different prerequisites and requirements for successful cooperation and development. Moreover, a lack of financial resources and adequate funding and financial mechanisms can impede transboundary water cooperation and basin development even if all riparian states are committed to it. The main challenges in funding and financing transboundary water cooperation and basin development related projects are:

- Water initiatives, especially in emerging countries, are often perceived as particularly risky in a transboundary setting, given that risks normally related to one country (in terms of economic developments, political stability, etc.) are often compounded in basins shared by several countries.
- Many countries face financial capacity constraints and must make tough decisions on how to allocate their scarce public funds. Whereas that is true for all sectors and initiatives, transboundary water cooperation and basin development is often not at the top of countries' priority lists.
- Most official development assistance (ODA) that could temporarily fill this funding gap goes to the Water, Sanitation and Hygiene (WASH) projects and initiatives, while most international private financing goes to large infrastructure projects that are developed and implemented at the national level.
- Limited consideration of the benefits of cooperation and a general lack of cooperation by riparian states in many of the world's basin.

This report sets out to explore the different financial needs and opportunities associated with transboundary water management and cooperation as well as basin development. It aims at providing professionals – with a background in water resources management, finance, or other – a better understanding of the needs and the sources available to sustainably fund transboundary water cooperation and basin development.

In the first part, the report provides a comprehensive summary of the financial needs for transboundary water cooperation and basin development. It differentiates between core costs – the costs associated with establishing and maintaining institutionalized cooperation mechanisms – and program costs – the costs associated with managing a transboundary basin and developing its water resources. Both types of costs tend to vary considerably across the world's shared basins, largely depending on the focus and the objectives of cooperation which riparian states have agreed to pursue, and the mandate and the responsibilities assigned to a joint body.

In the next part, the report assesses the different sources available to meet the aforementioned financial needs. It groups those into different categories, namely public funding and financing and private funding and financing, acknowledging that hybrid forms between the two exist and can be valuable solutions.

On the public funding and financing side, the report first considers direct member state contributions to transboundary water cooperation, management, and basin development – highlighting their great importance for ensuring the long-term financial but also political sustainability of cooperative action –

and assesses some of the typical characteristics and challenges associated with said contributions. Next, the report assesses other, less commonly applied direct public sources, such as regional taxes or user/polluter fees. It finds that those come with numerous challenges and have so far not developed into a broad funding base for joint bodies. The report also assesses the sale of data and services derived from transboundary water cooperation and basin development as well as management and administration fees/project management that joint bodies can charge for projects and which can provide a source of, albeit not long-term sustainable, income. The last public funding and financing sources reviewed include public loans, grants, and technical assistance mechanisms. The report acknowledges their potential importance for overcoming financial capacity constraints in basins in developing countries, thus allowing to kick-start cooperation, joint management and basin development even in times of budget limitations, but also highlights challenges related to long-term financial sustainability.

On the side of private funding and financing, the report first assesses mechanisms of private funding and the role private philanthropies can play. Acknowledging that there is limited potential to meet financial needs in many of the world's basins through philanthropy and other types of private funding, the report moves on to investigate private financing for the development of water related infrastructure projects. It starts out with a discussion on public private partnerships, explaining how they can be structured to achieve efficient risk allocation while overcoming some of the key challenges associated with infrastructure development. Next, the report assesses the role of equity and debt in private financing and how they can be used in transboundary basins. It also highlights some of the constraints related to those, which include a repayment obligation for private debt and a positive risk-adjusted return expectation for equity, making private financing typically more expensive than public financing.

The report also reviews new development and opportunities to finance transboundary water projects. These include innovative financing mechanisms and initiatives that have emerged over the past years, especially in the form of green, social impact, and blue bonds. The report details how these mechanisms could work and acknowledges the innovation potential of these approaches; simultaneously, the report informs also about unknowns and risks still associated with those still developing mechanisms.

The chapter ends the discussion on funding and financing by exploring "blended financing" as a way to finance transboundary water infrastructure projects, discussing two relevant case studies that employed such an approach successfully. OECD (2018) defines blended finance as the strategic use of development finance for the mobilization of additional finance towards sustainable development in developing countries. By using public funding and financing in combination with specific financial instruments to overcome risks that commercial financiers cannot easily absorb, a blended finance approach can mobilize private debt and equity financing that may otherwise not have been available. Besides mobilizing additional financial resources, blended finance can help efficiently allocate risk to the stakeholder best positioned to manage and/or absorb it while potentially reducing the overall cost of capital for the project. Blended financing, therefore, presents significant opportunities to mobilize funds for transboundary water management infrastructure projects.

Throughout the report, case studies will be leveraged to illustrate different funding and financing mechanisms in action. The case studies describe how these mechanisms were harnessed in transboundary settings. These range from solely public to completely private approaches. Blended financing will be explored more deeply through two longer case studies. The other examples can be found in textboxes throughout the report. In this way, the report connects real projects to the various

mechanisms, thus exploring unique challenges and opportunities present in different scenarios and emphasizing the lack of a “one size fits all” solution to transboundary water financing.

The next chapter summarizes the key findings of the report and takes a special focus on the challenges and opportunities of each funding and financing mechanism, aiming to highlight, for each mechanism, its potential to contribute to the long-term sustainable funding or financing of transboundary water cooperation and basin development, as well as the challenges that basin managers and others involved in these processes should be aware of.

Finally, the main findings of the research work undertaken for this study are summarized at the end of the report in the form of 20 detailed take-away messages, targeted at high-level policy and decision makers from both the water and the finance side. Below are the key highlights drawn from the study:

- Creating an enabling environment for states and joint bodies with shared basins to mobilize financial resources is crucial. This can be achieved by building strong legal and institutional frameworks, strengthening governance, and by elaborating basin development plans.
- Despite challenges related to member states’ budget constraints and political willingness, domestic budgetary resources from riparian states are and should remain the primary funding source to support joint bodies core costs and basin water management activities. Identifying and communicating the benefits of transboundary water cooperation can help securing national budgetary contributions.
- To complement domestic budgetary contributions and meet the transboundary water cooperation and basin development financial needs, a number of other public funding and financing options are available for riparian states and joint bodies.
- Private financing can also be leveraged as it offers opportunities to cover transboundary basin infrastructure development costs.
- Innovative financial instruments are also being developed and tested. These instruments could potentially offer new opportunities for countries and joint bodies to finance transboundary water cooperation and basin development.
- There is a need for further capacity-building and exchange of experience and information about the funding and financing of transboundary water cooperation and basin development as well as the challenges and lessons learned across basins worldwide.

Based on these findings, water management practitioners, basin managers, representatives of national ministries in charge of economic planning and finances, and representatives of joint bodies as well as representatives of international financial institutions and private financiers can engage in a deeper dialogue on how best to meet the financial needs of transboundary water cooperation and basin development.

1 Introduction

Transboundary water cooperation and basin development faces tremendous financial needs worldwide. While transboundary watercourses – rivers, lakes and aquifers – are of crucial importance for riparian communities, municipalities/local governments, countries, and their entire basins (including their environmental health, socioeconomic development and political stability) the provision of financial means for their management, development, and protection remain insufficient in most parts of the world. This affects more than 40% of the world's population who live near or are impacted by the more than 300 transboundary river and lake basins (and many more aquifers) on our planet.

To understand the challenges encountered in meeting transboundary water cooperation and basin development financial needs, it can be helpful to first look at the challenges associated with water infrastructure development in general. As the OECD (2018) reports, water is often undervalued and accordingly underpriced, resulting in poor cost recovery. In addition, water infrastructure tends to be capital intensive, meaning that it takes a long time to recover those early investments. Furthermore, many of the benefits of water management and infrastructure cannot be easily monetized, thus limiting revenue potential for public and private financiers. Lack of appropriate analytical tools and reliable data may also deter financiers. Moreover, water projects tend to be very context specific, thus raising transaction costs and potentially limiting the efficient use of emerging innovative financing models. Lastly, by focusing on financial flows rather than economic benefits, financiers and planners will likely prioritize projects with substantial revenue potential while ignoring projects that may not have a solid business case but would generate significant positive externalities. Besides challenges in monetizing economic benefits, water projects that touch upon multiple sectors often struggle to capture, quantify, and communicate the benefits across all sectors, which may include, among others, energy, agriculture, pisciculture, navigation, and tourism.

Whereas all of the above also applies to transboundary water management and basin development related projects, there are a number of additional complications that making it particularly challenging to meet the financing needs of such initiatives. Firstly, whereas water initiatives may be inherently risky, especially in emerging countries, they are often perceived as particularly risky in a transboundary setting, given that risks normally related to one country (in terms of economic developments, political stability, etc.) are often compounded in basins shared by several countries. This is particularly true if there is no legal agreement between countries on transboundary water cooperation. The existence of an enabling environment including a stable and effective legal and institutional framework is crucial for any investments. Global conventions such as the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention)¹ may be useful in this regard. Secondly, many countries face financial capacity constraints and must make tough decisions on how to allocate their scarce public funds. Whereas that is true for all sectors and initiatives, transboundary water management and development is often not at the top of countries' priority lists. The coordination of water resources uses across countries, the development and the maintenance of joint institutions or the implementation of joint river basin management projects typically do not feature highly on countries' national priorities. Thirdly, most official development assistance (ODA) that could temporarily fill this funding gap goes to the WASH sector, while most international private financing goes to large infrastructure projects that are developed and implemented at the national level. Transboundary water management and development is therefore still largely underfunded, in spite of increasing international donor interest. Finally, another key challenge relates to a limited consideration of the benefits of cooperation and a general lack of cooperation by riparian states in

¹ <https://www.unece.org/env/water/text/text.html>

many of the world's basins. According to the first reporting exercise of Sustainable Development Goals (SDG) indicator 6.5.2 (UNECE/UNESCO/UN-Water 2018)², which was undertaken in 2017-2018 and measures the proportion of transboundary basin area with an operational arrangement for water cooperation, there has been recent progress in strengthening transboundary water cooperation worldwide but there is still high need for improvement. Based on data collected from 67 out of 153 countries sharing transboundary waters, the average percentage of national transboundary basin area covered by an operational arrangement was 59 percent and only 17 countries reported that all their transboundary waters were covered by operational arrangements. This also reflects the complex geopolitics behind transboundary water management in certain basins. The limited willingness to engage in transboundary cooperation translates to an unwillingness to provide the financial means for it.

Consequently, transboundary water cooperation and basin development often lag behind their potential, preventing the generation of cooperation benefits and the sharing of said benefits across the basin. This can create vicious cycles of decreased available funding. Failure to manage shared water resources in a cooperative manner and to develop them in a coordinated and sustainable way poses a myriad of threats – some of them with impacts well beyond the water sector.

It is therefore important to better understand the needs and sources available to fund transboundary water cooperation and basin development and to assess them in a comprehensive manner. This can help government officials, basin organizations, other joint bodies, water sector practitioners, and other stakeholders involved in the management and the development of shared water resources at various governance levels; it can also assist donor agency representatives and the private sector to better understand the mechanisms and processes behind different funding and financing mechanisms. This will contribute to a better understanding of and dialogue between the public and private entities involved in funding and financing transboundary water related initiatives and projects, and thus make an important contribution to the sustainable management and development of shared watercourses. In this context, it is also important to acknowledge that the reasons for a lack of available financial resources often lie outside of the financial sector. As mentioned before, they typically relate to different political priorities or an overall lack of commitment to cooperation over shared water resources, which help explain the lack of enabling conditions for cooperation and sufficient financial means.

Previous academic publications as well as policy analyses are very limited. Most analyses focus on funding of WASH services or water resources management at the national level (Rees et al. 2008; World Water Council 2015; OECD 2018). Funding for transboundary water cooperation and basin development has hardly been addressed (for some of the few exceptions refer to Henkel et al. 2014; UNECE 2018, as well as reports that address transboundary cooperation challenges more broadly, thereby also emphasizing the importance of financing transboundary cooperation, such as the Global High-Level Panel on Water and Peace's Report (2017)) and research often focuses on specific topics only, such as ODA funding for transboundary water management (ODI 2002; GTZ 2007), climate funds (World Bank 2019), or innovative mechanisms for leveraging public and private financing (Blue Peace 2018). Additional information for this report has been gained from basin-specific documents that River Basin Organizations (RBOs) have developed in the context of reform and financial change processes as well as from relevant case studies of past transboundary water infrastructure projects.

The remainder of this report consists of two main parts: In the first part (Section 2), the funding needs for transboundary water cooperation and basin development are presented, differentiating between

² Progress on Transboundary Water Cooperation. Global baseline for SDG indicator 6.5.2 (2018). UNECE, UNESCO, UN-Water. Available at: <https://www.unwater.org/publications/progress-on-transboundary-water-cooperation-652/>

funding needs for joint bodies in the form of core costs (see Section 2.1) and funding needs for the implementation of projects and activities related to basin management and development (see Section 2.2). The second part (Section 3) analyzes different sources of public and private funding and financing to cover these different costs. The report summarizes the key challenges and opportunities for each of the funding and financing sources in Section 4, followed by conclusions in Section 5. Please refer to the glossary for an overview of key terms used in this report, which may be a useful guidance for readers with limited financial background.

2 Funding Needs for Transboundary Water Cooperation and Basin Development

This first part of the report examines the different funding needs for transboundary water cooperation, management, and development. It thereby differentiates between core costs – costs incurred through the mere existence of an institutionalized cooperation mechanism – and program costs – costs related to the development and implementation of basin management and development activities. It shows that core costs are relatively similar across joint bodies – yet the amount spent on these varies considerably and is largely determined by the size of a RBO’s secretariat, which in turn is determined by the RBO’s mandate and its functions. Similarly, the more of an implementation mandate a RBO has, the higher the program costs. Both cost dimensions also change significantly over time, as various examples below highlight.

2.1 Core costs of cooperation – through joint bodies and beyond

This section focuses specifically on the costs related to the existence of a joint body for managing a shared basin – often referred to as “core costs,” “regular budget,” or “corporate services budget.” The costs of river basin management and development activities and projects are covered in the next section. Core costs include those costs that occur due to the mere existence of a joint body and thus include costs of staff salaries, offices, office material, and other items that ensure the functioning of a joint body, particularly its secretariat. They also include costs of meetings (and their preparation) of the joint body’s governing bodies (such as a Council of Minister or a Meeting of Heads of State) as they ensure the continuous existence and functioning of the organization.

It should be noted here that no clear-cut definitions exist for these terms and they are sometimes used interchangeably, although they may refer to slightly different concepts. In the narrowest sense, the “corporate services budget” can be defined as the budget for administration and services (such as finance, information and communications, human resources management) (Henkel et al. 2014: 12). “Core costs” have a similar meaning yet can be slightly broader. A “regular budget” is even slightly broader and can be defined as the “permanent and recurrent budget that is being allocated or agreed upon by its member countries to sustain the regular basic operations of the institution” (Henkel et al. 2014: 12), which can also include certain project activities, if deemed a regular basic operation of the joint body such as hydrological and environmental monitoring. In this report, the term “core costs” will be used and understood as comprising the costs incurred due to the existence and the operation of a joint body, but not the costs relating to the management and the development of a basin’s water resources. Core costs thus include:

- Costs of meetings of the RBO’s governing bodies such as ministerial meetings, technical meetings (including preparation, documentation, etc.)
- Staff costs of the secretariat (both permanent and temporary staff as well as consultants that are not part of specific river basin management and development projects)
- Costs of buildings, offices, office equipment, cars, and other items required for the physical functioning of the RBO (mainly its secretariat)
- Costs of communication and information dissemination (to member states as well as basin stakeholders)

In this context, it is also important to note that joint bodies come in many forms and shapes. The specific nature of a joint body will also determine the costs associated with it. Generally, one can characterize joint bodies along a continuum that spans from institutions with very limited coordination functions to institutions that have strong implementation competences. The first type – coordination-

oriented RBOs (Schmeier 2013) – are institutions that provide a platform for member states to consult over and coordinate water resources management activities, but the activities themselves are implemented by the member states. Typically, these joint bodies have narrow governance structures and small secretariats (or sometimes no permanent secretariats at all). Examples for such RBOs with Secretariats include the International Commission for the Protection of the Elbe (ICPE) or the Orange-Senqu River Basin Commission (ORASECOM), while e.g. the German-Dutch Boundary Water Commission (GDBWC) and the Permanent Joint Technical Committee (PJTC) for the Kunene River do not have permanent secretariats.

The opposite model – implementation-oriented RBOs – are institutions that do not only provide a platform for coordination, but also have the responsibility to develop and implement projects for river basin management and development themselves. This often comes with broader powers and higher independence vis-à-vis the RBO's member states (Schmeier 2013: 46). The most prominent examples are the Organisation pour la Mise en Valeur du Fleuve Sénégal (OMVS), the Organisation pour la Mise en Valeur du Fleuve Gambie (OMVG) and – to a slightly lesser extent – the Niger Basin Authority (NBA) and the Lake Chad Basin Commission (LCBC). Most RBOs can be found somewhere between these two extreme models. Moreover, RBOs can move along this continuum during their lifespan, tending towards a heavier coordination role or towards more active implementation at different times.

The core costs of these different types of joint bodies vary considerably. The core costs of purely coordination-oriented RBOs tend to be the lowest – especially if no permanent secretariat exists. Most of the costs that occur in coordination-oriented RBOs are staff costs in the secretariat. The International Commission for the Protection of the Danube River (ICPDR) and the International Commission for the Protection of the Rhine (ICPR), for instance, work with annual budgets for core costs of around USD 1.0 million (largely made up by staff costs). Implementation-oriented RBOs, on the other hand, tend to have a considerably larger budget, with project or activity costs accounting for the vast majority of all costs³.

Joint bodies can make conscious decisions, from a cost perspective, when deciding on the scope and functionality of their secretariats given certain budget limitations. That is, cost considerations can be a parameter that helps shaping an organization's scope and mandate, ensuring that those activities planned are also budgeted for in the long-run and do not overrun member states' budgetary capacities. The Nile Basin Initiative (NBI), for instance, assessed different scenarios of core operating costs of the Nile Secretariat (Nile-SEC) in relation to Nile-SEC's functions and mandate and eventually decided in favor of a so-called "minimum functionality" option with a certain budget cap (NBI 2011).

It is important to note that the core costs of an RBO can vary over time and tend to evolve, especially for nascent or young RBOs. In the first years after a RBO's establishment, core costs tend to rise as institutionalization progresses, staff positions are filled, and remaining capacity gaps are discovered and filled. Once the organization stabilizes, core costs tend to remain the same for longer periods of time, as the examples of the ICPDR and the ICPR show.

A key part of the core costs of an RBO are staff costs. In some RBOs there is a tendency of significantly increasing staff costs over time due to an expansion of the secretariat's organigram and staff positions as well as increasing costs related to staff. The NBA provides an interesting example of such development: Its staff costs rose from FCFA 302 million (approx. EUR 460,000 in today's terms) in 2004

³ Some implementation-oriented RBOs, however, also have a relatively high share of staff costs, in spite of a high share of projects costs compared to overall costs. Especially a continuous increase of staff costs over time might be related to efficiency challenges and therefore requires monitoring and potentially change. In the case of the NBA, for instance, staff costs have increased from 62% of the organization's overall costs – a number already relatively high for an implementation-oriented RBOs – to more than 70% in 2008 (NBA 2009: 43).

to FCFA 481 million (EUR 732,000) in 2008 (NBA 2009: 43) and continued to rise in the following years. This is due to increasing salary costs (both due to staff hires and to increases in individual salaries), but also due to an increase in related costs, namely travel and benefits – some of them associated with an expansion of activities of the organization.

Two additional elements are important to mention here: Firstly, the costs related to the establishment of a joint body as an institutionalized means for transboundary cooperation, and secondly, costs related to cooperation that is not institutionalized through a full-fledged joint body but through other (most often bilateral) mechanisms.

The initiation of cooperation (exchange and trust building between riparian states, negotiations and required platforms allowing country representatives to come together in a well-prepared setting as well as the negotiation and implementation of an international water treaty and ultimately a joint body) itself already has significant cost implications. These costs vary considerably across basins. In many cases in the developing world, third parties have supported negotiation processes – not only by facilitating negotiations, but also through the provision of financial means to enable these negotiations in the first place. Examples include the World Bank's engagement in the negotiation of the 1960 Indus Waters Treaty or United National Development Program (UNDP)'s support to the negotiations for the 1995 Mekong Agreement from 1991 to 1994. More recently, GIZ has been instrumental in supporting (and to a large extent funding) negotiations in the Kunene and the Cuvelai basins in Southern Africa, leading to the adoption of agreements and the establishment of RBOs.

In some of the world's basins – typically the smaller ones with less riparian states, most commonly only two – transboundary cooperation, management or development are organized without joint bodies (that is, without a permanent institutionalized cooperation mechanism e.g. in the form of a secretariat). Member states meet regularly on a bilateral basis, often in one of the states and at this state's facilities, data and information are exchanged through bilateral means without involving a joint body and projects are decided on jointly but implemented through national agencies in each country. Examples include the Finish Russian Commission on the Utilization of Frontier Waters (CUFW), the International Water and Boundary Commission (IBWC) between the US and Mexico or the Indo-Bangladesh Joint Rivers Commission (IBJC). In this case, core costs of joint bodies do not occur. Instead, each country typically entertains a coordination unit within the ministry responsible for water resources (or a separate entity with such responsibilities). Program costs for the implementation of jointly agreed upon activities are then usually borne by each country at the national level, as are the costs of each country's participation in meetings and other activities. This typically makes part of the respective ministry's or agency's normal (national level) budget and is often not specifically earmarked for transboundary cooperation (especially if activities are to be implemented under national water management strategies as well). They are therefore difficult to track in specific numbers.

2.2 Project, program and activity costs

In addition to the existential core costs required for a joint body or, more generally, the development and the maintenance of cooperation in an institutionalized manner, costs are incurred for designing and implementing river basin management and development activities at the basin level in order to achieve the desired benefits of cooperation. These are typically called "project costs," "program costs," "activity costs," or in some cases also "investment costs." Program costs, as they will be referred to in this report, can include costs relating to:

- River basin monitoring (water quantity, water quality, ecological health, fisheries, socioeconomic factors, etc.) and required equipment, IT systems, river basin management software, etc.

- Preparation of strategic plans and related documents (shared visions, basin management plans, etc.) and processes (stakeholder consultations, etc.)
- Implementation of strategic plans and the specific activities defined in those (including the monitoring of implementation)
- Development and implementation of infrastructure projects, especially in the context of basin management and investment plans
- Management and maintenance of infrastructure projects (if owned and managed by the joint body or any other international entity of the basin states)

Program costs vary across basins and, if present, RBOs. The magnitude of those costs is largely determined by the coordination or implementation nature of the RBO. Coordination-oriented RBOs implement less activities themselves, minimizing their cost exposure. Instead, they coordinate projects and activities being implemented by member states. This limits their project costs to a few items that must be done at the basin level, such as data and information acquisition, analysis and exchange (including costs for modeling a basin's hydrology or environmental status and related decision-support tools), or the development of joint basin management plans. Other activities, such as implementing measures to reduce pollution of a river or to rehabilitate a wetland of transboundary importance are being implemented by the member countries, typically not at the national but at the sub-national level. Implementation-oriented RBOs, on the other hand, have a considerably higher project budget, especially if – such as in the case of the OMVS – implementation includes the development, maintenance, and management of large infrastructure projects. The vast majority of RBOs lie somewhere between these extreme cases.

It should be noted here that in the case of coordination-oriented joint bodies with implementation of jointly agreed upon activities of basin management and development through national agencies, typically with the involvement of different levels of government such as provinces/states and local water authorities (Schmeier 2021), these costs often do not feature at the basin level and are therefore also difficult to account for in an aggregate manner⁴. This is even more the case as many of these activities (e.g. the regular monitoring of water quality status) are undertaken to meet both national and basin-wide objectives (e.g. national water quality standards as well as basin-wide agreements on a certain state of the basin). It is therefore not possible to provide detailed accounts of all basin management and development program costs incurred in a basin in one total number.

These program costs are usually determined by the RBO's management, action or investment plans, which specify activities to be implemented in order to reach specific objectives for the basin, its management, and its development. In the case of International Congo Basin Commission (Commission Internationale du Congo-Oubangui-Sangha, CICOS), its 2010 Strategic Action Plan called for water resources management, followed by a detailed program of measures to achieve the action plan for water management and development (Schéma Directeur d'Aménagement et de Gestion des Eaux, SDAGE; CICOS 2016). Those documents list a number of activities (including e.g. pre-feasibility studies of a dam on the Oubangui River that would generate hydropower and improve navigability, the construction of landing sites for boats along the river and the exploration of eco-tourism opportunities) to be implemented from 2010-2015 and 2016-2020, respectively, and thus provide the basis for budgeting for said activities, thus determining the project costs of the joint body. In the case of CICOS,

⁴ Accounting for costs at the basin level is further complicated by the fact that costs for the implementation of certain activities occur at different levels in each country – at the national, state, provincial, municipal or local level. In the case of the Elbe River Basin, for instance, costs for the management and development of the Elbe River in the German part of the basin are incurred at the national level, but also at the level of the German states sharing the Elbe River (Bavaria, Saxony, Saxony-Anhalt, Thuringia, Berlin, Brandenburg, Lower Saxony, Mecklenburg-Western Pomerania, Hamburg, Schleswig-Holstein) as well as at the local and municipal level (Schmeier 2021).

the costs for implementing the activities of the SDAGE between 2016 and 2020 have been estimated at EUR 25 million.

As joint bodies develop from their early stages, their project costs tend to increase as more activities are implemented under their mandate. A RBO's mandate may even be expanded as it matures. In the case of CICOS, for instance, project expenses increased (albeit in a non-linear way due to the large arrears incurred by some member states, see also Section 3.1.2), especially since the extension of CICOS' mandate (originally focused on interior navigation) towards integrated water resources management in 2004. Later in the process, RBOs – in some cases – also reconsider program costs again, especially in light of increasing cost implications, and initiate processes that reduce (too) high program costs, e.g. through decentralization.

Textbox 1: MRC's decentralization of core river basin management functions

The Mekong River Commission (MRC)'s costs – both core and project costs – have increased since its establishment in 1995. One reason for this continuous increase in project costs was the centralized nature of implementing river basin management functions, such as flow and water quality monitoring or the preparation of national plans for basin planning.

In the late 2000s, it became clear that this development was not sustainable: MRC's increasing budget was not matched by member contributions, donor funding was expected to decrease in the near future as member countries experienced economic growth and graduated from the developing country status, and capacity advances in member countries allowed for an implementation of river basin management functions in a more decentralized manner. At the 2010 Hua Hin Summit of the Heads of State and Government of the MRC member countries, it was decided to decentralize a significant part of MRC's river basin management work in the context of a broader organizational reform effort. The ultimate aim of this effort was to ensure the financial self-sustainability of the organization by 2030. In the following years, core river basin management functions (CRBMFs) such as monitoring flow parameters or sediment loads were identified that were ready for decentralization (based on an assessment of member states' technical and financial capacity to implement those). Those were subsequently decentralized, with MRC taking an increasingly coordinative role.

While there have been some delays in the process and not all CRBMFs that were identified for decentralization have been decentralized yet (or to the degree that was originally foreseen), this reform has helped to decrease MRC's project costs while at the same time strengthening member states' ownership of river basin management.

Sources: MRC 2014; MRC 2019a

The following paragraphs provide some more insights into typical elements of program costs.

Data and information for basin management and development

Information is required to understand the state of a basin, its significant water management issues as well as changes over time caused by natural fluctuations or by infrastructure. This is necessary for RBOs and riparian countries to make basin management and development decisions based on sound knowledge. This requires, for instance, the establishment and maintenance of monitoring networks for hydrological data collection, the analysis of data in qualified laboratories, the development of basin models, the use of decision-support tools, the production of a 'state of the basin' report, the maintenance of a flood early warning system, and/or the assessment of environmental impacts of infrastructure projects. All have related costs, which can be significant. The costs for setting up a hydrometeorological monitoring system at minimum functionality, for instance, are estimated by the

World Meteorological Organization (WMO) to be USD 1.8 million per country. The costs for a ‘state of the basin’ report can amount to USD 250,000 as was the case with CICOS’ and the NBI’s latest state of the basin reports respectively, or up to USD 400,000 in case of the MRC’s latest ‘state of the basin’ report. Often, riparian states do not have these financial means (or are not willing to invest them) at the national, let alone at the transboundary level. Joint bodies have therefore often engaged in data and information management activities and sourced funding for this.

Basin management activities

Basin management projects and programs also incur various costs. They include the development of a basin management plan as well as the implementation of its various activities that have been identified as required for achieving the desired state of the basin agreed to by member countries. The MRC Basin Development Strategy 2016-2020 (MRC 2016), for instance, outlines a number of activities such as a review and an update of the design guidance for mainstream dams, the preparation of guidelines for addressing climate change risks, including drought impacts, the establishment of a flash flood forecasting system, and the establishment of a regional emergency communication network for floods and droughts or a study for the potential of conjunctive management of surface and groundwaters (MRC 2016). Basin management activities often also provide the basis for coordinated basin development, including the development of infrastructure.

Infrastructure development and management

Infrastructure projects also require financial resources, from the preparation of projects (including potentially a basin-wide investment plan) to the development, operations, and maintenance. Costs for the preparation of infrastructure investments (pre-feasibility and feasibility studies) are often underestimated. They can amount to 10-15% of the overall project costs and often need to be borne by actors other than those eventually developing the infrastructure project and benefitting from its returns on investment. Often, when joint bodies are already in place and functioning, the preparation of infrastructure projects is done in the context of comprehensive basin development plans. An example is the Niger Basin Climate Resilience Investment Plan, which aims to coordinate investments in the basin that are the most beneficial from a basin-wide management and development perspective.

The development of infrastructure projects typically requires the biggest share of financial resources. Costs differ by sector, type of project, size of the project, design of the project, and many other factors; but in nearly all cases, the costs exceed the financial capacities of individual actors, government agencies, or basin organizations. Public and private financing is therefore required in most cases, as will be discussed in more detail in Section 3.

The operations and maintenance of infrastructure also needs to be considered when assessing water infrastructure costs. Many countries – rich and poor – struggle to appropriately budget for the operations and maintenance of existing water infrastructure (Rozenberg and Fay, 2019). These ongoing costs can vary considerably, depending on the type of infrastructure and selected technological solution, but are often larger than the upfront investment when considered over the life of the asset. Sufficient and timely operations and maintenance spending in water infrastructure prevents further spending down the line: failure to perform routine maintenance increases overall capital replacement costs by at least 60 percent (Rozenberg and Fay, 2019). In the power sector, another key investment area related to transboundary water management, annual maintenance costs range from 0.5 percent to 6 percent of the cost of investment needed, largely depending on the technology and installed capacity (Rozenberg and Fay, 2019). Operating and maintenance costs can constitute a significant financial challenge, especially if not planned for properly and/or if no actor finds the management of that specific infrastructure scheme financially attractive. In the Senegal River

Basin, the South African infrastructure company EKSOM, contracted to manage and maintain the Manantali Dam, faced decidedly lower than expected returns. ESKOM refrained from renewing its contract in 2014 as the project was no longer financially viable for the company. This left OMVS, as the owner of the infrastructure, with a major challenge and sudden increase in cost. To avoid such situations, it might be necessary to find joint arrangements between countries. This has been done, for instance, in the Chu-Talas River, where operation and maintenance costs were included in an agreement between Kazakhstan and Kyrgyzstan on the management of joint dam projects (World Bank 2018). In this case, downstream Kazakhstan covers costs of infrastructure maintenance in upstream Kyrgyzstan due to its stronger economic position and the fact that it is the main beneficiary of the infrastructure - a rare example of cost-sharing measures in a shared basin.

3 Funding and Financing Sources for Transboundary Water Cooperation and Basin Development

This part of the report focuses on the different sources available for funding and financing transboundary basin management and development. For the purpose of this study, funding refers to money made available that do not have a repayment obligation while financing mechanisms involve a repayment component. Whereas financing helps bridge the time gap between upfront investment and future repayment, funding, for example in the form of government grants or user fees (tolls, tariffs) is what ultimately pays for projects and activities. These funding and financing sources include both public and private capital, which will be explored separately in Sections 3.1 and 3.2, respectively.

3.1 Public funding and financing

Public funds are critical for transboundary river basin management and development, in large part due to the public good nature of water resources and related services. At the same time, the mobilization of public funds has been and still is a challenge, for the reasons discussed in Section 0. The willingness to pay for water resources and related services is often limited (and often not enforced through taxes or fees), thus limiting availability of public funds for transboundary river basin management and development. At the same time, the multi-sectoral benefits of transboundary and cooperative river basin management and development are often insufficiently acknowledged by member states of a joint body (or insufficiently clear to them due to a lack of tangible outputs produced by the joint body), which further decreases the basin members' willingness to pay. The following sections will address the different sources of public funds – from joint body member states to external sources.

3.1.1 Direct member state contributions

The central sources of funding for river basin management, for both core and project costs, are the direct cash contributions from member states. As mentioned above, covering the entire budget of a joint body by member contributions is more challenging if the institution's annual budget is high (with implementation-oriented RBOs requiring higher contributions from their members) and/or if the RBO's member states have less financial capacity. Funding only through direct contributions from basin states might then be insufficient and other sources must be explored.

The financial means for member contributions typically comes from the respective country's national budget, sourced from various taxes and through other means that constitute state income. The national contribution to a joint body or specific water management and development activities thus becomes an item in a state's annual budget planning, thus directly competing with many other national budgetary priorities.⁵

It is also possible to separately source the financial means for a country's direct contribution through specific water taxes, ecological taxes, etc. Note that these are different from water user fees or polluter-pays instruments, which are discussed in Section 3.1.3. While this approach is being pursued at the national and sub-national level, no examples are known at the transboundary level. Strong legal, institutional, and procedural linkages between basin level cooperation, national planning, and management and budgeting processes are required in both cases.

⁵ In some cases, regional and joint body budgeting processes and timelines are insufficiently coordinated with national budgeting processes and timelines. Examples show that joint bodies have faced (temporary) funding constraints when their budgets requests to member countries (especially in case of increases of contributions) were submitted too late for them to be considered in that year's national budgeting process.

Another form of member state contributions are in-kind contributions. In-kind contributions can take many different forms, including for instance, the provision of a building or office space by the host state, the provision of staff (permanently or through seconded national staff), the coverage of travel costs of government and basin organization officials, or the coverage of other expenses of the joint body or in the context of specific projects. The Government of Botswana, for instance, pays the rent of OKACOM's (The Permanent Okavango River Basin Water Commission) office space first in Maun and now in Gaborone, while the Government of South Africa provides the offices for ORASECOM in Centurion, South Africa, and grants ORASECOM and its staff certain tax exemptions.

Reliability of member contributions

The reliability of member state contributions is a highly problematic issue in some of the world's basins: If member states do not pay their agreed contributions (or do not do so in time), arrears accumulate that can put significant pressure on the RBO, delay or otherwise impact its work, and negatively affect the projects and activities it is asked to implement. This can ultimately hamper overall river basin management and development effectiveness.

Several RBOs have seen such challenges in the past years: In the Niger River Basin, for instance, the NBA has struggled with considerable arrears in member country contributions over a long time. Member state contributions fell short of agreed amounts or were paid with significant delays. At the same time, the expenses of the NBA grew considerably, leaving an ever-widening gap between income and expenses, especially in the early and mid-2000s (NBA 2009). This has led to cash-flow problems in which the NBA Executive Secretariat overspent its bank accounts, as well as delays in the implementation of activities. Development partners have covered some of these gaps, including the funding of some Executive Secretariat staff positions and governance body meetings. The LCBC and other joint bodies have encountered similar challenges.

Textbox 2: Addressing challenges arising from arrears in member contributions (Example of CICOS)

CICOS has experienced significant financial challenges because of member states' failure to regularly pay their member contributions. This concerns the Democratic Republic of Congo (DRC) in particular as it is not part of the Economic and Monetary Community of Central Africa (Communauté Economique et Monétaire de l'Afrique Centrale, CEMAC) regional tax financing scheme (see Section 3.1.2) and therefore has to pay its contributions directly from its national budget to CICOS. In the period from 2004 to 2018, DRC largely failed to meet its financial commitments, with only two payments made which represent about 30% of what it owed CICOS over that period.

Largely due to DRC's failure to meet its financial obligations, CICOS was not able to fill all staff position. This in turn led to significant delays in the implementation of activities and an increasing dependency on donor financing. Moreover, the failure to deliver planned outputs for both navigation and river basin management and development has led to a decrease in member states' commitment to cooperation as the benefits of cooperation have not been fully realized to basin members' expectations.

As a consequence of these challenges, CICOS member states and governance bodies are reconsidering enforcement mechanisms that could be applied in the case of severe arrears, including during CICOS' latest organizational reform efforts. According to the 1999 CICOS Agreement (Art 28), members defaulting repeatedly on their contributions can lose their voting right in CICOS decision-making processes. While this clause has never been applied so far, it is increasingly being discussed by CICOS member states. In addition, a potential relocation of the CICOS Headquarter, currently based in Kinshasa, DRC, has also been discussed as part of CICOS' ongoing organizational reform efforts.

Cost-sharing mechanisms

There are a variety of approaches to cost sharing between member states of a joint body; in a number of basins, costs are shared equally by all member states. That is, each member state of a RBO contributes the same share to the budget. In ORASECOM, for instance, each member country contributes 500,000 RAND per year to ORASECOM, setting the ORASECOM secretariat budget at 2,000,000 RAND per year. The overall budget is then, once approved by the governing bodies of the joint body, divided by the number of member states. Other examples for equal cost-sharing include the Lake Tanganyika Authority (LTA), the International Sava River Basin Commission (ISRBC) or the Binational Autonomous Authority of the Lake Titicaca (LKTC).

In other basins, differences in economic capacities, shares in the basin, and/or benefits from the basin's resources have led countries to agree to share costs in a non-equal way and instead define certain cost-sharing keys. Basins with key-based cost-sharing mechanisms include, for instance, the Congo River Basin with CICOS, the Scheldt and the International Scheldt Commission (ISC), the Niger River Basin and NBA or the Volta River Basin with the Volta Basin Authority (VBA). These cost-sharing 'keys' can be based on a number of different parameters (or combinations thereof), including the share of member countries in the overall basin territory and the GDP of the countries. The share of a country in the basin is thereby the most common parameter used. In some cases, the benefits a country receives from the basin's resources are used to calculate a country's contribution in the cost-sharing mechanism. This is, for instance, the case in the Comision Tecnica Mixta de Salto Grande (CTMS), in which Argentina and Uruguay share the costs based on the hydropower they receive from the joint project.

Arguments in favor of both approaches can be found. Ultimately, the specific basin context should guide member states' decisions on how to share costs. However, as a word of caution, it should be mentioned here that key-based cost-sharing mechanisms come with a number of challenges: namely, they contradict the principle of sovereign equality that typically guides states' behavior in international relations and may imply that those countries covering a larger share of the costs (e.g. because they cover a larger share of the basin or because they are economically more powerful) can also demand higher levels of influence in basin management and development, which – coupled with a generally more powerful position in the region – might not always be desirable for all riparians.

It should also be noted that the way costs are shared can change over time, reflecting changes in the basin or basin states' financial capacities – as the two textboxes below highlight.

Textbox 3: The development of cost-sharing mechanisms in the MRC

Since the establishment of the MRC in 1995, member contributions to the MRC's core budget have been shared equally among the four member states Cambodia, Laos, Thailand, and Vietnam (as Art 14 of the 1995 Mekong Agreement provides).

Over time, however, the core budget of the organization increased and adjustments to member contributions were required to meet the new budgetary needs. Countries negotiated that these increases in member contributions would not be the same for all countries, but would instead be based on a key determined by five factors: the share of a country in the catchment area, the average flow contribution of a country to the river, the irrigated area in a country, the population, and the GDP of the country. This approach aimed to better reflect the members' capacities as well as the benefits they generated from the use of the basin's resources. This led to the adoption of the 2000 decision to

annually increase each member state's contributions by 18% for Cambodia and Laos, by 30% for Vietnam, and by 34% for Thailand.

In recent years, in the context of the MRC's overall organizational reform, the cost sharing mechanism is being reconsidered. This was also driven by dissatisfaction of the larger contributors (especially Thailand) over unequal contributions compared to the benefits gained from cooperation, especially in light of the services and benefits provided by the MRC to each member country. Moreover, concerns arose around the parameters used to determine the cost-sharing key, such as the fact that irrigated area, but not hydropower benefits, were incorporated. As a result, for the MRC's core budget – estimated at USD 6.5 million for 2030 – country contributions will again be based on equal terms.

Sources: MRC 2000; MRC 2019b

A thorough assessment of member states' financial capacities is also crucial when determining cost-sharing arrangements – while at the same time keeping in mind the implications of non-equal cost-sharing at the political and decision-making level, as demonstrated in the textbox below.

Textbox 4: From key-based to equal cost-sharing in the ICPDR

The ICPDR's founding documents stipulate that the costs of the ICPDR are to be shared equally among all member states. At the same time, immediately after the establishment of the RBO, member states acknowledged the tremendous differences in economic capacities across the Danube River Basin; the gap being higher than in any other basin in the world. In order to maintain the principle of sovereign equality while at the same time allowing all states, including the economically weak downstream states, to participate in the cooperation process, a temporary cost-sharing key was adopted that grouped member countries into four different categories according to economic capacity. Initially, the countries in the economically weaker categories would pay less and the gap would be covered by the economically stronger upstream countries. Over time, however, the former countries' contribution would incrementally rise, and the latter would decrease, until arriving at equal sharing.

Source: Henkel et al. 2014: 30

Overall, member contributions remain very low in quite a few of the world's joint bodies as they have been fixed at low levels compared to the overall budgetary requirements of the joint body and/or because member states have accrued considerable arrears. In the Nile River Basin, for instance, until 2012 when the main external financing mechanism, the Nile Basin Trust Fund (NBTF), was set to end, member state contributions had only amounted to 2% of the overall financial resources provided to the Nile Basin Secretariat (NBI-SEC) since its establishment in 1999 (or 12% if all in-kind contributions are included) (NBI 2011). This has led joint bodies to investigate other sources, which are presented and discussed in the remainder of this section.

3.1.2 Regional taxes

River basin organizations can also be financed through contributions from regional organizations, which may be funded through a type of regional tax such as import tax. The import tax is typically collected by the member states on behalf of the regional organization, although the exact tax collection arrangement varies. Tax proceeds are used to support the regional organization's own operations as well as potentially a number of associated specialized organizations and/or projects. Specialized organizations supported by the regional tax may include RBOs. As imports and import tax receipts typically do not fluctuate dramatically from year to year, this source of funding is typically more stable and reliable than direct government contributions coming from the national budget.

Stability provided by regional taxes as a funding source ensures that RBOs can meet their fixed financial obligations while also allowing them to plan more effectively for future capital-intensive projects and to execute projects in its pipeline. By minimizing dependency on direct national funding, the RBO can overcome weaknesses in national budgets and avoids having to compete with numerous domestic funding priorities. In addition, it can potentially help avoid being held captive by large contributing member states' interests. However, given its role of principal funder, the regional organization could have, or perceived to have, undue influence over the RBO's work and/or priorities. From here, challenges related to ownership, as well as the specific legal and institutional arrangements for financing, can arise.

A regional tax, although stable, is disconnected from water-based activities pursued by the RBO. On one hand, the disconnect allows the RBO to act outside of a specific national interests or politics and pursue appropriate basin-level activities. It can do this because the regional tax meets basic funding needs regardless of national contributions. On the other hand, as the funding is more or less automatic without any link to the work of the RBO, it may also reduce the interest of national governments as they are not paying for its operations. Furthermore, the RBO cannot set the tax rate, meaning it cannot levy higher taxes to meet funding deficits if other forms of contributions fall short.

Textbox 5: Supplementing direct contributions with regional taxes (Example of CICOS)

CICOS is a prime example of how regional taxes can fund RBOs. CICOS is a specialized agency of the CEMAC. CICOS benefits from both direct contribution from two of its member states (Democratic Republic of the Congo and Angola) as well as from CEMAC funding, via the CEMAC Community Integration Tax, a set 1% import tax, which covers the contribution of the remaining four member states. Whereas the direct member state contributions have been volatile and insufficient over the past 15 years as discussed in Section 3.1.1, the tax-based CEMAC funding has been relatively stable, thus providing CICOS with a reliable income flow to support its operations and activities. This difference in funding reliability and sufficiency is also borne out in the recovery rate, which was 80% for the tax-based CEMAC funding versus some 30% for direct contributions.

The relationship between CICOS and CEMAC also illustrates the potential complexity of institutional arrangements associated with regional taxes. Not all CEMAC members are a part of CICOS, nor are all basin countries members of CICOS and/or CEMAC. As discussed, a lack of direct national ties can lead to less individual government buy-in. In addition, it can create cases of free riding for basin member countries that are not part of CEMAC and who may fall behind on its direct contributions, as the case of DRC (which controls 70% of the basin but is not a member of CEMAC) discussed earlier demonstrates. Although DRC only contributed twice over the past 15 years and is therefore well behind on its financial obligations, it continues to benefit from many CICOS activities.

Source: IMG Rebel 2019

3.1.3 User and polluter fees

Considered to be more innovative funding mechanisms at the transboundary level, user-pay or polluter-pay funding approaches rely on the idea that those who use or pollute the resource should fund the organization in charge of water resource management and/or interior navigation. They have been applied at the national and sub-national level in many countries, providing some guidance on their potential application at the transboundary level.

Although in theory all users/polluters could potentially contribute, the issue of transaction cost (i.e. the cost to collect money) makes it more efficient from a financial perspective to target a limited group of large users (e.g. hydropower, large-scale irrigation, navigation, etc.) or polluters (e.g. industry,

mines, etc.). However, there are also other considerations that should be taken into consideration when designing a user-pay or polluter-pay system, including cost recovery from beneficiaries, incentives for more rational water use, and the impact of externalities (in the case of a polluter-pay system).

Under a user fee-based funding mechanism, users are expected to pay for water resources. Large water consumers such as hydroelectricity, irrigation, industry, and mining could be asked to pay a charge for the right to withdraw a certain amount of water. Similarly, commercial boats could pay a passage fee. To justify such a system, the RBO or riparian states must be able to provide a clear service or benefit to its users. In the context of transboundary water cooperation, however, it can be difficult for a RBO or riparian states to demonstrate the value of the service. Another potential challenge for user fee-based funding is that member states may decide not to transfer (all) user charge revenues to the RBO. Several transboundary RBOs in developing countries (Mekong River Commission, Niger Basin Authority) considered a user fee-based financing mechanism but experienced conflicts of interest between member states.

Non-transboundary RBOs have been more successful in implementing user fee-based financing mechanism. Examples include Burkina Faso, where large water users such as mining companies help support sub-national RBOs, as well as France and the Netherlands, where user fee-based financing mechanisms have been used for many decades, generating substantial revenues for their respective organizations. In the latter case, the user fee-based revenues are used to not only support the operations of the RBO but also implement specific projects.

Under a polluter fee-based financing mechanism, polluters pay for the damage caused by their pollution. The penalty that polluters pay should somewhat accurately reflect the externalities created by the pollution. If the penalty is too low, a polluter fee-based structure could create a “right to pollute” without encouraging behavioral change (such as installing water filters if the amount to be paid to compensate for negative externalities is high). If the penalty is set roughly equal to the value of the externalities created by the pollution, a polluter fee-based financing mechanism could generate substantial revenues—potentially beyond the RBO’s funding needs. If the penalty is too high, the system could negatively impact the overall economy as beneficial economic activity could be discouraged. If the penalty is set by the RBO and all associated revenues also flow to the RBO, the RBO could ultimately generate revenues beyond its funding needs. A polluter fee-based financing mechanism can therefore only work if the revenues are collected by an independent entity that also ensures that the penalties are set appropriately. A polluter fee-based financing mechanism also requires that the polluters can be identified and monitored through an effective control system, for example through the use of a “water police”.

Whereas many states have included the idea of user-pay or polluter-pay in their national legislation, there are few examples known where such funding system generates substantial resources to support water resources management. Different RBOs (the MRC or NBA) have studied implementing a user-pay system but ran into conflicts of interest between member states. No RBO is believed to have implemented a polluter-pay system at a transboundary river basin level (Henkel et al. 2014).

3.1.4 Sale of data and services

In recent years, the sale of services has increasingly been perceived as a potential new funding source for transboundary river basin management and development. Various joint bodies, national governments, and donor agencies have suggested to sell the regional data collected and processed to other interested parties in order to generate additional income to cover some (typically the core) costs of the joint body.

Textbox 6: The sale of data and services by the MRC

The MRC now sells its data and specific data projects (such as datasets available as CD-ROMS, printed MRC publications, or photos of the basin) to users. Differentiating between different user groups (e.g. commercial or educational), prices range between USD 3 and USD 50 per product or item (plus shipping and data handling costs). The overall income generated from these sales remains extremely low: less than USD 500 per year. The sale of data and related services is thus more a cost recovery mechanism, compensation RBO staff's work on extra data and maps, than a promising source of income.

Source: MRC Data Portal

Some joint bodies have also tried to sell services in the form of trainings or courses or even set up specific training institutes for which they charge education or participation fees (or are planning to do so).

Textbox 7: CICOS' Regional School for Vocational Training in Inland Navigation

CICOS maintains its regional school for vocational training in inland navigation (Ecole Régionale de Formation aux Métiers de la Navigation Intérieure, ERFMNI), which trains students from the entire basin in navigation-related jobs (navigation mechanics, sailors, captains, etc.). Students pay a tuition to participate in the school's program (USD 10 inscription fee per year and USD 500 per year participation fees/tuition). In addition to these educational programs, CICOS also offers short-term courses and trainings to staff of commercial shipping companies in the basin for a course fee, creating additional business for the ERFMNI. In reality, however, little income has been generated on this basis: Tuition fees of more than USD 100,000 could be generated so far (figures of 2015), but these do not cover the costs of the school (building, costs for student housing, teaching staff, etc.). In fact, income from tuition fees only amount to 14% of the school's overall costs. Also, ERFMNI has struggled to attract short course participants as the financial capacity of many local shipping companies remains low and interest in improved capacities for navigation limited. As a consequence, the ERFMNI remains financially dependent on CICOS (and its donors, that fund the maintenance and the operation of CICOS to a large extent) and it appears unlikely that it will become a source of additional funding for CICOS in the future.

Source: CICOS 2015

Overall, the sale of services – whether in the form of data and information or in the form of training or other activities – has so far not proven to be a material source of income for joint bodies. While it might be useful to occasionally review opportunities for the sale of services as a potential additional source of income to fund basin cooperation and development, the associated revenue potential is expected to be limited.

3.1.5 Management & administration fees

RBOs may be able to leverage their role in transboundary water projects to finance their own operation with management and administration fees (covered in this section) and/or project management fees (covered in Section 3.1.6). This funding source is dependent on the mandate of each RBO; those which are governed by a mandate limited to coordination cannot leverage project management fees and may be constrained to harness management and administration fees. Both management and administration fees as well as project management fees face challenges in terms of mandate constraints as well as the dependency on fee to outweigh cost.

Management and administration fees are different from project management fees because they are not limited to infrastructure. They are charged on “soft”, externally funded non-infrastructure projects

or activities in which the RBO's staff are directly involved in implementation. A fee is charged for each payment made or expenditure incurred which is eligible for development partner funding. RBOs such as the MRC have utilized management and administration fees to fund its Operating and Expenses budget; the fee is based on 11% of the project expenditure. The projects denote this fee as an expense. Effectively, this means that donors co-fund the MRC's operating budget, similar to structures used by international development agencies when implementing projects on behalf of another agency. For the MRC, these fees cover the cost of technical and administrative services rendered to the project.

There is a risk that the staff hours used for the project's management and administration will exceed the fees paid to the RBO, meaning more money is paid out than the fees bring in. This results in negative budget implications for the RBO. It is also possible that these projects, necessary to meet budget needs, will redirect staff hours from more relevant projects to projects that provide the highest income in management and administration fees. This can end up undermining the basic purpose of the RBO as an organization that intends to foster regional cooperation and the benefits it provides by managing cooperation over shared water resources. It is also important to note that management and administration fees may not be a long-term viable financing option; as the size or number of donor projects in the region decline, so would the revenue flow.

3.1.6 Project management fees

Project management fees differ from management and administration fees as they are typically related to infrastructure projects. An RBO may be mandated to perform a variety of activities, for which it can be compensated via a project management fee, including initial scoping, negotiating, and arranging of finance for an infrastructure project; (managing) feasibility studies; supervising procurement and construction; and even involvement in operation and maintenance. Ultimately, the fee is charged to the owner of the infrastructure, either the state government or a private developer.

Performing these services is viable if the staff has the needed skill set. Tasks that require specialized work may incur additional costs. In all cases, project management fees only serve as a financing mechanism to the extent that the fees exceed the actual incurred cost to the RBO. Again, this option is not available to RBOs with a mandate limited to coordination.

The NBA considered project management fees as one of multiple financing mechanisms proposed to cover its operating costs. NBA member states have, at a policy level, committed to paying for NBA assistance but this is not yet been significantly implemented. Elsewhere, the NBI uses project management fees to cover its operating costs. A separate trust fund, the Nile Basin Development Fund (NBTF) and later the Cooperation in International Waters in Africa (CIWA) Trust Fund), set up by the World Bank transferred funds to NBI for the implementation of project activities; previous work included a basin-wide study to assess power demand and assistance implementing several hydropower projects. In fiscal year 2018, this made up 23% of the NBI's funding, exceeding member state in-kind contributions (15%) and member states cash contributions (2%), with the remainder coming from a variety of international donors. This system has been effective for the NBI as most activities are recipient-executed.

3.1.7 Public Loans

Loans can potentially help transboundary basins bridge the gap between investing needs now and repayment later. Besides the inherent repayment obligation associated with loans, they typically accrue interest as well. In developing countries, International Financial Institutions (IFIs) can often offer long-term loans at below market/concessional rates to public borrowers. Private borrowers can also borrow from select IFIs such as International Finance Corporation (IFC), Proparco and the Dutch

development bank (Financierings-Maatschappij voor Ontwikkelingslanden, FMO), but they typically charge market-based interest rates.

In practice, many RBOs face challenges in securing loans for one of two reasons: 1) They lack the legal status that would allow them take on loans or 2) they lack a revenue stream that can be used to repay the loan. As such, it is more likely that national governments, rather than the RBO, will apply for concessional loans to be used for large transboundary infrastructure projects. As these loans are entered into by national governments and typically backed by general taxation revenues, lenders usually assume little to no commercial risk for potential failure of the infrastructure project. An example of this can be seen in the Rusumo hydroelectric project on the Kagera river, which is shared by Burundi, Rwanda, and Tanzania. The World Bank lend USD 113 million to each government as low-interest loans for a total of US \$340 million in financing.

Like grants, loans can come with extensive conditions which must be met in order to obtain the funds. The terms of such loans largely depend on the country's financial situation and past borrowing. In addition to the interest rate and repayment conditions, borrowers must also consider currency fluctuations if revenues to be generated by the project are in a different currency than what the loan was issued in; this is especially relevant for RBOs operating in developing countries with less stable local currencies. Given that repayment is required, loans may be most appropriate for revenue generating activities or projects, although countries can decide to use loan proceeds to fund non-revenue generating transboundary infrastructure or activities. The business case for this scenario is weaker given that the government will not receive any revenues from the project and instead rely solely on taxes or other aspects of its budget to service the loan. The loan becomes, effectively, a country contribution.

Notwithstanding the above, some RBOs have received loans directly. The Manantali hydropower project spearheaded by the OMVS is one such example. Twelve bilateral and multilateral organizations⁶ provided loans and grants to OMVS to construct the Manantali dam. Specific provisions were given that each member country must make a financing plan to cover their share of the OMVS budget, so that the RBO could repay the loan and that the member countries would cover cost overruns (i.e. a sovereign state guarantee). To complete this project, the OMVS created a special purpose vehicle (SPV) in which all member countries were shareholders. The SPV managed the hydropower structures and the loan given to OMVS. A decade after project completion, OMVS attracted additional loans from largely the same lenders in order to increase hydropower capacity and generation.

3.1.8 Grants

RBOs may also have access to grant funds through a variety of sources to complement riparian funding, especially in times and cases where riparian financial resources are limited or where specific one-off activities need to be undertaken. These can come from multilateral (i.e. World Bank, Global Environment Facility (GEF), regional development banks, United Nations) or bilateral institutions (i.e. Agence Française de Développement (AFD) or German Kreditanstalt für Wiederaufbau (KfW)). Unlike loans, grants do not require repayment. This makes grants ideal for public agencies who do not have a dedicated revenue stream that can be leveraged to repay debt, cannot take on debt, or whose member countries cannot meet its budgetary needs. Often, grants are blended with other kinds of funding or financing; some grants are conditional on there being other sources to cover the remainder of the budget, such as contributions from member countries.

⁶ The contributors included the governments of Saudi Arabia, Kuwait, United Arab Emirates, and Iran as well as the organizations KfW, AFD, CIDA, ADB, USAID, and the World Bank. German and Swiss export credit agencies were also involved.

While grants do not need to be repaid, they typically come with limitations on what the money can be used for. For example, grant proceeds are often used to implement specific projects or activities and typically cannot be used for the RBO's day-to-day operational expenditure. Finding grants which the RBO, and the associated project, are qualified for can be difficult. Grants often have specific sector focuses and/or specific conditions. Beyond qualifying for the grant, the RBO must prepare a grant application and often compete against many others to receive the funds. The time necessary for staff members to prepare grant applications can be significant; this detracts from staff's work on the RBO's regular activities. A vicious cycle is created in which the less money an RBO has, the more reliant it is on grants, meaning that more staff hours are dedicated to writing grant applications. This detracts from the RBO's ability to complete its core mission. It also makes budgets extremely volatile year to year.

Even after qualifying for a grant, the RBO must ensure that it is eligible to receive the funds. Some donors require that the RBO be an implementing body, such that the funds can be used within the set conditions; this excludes RBOs limited to a coordination mandate. Note that these requirements can be different from receiving loans, discussed in the next section. As an example, the Niger Basin Authority (NBA) can sign for grants but cannot sign for loans and payment agreements. Those must be approved by member states. In the case of NBI, the NBTf, a separate trust fund by the World Bank and the NBTf Committee, was set up as the NBI itself remains without legal personality. The NBTf coordinated donor funds and grant allocation to the NBI.

If the basin lacks a joint body or coordinated RBO, it is still possible for the basin states to engage in transboundary activity funded through grants. This can be done through specific water funds, designed to provide funding for basin activities. An example is seen in the Upper Lempa River basin (shared between El Salvador, Guatemala and Honduras) which, although not ruled by a joint body, does have a framework agreement on transboundary activity in the form of the treaty and the corresponding "Trifinio Plan." Using this as a foundation, joint transboundary activities have included hydropower projects and preservation initiatives. Grants through the Inter-American Development Bank (IDB) and regional development banks have funded these activities to-date.⁷ To support long-term continuity and success, the IDB is currently (as of 2020) spearheading an initiative to create a specific transboundary water fund under the Trifinio Plan. User fees and tariffs are also being explored as funding options (Artiga 2003).

3.1.9 *Technical assistance*

In addition to loans and grants, development partner support also often consists of technical assistance (TA) as part of ODA. Both go hand in hand and often there is no clear separation between financial assistance in the form of loans or grants and TA as they are often implemented by the same donor in a combined manner. It is therefore sometimes difficult to differentiate the two. TA typically refers to advisory services and capacity development activities for actors in the water sector – such as ministries, subordinate government agencies, basin organizations, etc. The focus of TA is on capacity development, enabling actors in a basin to perform certain tasks, activities and functions in the management and development of transboundary water resources themselves. Infrastructure is less relevant in the context of TA – unless it relates to partners' capacity to plan and manage infrastructure projects or effectively evaluate and mitigate their impacts. The amounts provided to transboundary basins through TA are thus also significantly lower than amounts provided through loans or grants, but

⁷ The IDB led the Regional Public Goods (RPG) project in El Salvador, Guatemala, and Honduras to develop capacity for better managing the shared resource. This led to a trinational, cross border public policy known as Shared Waters. GEF trust fund initiated a project to better understand the root causes, impacts, and gaps related to environmental threats facing the Lempa River Basin; all three basin countries were involved in this project.

often still amount to significant contributions to RBOs. For CICOS, for instance, the GIZ's TA contributions – for a substantial time the only development partner – have ensured the functioning of the RBO and the development of key products (such as the river basin management plan) as well as the maintenance of important services (such as the navigation school). TA thus often plays a key role in the functioning of RBOs.

TA has been on the rise since the 2000s and into the 2010s, when various European donors actively engaged in transboundary water management especially in African basins. In the past years, however, TA support to transboundary water management has decreased again. Various bilateral and multilateral donors have reduced or even stopped their support to specific basins and their joint bodies – often in relation to questions concerning the overall effectiveness of these bodies, their financial self-sustainability or the efficient use of TA funds for fostering regional cooperation objectives.

Textbox 8: GIZ TA support to river basin management and development in the Niger River Basin

German development cooperation agency GIZ has supported transboundary water cooperation in the Niger River Basin and, in particular, the NBA, for a long time. Since 2009, more than EUR 13 million has been spent. In its current phase, the TA project helps NBA to develop a comprehensive legal framework for transboundary cooperation and to develop and implement a comprehensive planning framework for the basin, with a particular focus on the water, energy and food security nexus. This support consists of technical experts from outside the river basin being based within the NBA, the provision of short-term consultants for specific, technically complex tasks, such as drafting parts of the Water Charter together with staff of the NBA and its member countries, as well as the organization of trainings and workshops for NBA and member country staff.

Source: GIZ 2020a

It should be noted here that recipients of TA often express a preference for receiving financial means directly, e.g. through grants or donations, over TA. This is a complicated matter as the very nature of TA aims at building technical and human capacities through trainings, workshops, on-the-job training, the joint implementation of projects, etc. These objectives may not be achieved through the mere provision of financial resources to a joint body. At the same time, the provision of TA is often related to the secondment or hiring of international technical experts, which tends to come at significantly higher costs than hiring local staff.

In this context, it is important that the TA provided by bilateral or multilateral donors is directly related to and integrated in the strategic plans and the work plans of joint bodies (or respective member states' documents).

3.1.10 Climate funds

Since the development of the global climate change regime, and in particular the United Nations Framework Convention on Climate Change (UNFCCC)'s Art 4, which commits developed countries to financially support both mitigation and adaptation in developing countries, a new source of international financing for climate and environmental purposes has been developed: international climate funds. While often mentioned in the context of development cooperation (World Bank 2019), these funds are different in so far as they arise from a climate-specific treaty obligation that developed countries entered into under the framework of the climate change regime. Nonetheless, there are considerable similarities to international development financing. The following paragraphs provide an overview of some of the existing climate funds – without attempting to cover all funds. The main focus is to highlight the opportunities and challenges related to the use of these funds for transboundary water management and basin development.

Green Climate Fund

The Green Climate Fund (GCF) was established in 2015 with the aim to fund activities that enhanced adaptation and mitigation in the context of developing countries Nationally Determined Contributions (NDCs), by financing the incremental costs related to climate change. Access to the GCF requires countries to collaborate with GCF-accredited agencies. For regional projects, support from all countries involved need to be proven to the GCF.

In spite of their very appealing nature, experiences of regional organizations – including joint bodies – with GCF funding are still limited. The Sahara and Sahel Observatory (OSS) successfully underwent the accreditation process with GCF in 2017, allowing it to prepare project proposals for GCF financing. Based on the specific type of accreditation that OSS received, it can apply for GCF funding up to USD 10 million. So far, concept notes for potential projects – many of them concerning regional matters other than water – have been developed, but the final project development and funding decision are still pending. Another example is the NBA mobilizing the GCF funding among other financial sources for their Programme for Integrated Development and Adaptation to Climate Change in the Niger Basin (PIDACC)- established from the actions identified in their Climate Resilience Investment Plan (CRIP) . This specific example is detailed in the text box below.

Textbox 9: The Niger Basin: first transboundary basin to receive GCF funding for a transboundary climate change adaptation project

The Niger Basin is home to more than 112 million people throughout the countries of Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger, and Nigeria. The Niger River provides drinking water, irrigation, aquaculture, energy, and transport to these nine riparian countries. Climate variability has long been a challenge and an obstacle for development in the basin. Developed in 2015, the Climate Resilience Investment Plan (CRIP) has been the basis for the NBA and its member countries to elaborate the Programme for Integrated Development and Adaptation to Climate Change in the Niger Basin (PIDACC), whose objective is to address the effect of climate change in the Niger basin including through a strengthening of shared management of natural resources. Following several years of cooperation and discussion with financial partners, the Green Climate Fund finally approved funding for the PIDACC through the African Development Bank making the Niger basin the first transboundary basin to receive financial support from the GCF for a transboundary project. The success of the NBA in approaching financial partners and securing funding for the PIDACC is related with the political will of the member states to cooperate demonstrated by co-funding from the NBA member states. The existence of a solid shared investment plan developed for the basin was also key in the process to show the coherence with the long-term development objectives. Finally, the implications of other financiers in the project such as AfDB, the GEF, KfW, the European Union and the World Bank was also crucial.

Source : Presentation *Development and financing of Niger basin's climate resilience investment plan*, NBA Executive Secretary, Mr. Abderahim Bireme Hamid, COP 24, December 2018

Adaptation Fund

The Adaptation Fund (AF), established in 2007 in the context of the Kyoto Protocol, supports developing countries in coping with the effects of climate change. It has recently been increasingly active in supporting projects at the regional level or with a regional focus, also involving joint bodies and other regional organizations. The AF is financed through the Kyoto Protocol's Clean Development Mechanism (CDM), which generates funding for projects in developing countries through emission reduction projects and emission trading schemes between developed and developing countries. The

AF is managed by the GEF and can be accessed by any country that has established a dedicated and accredited national implementing entity. This allows for access to funds without going through specific implementing agencies normally involved in GEF projects, such as the World Bank or UNDP. AF is explicitly open for regional and transboundary projects; neighboring countries that share similar adaptation challenges can jointly apply if their national implementing agencies partner with each other and if they can prove the added value of a regional approach.

The Lake Victoria Basin and the Lake Victoria Basin Commission (LVBC) have been among the first to benefit from AF funding. Based on earlier studies on climate vulnerability assessments for the basin, done by LVBC's parent organization – the East African Community (EAC), LVBC proposed a project for implementing these assessments, which was accepted by the AF in 2017 and runs from 2018 to 2020. The project is implemented by UNEP as the Eastern African Community (EAC), LVBC's mother institution, is not accredited with the GCF (World Bank 2019: 18, LVBC 2019). It focuses on the reduction of vulnerability to the negative effects of climate change in basin countries and provides USD 5 million to LVBC as executing agency. Activities include the strengthening of institutional and technical capacity to integrate climate resilience into transboundary water management, the improvement of climate information and its availability to policy makers, technical experts and local communities, as well as specific projects with local communities (GCF 2020).

OSS has been accredited with the AF as well since 2013. On this basis, a national water project in Uganda has been prepared as OSS' first AF project shortly thereafter. Two regional projects followed a few years later: The 2019 "Integration of climate change adaptation measures in the consolidated management of the transboundary WAP (ADAPT-WAP) Complex Tools" project benefits Benin, Burkina Faso and Niger and, in particular, a transboundary biosphere reserve and two parks in these countries, with the aim to strengthen ecosystem resilience against climate-related threats such as floods, droughts and bush fires. The 2020 "Strengthening Drought Resilience of Small Farmers and Pastoralists in the IGAD Region" (DRESS-EA), covering Djibouti, Kenya, Uganda and Sudan, aims at increasing small farmers and pastoralists' resilience to drought by developing early warning systems and implementing adaptation actions. Another proposal is currently being prepared, focusing on drought resilience for local communities in South-Western Africa.

It is important to note that while these projects are to some extent international in nature and supported by a regional organization (OSS), they do not specifically focus on a transboundary river or lake basin (and the integrated and cooperative management or the joint development of those) and are not implemented by a joint body for a shared basin. This should be kept in mind when drawing conclusions and sharing experiences from the OSS case.

The third case of AF financing for transboundary water management can be found in the Drin River Basin, where the "Integrated Climate-resilient Transboundary Flood Risk Management in the Drin River Basin in the Western Balkans" (Drin FRM) project was approved in 2019. This project builds on earlier activities by other donors and focuses on the flood resilience dimension of the Drin River Basin's Strategic Action Plan (SAP) that was developed in previous years. It is implemented by UNDP, similarly to the aforementioned case of the LVBC.

Other global climate funds

In addition, smaller climate funds have been set up for specific groups of countries or sectors. The Special Climate Change Fund (SCCF) provides support to adaptation projects in developing countries in specific sectors (including water management). It is open to all developing countries that are parties to the UNFCCC. The Least Developed Countries Fund (LDCF) supports the preparation of National Adaptation Programs of Action (NAPAs) in least developed countries. Both funds are managed by GEF.

They have so far not supported any transboundary water management or development projects nor engaged with any RBO.

Experiences of joint bodies with climate funds are still limited. Overall, the situation to-date shows that accessing these funds for transboundary water management is not easy for various reasons. Firstly, transboundary water management does not rank high on these funds' priority lists. This is also because the transboundary water management community has so far – in spite of the obvious linkages between the hydrological cycle and climate change – struggled to highlight the specific benefits of transboundary projects for climate change adaptation and these projects' additional value compared to more traditional development financing through loans and grants instead of climate funds. Especially in least developed countries and their basins, data on climate change to support the articulation of a climate rationale is often lacking while short-term development needs seem more pressing than long-term climate measures.

Secondly, it largely remains unclear whether and how regional entities and intergovernmental organizations – such as RBOs – can access these funds directly if at all and, if so, under what conditions. In this context, it is important to note that some funds, such as GCF, do not always cover the full costs of a project. This means that the joint body would need to raise the remaining funds from its member states – which often lack these financial capacities – or from other sources as it was done by the NBA for the financing of the PIDACC.

Thirdly, for RBOs to access such funding schemes, they must endure highly complicated and considerably varied processes and procedures across funds. Similar to other types of grants discussed in Section 3.1.8, the technical, human, and financial capacity of joint bodies to prepare proposals and engage in the often very long and complicated application processes is, however, limited. This is unfortunately particularly true for joint bodies in developing regions that need the financial resources most in order to fulfil their important role in coordinating climate change adaptation measures of riparian states and engage in joint activities (such as the development of basin-wide vulnerability assessments) but have the least capacities. RBOs struggle with so many different challenges, requirements, and tasks that expecting them to effectively fulfill this role of basin-wide coordinators and implementers of climate change adaptation measures may be slightly unrealistic unless budget and mandate are adjusted accordingly. Member states providing this expertise to their RBOs through relevant ministries and government agencies handling climate finance matters at the national level might be a promising way to bridge these gaps. This does, however, require considerable commitment from member states to their RBO and to joint, cooperative, and trustful basin management and development.

National climate funds

In addition to these global efforts, individual developed countries have set up their own climate funds to implement their specific goals. The set-ups, focus areas, and types of projects funded vary considerably. For instance, the German International Climate Initiative (IKI), established in 2008, helps implement Germany's commitments under the UNFCCC and the Convention on Biological Diversity (CBD). Support is provided to activities in developing countries that are determined in these countries' NDCs, including measures on climate change adaptation in the water sector. The selection of projects is done through a competitive 2-step process based on a county-specific or a theme-specific call that is issued regularly. So far, IKI has committed more than EUR 3.9 billion (2008-2019) for more than 730 climate-related projects. These include projects focused on transboundary water resources in the Congo, Mekong, the Mono and in the Nile river basins, concerning climate change scenarios and their impact on tropical forests, climate-smart flood protection, transboundary biodiversity protection, and wetlands management, respectively.

Textbox 10: IKI support to wetlands management in the Nile River Basin

The German IKI mechanism provides funding of EUR 6.0 million (2015-2021) to the Nile Basin Initiative (NBI) and its member states to strengthen their technical and institutional capacities for sustainably managing wetlands in the Nile River Basin as a means for climate change adaptation.

The project produced several important analytical tools and studies, including an assessment of the economic dimensions of wetlands, the role of peatlands in the basin for greenhouse gas storage and thus climate change mitigation, as well as an inventory of regionally important wetlands and their ecological status. The project also helped analyze environmental flow needs in the Nile River Basin that feed into the NBI's basin planning process, aimed at integrating wetland needs into basin-wide planning and at developing specific wetland management plans that can help adapt to climate change through green storage, flood protection, etc.

The project is implemented by the NBI and thus constitutes a truly transboundary project that is built around the river basin instead of on specific country projects.

Sources: GIZ 2020b; IKI 2020

3.2 Private funding and financing

In addition to public funding and financing, there is potential to leverage private capital in transboundary water cooperation and basin development; this is typically limited to infrastructure projects, as discussed in detail below. Whereas private capital comes largely in the form of debt or equity financing, there is a limited number of examples of private funding in the form of donations and grants, which will be discussed next.

3.2.1 Private funding

It should be stressed that private philanthropies and donations to RBOs and basin member states, without any repayment obligation or return expectation, are rare. The examples available are mostly in the face of disasters, where private citizens donate indirectly to RBOs to support recovery from floods or similar events. This includes the USD 5.5 billion in private donations made in response to the 2004 Indian Ocean earthquake and tsunami. Said funds largely went to non-profits which funneled a portion of the funds to transboundary water projects as well as recovery and reconstruction efforts.⁸ Another example of private funding is the Great Lakes Commission, detailed in the textbox below.

Textbox 11: Great Lakes Commission – Private Funding in Action

The Great Lakes Commission (GLC) is a transboundary RBO created through an interstate pact. A significant portion of its budget comes through private philanthropy; in many ways, GLC operates as a non-profit despite being an RBO. Philanthropies such as the Charles Stewart Mott Foundation, the Joyce Foundation, and the Erb Family Foundation form the core of the GLC donor base. Transboundary project work is directly billable to the various foundations, while operations and baseline budget is covered by state funds. Because private funding is such a sizable part of the budget, GLC must be flexible as the foundations' priorities, and thus funding, shift year to year.

Source: Interview with former GLC staff

⁸ The funds were channeled through the EU, World Bank, and UNDP under a tripartite agreement that mobilized RBOs to help with recovery and reconstruction plans. Based on the documents available, it cannot be determined who were the actual beneficiaries of the funds.

3.2.2 Private financing

Due to the rarity of private funding in transboundary water cooperation and basin development, the remainder of this chapter will focus on private financing of infrastructure projects. In this context, private financing (in the form of debt and equity) refers to investments made by private entities into public sector projects. These investments are expected to not only be repaid, but also generate positive returns. Depending on the type of private finance used, these returns could be in the form of interest on debt or dividends on equity. The actors can be commercial banks, private companies, entrepreneurs, or investment funds, among others. The table below provides an overview of the most relevant instruments available for private financing of transboundary water infrastructure projects as well as potential investor groups for each of them.

Table 1: Types of private financing instruments

Category	Instrument	Examples of potential investors/providers
Debt	Bank loans	<ul style="list-style-type: none"> • Domestic and international commercial banks • International financial institutions with private sector mandate
	Bonds	<ul style="list-style-type: none"> • Retail bond investors • Investment funds
	Private placements	<ul style="list-style-type: none"> • Pension funds • Insurance companies
Equity		<ul style="list-style-type: none"> • Domestic and international entrepreneurs/corporates, including construction companies and utilities • Infrastructure development funds • International financial institutions with private sector mandate and ability to invest equity
Credit Guarantees & Political Risk Insurance		<ul style="list-style-type: none"> • International financial institutions • Export credit agencies

Private financing comes with a myriad of risks and challenges; hence it is not heavily utilized for transboundary water cooperation and basin development. Such issues include the need to repay investment principal and generate a positive risk-adjusted return, as reflected in the interest rate (for debt) and internal rate of return (for equity). This requires a reliable and sufficiently large revenue stream, which may not always be available. Compounding the problem of revenue generation is the social belief that water is a free public good. This may reduce consumer willingness to pay, thus complicating the monetization of (often intangible) water management benefits and limiting revenue generation potential.

Debt: Debt refers to loans or bonds, which need to be repaid over time. To compensate lenders, they receive interest on the outstanding debt balance. In addition, they may receive certain financing fees.

Equity: Equity refers to the value of a company or project net of its outstanding debt. As such, it reflects the value for its owners. It also refers to the investment made by equity investors to develop or acquire the project. To compensate equity investors, they are entitled to receiving dividends, which are distributions of a company's or project's earnings.

Another issue is the complex environment found in transboundary basins. Numerous stakeholders operating in different sectors and countries, with potentially different enabling environments with regards to hydrological, environmental, economic, social or political conditions, must coordinate and cooperate. Furthermore, depending on the geographical location, there may be a higher (perceived)

risk of political instability, which either increases the cost of private capital or makes private capital unavailable altogether. Currency risks can further complicate private financing as lenders are typically reluctant to take on currency risk. This is particularly relevant if local debt markets are insufficient and foreign currency must be used. In this context, transboundary projects which span multiple currency regimes are especially vulnerable. All of these issues are in addition to the typical complexities that come with implementing large infrastructure projects in potentially remote locations.

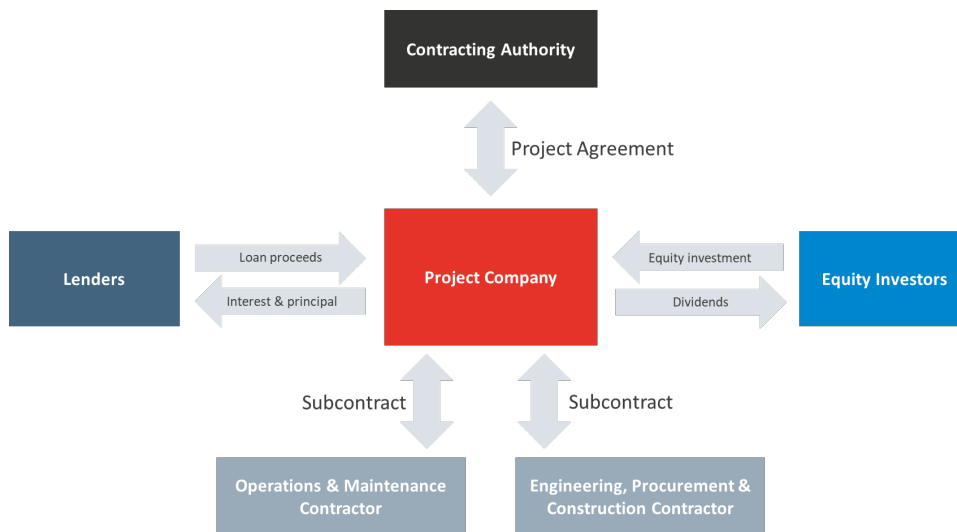
The above constrains the availability of private capital for water management. Notwithstanding these challenges, private capital has been leveraged to develop transboundary water management infrastructure projects, typically through a public-private partnership (PPP) approach for revenue generating assets, even though a similar structure can be used for non-revenue generating assets. Before discussing how private debt and equity can be used to develop transboundary water infrastructure projects, the following section aims to provide the reader with a basic understanding of what PPPs are and how they work.

Defining public-private partnerships

PPPs can take many forms and often can mean different things to different people. In the context of this study, PPPs will refer to a long-term agreement (the Project Agreement) between a public entity and a private entity to provide a public asset. Although different models exist, the private entity (often referred to as the Project Company) will typically be responsible for the design, construction, operations, maintenance, and financing of the asset. The Project Agreement defines the exact rights and responsibilities of both the Project Company and the public entity and thus lays the legal and operational framework for collaboration between those for project development and implementation. The Project Company often consists of a developer as well as multiple subcontractors, each subcontracted to do part of the project scope (e.g. design, civil works, operations, maintenance).

Many of the risks associated with the design, construction, and operation of the asset are typically allocated to the Project Company, with the public entity retaining substantially less risk than under a purely public project. At the end of the Project Agreement, the asset is transferred back to the public entity in a condition that satisfies the requirements outlined in the Project Agreement, often at no cost to the public entity. The long-term and integrated nature of the Project Agreement incentivizes the Project Company to maximize innovation and incorporate operations and maintenance considerations into its design, thus reducing the overall lifecycle cost of the asset. In addition, more efficient risk management can further reduce costs. A simplified overview of the contractual structure of a typical PPP project is shown in the figure below.

Figure 1: Typical PPP structure



To raise private debt and equity, a non-recourse or limited recourse project finance structure is usually employed. Under this structure, debt and equity are repaid from the cash flow generated by the project. Lenders only have recourse to the project's revenues and assets in case the Project Company defaults. This structure allows for a highly customized, and therefore efficient, financing structure that reflects the project's risk profile and risk allocation amongst the different parties involved. Depending on the type of infrastructure being developed, different payment mechanisms to compensate the Project Company for its investments can be used, including performance-based availability payments and user fees (tariffs, tolls, etc.). In developing markets, PPPs have more often been used for revenue generating assets as non-revenue generating assets create additional government liabilities that would need to be repaid through taxation. A project-specific deduction or penalty regime as defined in the Project Agreement can help ensure performance throughout the life of the project.

Whereas for energy generating facilities, such as hydropower plants, the payment mechanism is typically directly tied to the amount of electricity produced, developing a payment mechanism for a multipurpose water infrastructure PPP projects may be more challenging. For example, the payment mechanism for a multipurpose dam that is used for electricity production, river regulation, irrigation, and bulk water supply should not cause the Project Company to unduly prioritize energy production over the other water uses. In the case of transboundary water infrastructure, these challenges may be further compounded by the challenges of potentially competing national views on how to operate the asset (including upstream vs. downstream priorities) as well as an increase of the number of stakeholders involved.

The latter also relates to the question of who will ultimately own the asset after the Project Agreement expires, particularly in transboundary scenarios where multiple countries may have worked together through a PPP to realize the infrastructure project. In addition, financing transboundary water infrastructure projects may involve an additional layer of complexity if multiple currencies are involved, for example because energy produced is being sold in different countries and/or because hard currency financing has been mobilized.

Whereas water infrastructure PPPs have the potential to create substantial value for public agencies by leveraging the creativity of the private sector and the discipline that private financiers can bring, a well-organized procurement that encourages healthy competitive pressure also remains essential to deliver that value.

An example of a multipurpose water infrastructure project that may be implemented as a PPP and the potential role that RBOs can play is discussed in the textbox below.

Textbox 12: Lesotho-Botswana Water Transfer Scheme

The Lesotho-Botswana Water Transfer Scheme (L-BWTS) is a transboundary water project aiming to increase water supply not only in Southern Africa, which is provided with water under the existing Lesotho Highlands Water Project (LHWP) already, but also to Botswana, by conveying water from the Makhaleng River in Lesotho. This will allow for increased climate resilience for Botswana, Lesotho, and South Africa, as well as electricity generation via hydropower and a higher irrigation potential. Climate resilience became particularly relevant following severe droughts in the area; the project is designed to bring increased regional water security. The main sponsor is ORASECOM on behalf of member states – Botswana, Lesotho, Namibia, and South Africa.

The project is estimated to cost P15-20 billion (USD 1.3-1.7 billion) in capital expenditure and P450 million (USD 39 million) in annual operating expenditure. According to a desktop study conducted on behalf of the Republic of Botswana, a PPP structure may be considered. Given the size of the project, funding and financing would likely come from a range of sources, including government and IFIs. If pursued as a PPP, private financing would also be part of the solution. Currently, the ORASECOM is undertaking studies to better understand the scope, the route, and the long-term economic implications.

As is typical for multipurpose water projects, the project will have to navigate competing interests and priorities, which are further complicated by the transboundary nature of this project. For example, Lesotho will likely look to maximize hydropower production whereas Botswana will focus on long-term drinking water supply and irrigation. Although this could potentially result in conflict and competition over resource allocation, the fact that ORASECOM is leading this effort is an important sign that member states are seeking to collaborate on these issues. Furthermore, ORASECOM can serve as a platform from which to resolve these competing goals. This is even more so the case as ORASECOM also includes Namibia, the most downstream state, which will not directly benefit from the project, but needs to be informed and consulted.

Source: Lesotho Highlands Botswana Water Transfer, Desktop Study (2015)

Financing instruments in public-private partnerships

In many PPPs, private debt and equity are used to finance the required capital investment. Debt and equity each have their own risk and return profile, with debt being compensated through interest payments and equity through dividends to shareholders. Private debt and equity may also be combined with public funding and financing in what is often referred to as “blended finance.”

To attract private financing, investment guarantees and insurance can help mitigate some of the political risks and make the overall risk profile more palatable to potential investors. As these guarantees are used to cover private investment, the Project Company and its investors are responsible for obtaining and paying for them. Part of the World Bank Group, the Multilateral Investment Guarantee Agency (MIGA) can guarantee up to 90% of a cross border private equity investment and 95% of private debt principal against non-commercial risks. For example, MIGA’s guarantees coverage includes transfer restriction (including inconvertibility), expropriation, war and civil disturbance, breach of contract, and non-honoring of financial obligations. MIGA charges an annual fee for the guarantee, normally expressed as a small percent of the loan amount. Whereas other IFIs often require a counter-guarantee from the host government when issuing guarantees, MIGA’s guarantees do not require such counter-guarantee but do need host country approval. This

type of guarantee can minimize the political risk exposure for debt and equity investors as it provides recourse against potential government interference and/or disputes between investors and governments, which is particularly relevant for emerging markets. As a result, investors can be shielded from risks which they cannot manage well while still being fully responsible for technical and commercial risks.

The next two sections will discuss private equity and debt for infrastructure PPP projects in more detail. Following the discussion on equity and debt, the concept of blended finance will be introduced in Section 3.3, accompanied by several case studies that illustrate how private and public funding and financing have been harnessed for transboundary water infrastructure projects.

Equity

In infrastructure PPPs, equity investors effectively play the role of owner, although formal ownership of the asset is typically retained by a public entity. Equity investors are given the right to operate the asset and earn a return on their investment in the form of dividends over a predefined period. After this time elapses, the asset is handed back to the public agency, typically free of charge. Equity can come from a variety of sources including domestic and international entrepreneurs and/or companies, infrastructure development funds, and international financial institutions with both a private sector mandate and the ability to invest equity, such as the IFC.

These equity investors control the Project Company of the infrastructure asset. The Project Agreement defines the rights and responsibilities of the Project Company and the public entity. These typically include performance requirements and payment mechanism to be used. The latter defines how the Project Company is compensated for its investment as well as what deductions may be imposed if the Project Company cannot meet the performance requirements and other obligations. If the project is well-structured, equity investors will be the first to absorb losses from cost overruns, poor performance, or lower than expected revenues that cannot be recovered from subcontractors. This “first loss” attribute is a key benefit of equity as it serves to incentivize the Project Company, controlled by the equity investors, to deliver the project on time and on budget while adhering to the performance requirements.

Although equity is typically substantially more expensive than both private and public debt in terms of its target return, using equity in the PPP financing structure is often seen as essential to achieving a material risk transfer from the public entity to the Project Company. This contractual design limits the public entity’s exposure to construction, operating, and financing risks as well as cost overruns. Depending on the specifics of the project, equity investors may make a healthy return on their investments; however, they could also lose all that they paid in capital. The non-recourse/limited-recourse nature of project finance typically ensures that investors cannot lose more than their original investment. Given the inherent uncertainty of the risks and returns in combination with the potential to lose all investments, the cost of equity capital is often substantially higher than that of debt. This higher cost reflects to risk profile (or rather, the perceived risk profile) that equity investors are exposed to. These risks include project specific risks as well as country and regional risks.

Debt

Whereas the main benefit of using equity in a PPP financing structure is the substantial risk transfer from the public entity to the Project Company, as discussed above, its higher cost of capital negatively impacts the overall project cost. As such, equity is often combined with private debt to reduce the overall cost of capital while still achieving a material level of risk transfer. Additional benefits of private debt include the extensive due diligence lenders conduct on the project before agreeing to lend money as well as the discipline they impose on the Project Company over the life of the project. Public debt

typically lacks the same level of due diligence and discipline as repayment of public debt is often unrelated to the project’s revenues and instead is backed by tax revenues.

A key project finance structuring challenge is to determine what is the appropriate debt-to-equity ratio. This concept is also referred to as “gearing” or “leverage.” As private debt is usually cheaper than equity, using more debt will reduce the overall cost of capital and therefore the cost of the project. However, as lenders have a limited upside (their best-case scenario is to get fully repaid on time) while equity investors could potentially see substantial monetary gains (but are also at a higher risk of losing their entire investment), there are strict limitations on the amount of debt that debt financiers are willing to provide for a given project. Similar to the discussion on target equity returns, these limitations depend on the types of risks to which lenders are exposed. For example, if the project is exposed to demand risk, lenders may require at least 25% equity whereas that could be reduced to only 15% if no demand risk is present.

Besides the gearing requirement, the interest rate of private debt is also a reflection of the risk that lenders are exposed to. This means geographies or infrastructure sectors perceived to be riskier will tend to see higher interest rates. In extreme cases, lenders may be unwilling to lend money to certain projects altogether if they believe their risk exposure is too high. In addition, inflation expectations also impact the interest rate as financiers expect to make a positive return after adjusting for inflation. As discussed earlier, guarantees and political risk insurance can help de-risk projects, which should result in more attractive financing conditions and potentially lower interest rates.

Loans vs. bonds: A key difference between a bond and loan is that a bond is highly tradeable. If you buy a bond, there is usually a market where you can trade bonds. Another key difference is that loans are negotiated directly between the lender (often a bank) and the borrower. The limited number of parties involved allows the loan to be tailored to the borrower’s need more easily when compared to bonds.

Private debt can be split into bank loans and bonds. Bank loans can come from a variety of sources including domestic commercial banks, international commercial banks, and international financial institutions with private sector mandates, such as the IFC, FMO, and Proparco. Regarding the latter group, it is important to distinguish those financiers from development banks that lend directly to governments, as the financing conditions are likely substantially different. Public lending to governments is often concessional with tax revenues used to repay such debt. In the case of lending to a Project Company by, for example, the IFC, the repayment of that debt is based solely on project revenues with typically no recourse to tax revenues or other government funds. Those debt instruments tend to be priced in a way that is intended to be similar to the rates available from commercial banks, which are likely substantially higher than the interest rate on public debt.

In addition to bank financing, private debt can be raised through a bond issuance or private placements. A bond issuance refers to the sale of debt securities through a public offering. A private placement is similar but limits the offering to a small number of selected debt financiers, such as pension funds and insurance companies. One of the advantages of a private placement compared to a public bond issuance is reduced disclosure requirements, which can be costly and time consuming. Note that private bond financing is less common as an infrastructure financing solution outside of the US.

3.2.3 Innovative financing initiatives

Over the past years, impact investing has become more prominent. Impact investments are investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return. Impact investments can be made in both emerging and developed

markets and target a range of returns from below market to market rate, depending on investors' strategic goals. In the context of impact investing, a number of specialty bonds have emerged, including green bonds and social impact bonds. These bonds are types of private placements where the proceeds are used for pre-specified types of projects with high environmental or social impact potential. They are also sometimes referred to as "use of proceed bonds". For green bonds, these projects are climate and/or environmentally based. The World Bank issues its own green bonds that are used to "raise funds from fixed income investors to support World Bank lending for eligible projects that seek to mitigate climate change or help affected people adapt to it" (World Bank: 2020). The World Bank has issued over USD 13 billion in green bonds; each is trade triple-A quality, as with other World Bank bonds.

For social impact bonds, these projects support net positive social outcomes; this type of bond can also be called pay-for-success financing. It serves to cover upfront costs for socially relevant service interventions. Social impact bonds also function to reduce the government's role in welfare provision; they allow social investors to take on the risks associated with innovative or experimental service delivery methods. The social impact bonds "pay market rate of return if predefined outcome targets are met" (Warner: 303). By accepting this kind of repayment conditionality, investors are effectively accepting a below market risk-adjusted financial return as they also account for the value the social benefits in their investment decision process.

Whereas the universe for green bond and social impact bond investors is growing, competition from other environmental or social initiatives may make it challenging for RBOs to take advantage of them. Furthermore, the bonds' (conditional) repayment obligation means that the RBO still needs a revenue stream to service the debt, similar to more traditional forms of debt. A new concept that has been generating interest amongst water sector practitioners are Blue Peace Bonds, as discussed in the textbox below.

Textbox 13: Blue Peace Bonds

New conceptual frameworks for alternative and innovative funding and financing of basin management and development have emerged in recent years, although most remain largely at the conceptual stage. One of these potential innovations is the Blue Peace initiative, which is being promoted by the Swiss Agency for Development Cooperation (SDC) together with various other government, academic, international and civil society partners, such as Geneva Water Hub and the United Nations Capital Development Fund (UNCDF).

The Blue Peace initiative envisages the development of a multisectoral and transboundary masterplan comprised of investment plans that cover infrastructure needs as well as data, monitoring, and other soft assets. Such a master plan would then be of shared ownership by all countries in a basin. It would provide a basis for long-term cooperation to the benefit of all sectors and countries while reducing conflict risk and increasing stability and peace.

To finance projects in the master plans, the Blue Peace concept envisages the use of Blue Peace Bonds which aim to blend public and private instruments into a single, lower risk, instrument. In this case, the public funds are used to attract additional public and private financing in order to meet the overall financing needs, presumably in the form of credit guarantees or grants, not dissimilar to blended finance (see Section 3.3). Rather than public bonds issued by riparian countries, these bonds would be issued by transboundary water organizations or municipalities and repaid using the cashflows of the underlying projects, not dissimilar to the PPP project finance approach discussed elsewhere in this study. Surplus cashflows from one project could potentially be used to support other projects that lack a robust revenue stream. The Blue Peace bonds would be marketed to both domestic and international

investors. One of the challenges that the Blue Peace initiative is trying to overcome is the costly and time-consuming process of negotiating financing terms between the issuer, banks, and governments, thus simplifying the process of raising financing for project implementation. Besides requiring a legal basis that allows transboundary water organizations or municipalities to issue debt to finance infrastructure projects, a critical success factor for this innovative approach will be strong political leadership from riparian countries to support such an initiative. As of late 2020, UNCDF, as an implementing agency of Blue Peace Financing, is in the process of rolling out a Blue Peace pilot project in collaboration with OMVS and OMVG. Although still in the design/early implementation stage, it will be interesting for practitioners to follow how the Blue Peace pilot unfolds and how it can be adapted to other RBOs.

Source: Blue Peace 2018, interview with UNCDF staff

As the above sections demonstrates, there are many different types of private debt that could potentially be leveraged to finance transboundary water infrastructure PPP projects. When combined with equity, an optimal financing solution can be created that ensures a material risk transfers from the public entity to the private financiers. However, in practice, PPP projects often also incorporate public funds and/or financing, as well be explored in the discussion below on blended finance.

3.3 Blended financing

Blended financing refers to the strategic use of development finance for the mobilization of additional finance towards sustainable development in developing countries. By using public funding and financing in combination with specific instruments to overcome risks that commercial financiers cannot easily absorb, a blended finance approach can mobilize private debt and equity financing that may otherwise not have been available. An additional rationale for blending public and private capital is that both come with their distinct advantages and disadvantages that can potentially be partially overcome when combined. More specifically, private financing tends to be expensive, as it compensates investors for the risks they take on. Whereas public financing lacks that same level of risk transfer, it is often also substantially cheaper than private financing as repayment is typically not related with the project itself. If structured intelligently, governments can use public funding/grants as well as lower cost public financing to cover part of a PPP project's capital costs while still ensuring material risk transfer through the use of private financing for the remainder of the project cost. Where appropriate, risk mitigation instruments such as guarantees and insurance products can be used to lower the cost of private capital and/or overcome barriers to private financing. The overall cost of capital under this approach will be lower compared to a financing solution that only uses private capital. In addition, public funds can potentially be used as a backstop to protect the Project Company against specific downside scenarios, which can help improve private financing conditions, thus reducing the overall project cost. Given the large capital needs for most transboundary water infrastructure PPP projects, many projects do combine public and private financing, although the term "blended" finance may not always be used.

Blended finance: OECD (2018) defines blended finance as the strategic use of development finance for the mobilization of additional finance towards sustainable development in developing countries. Key instruments that can help mitigate certain risks for private financiers and thus mobilize commercial debt and equity include guarantees and insurance products, currency hedges, first loss capital, viability gap funding, and technical assistance.

Textbox 14: Congo Blue Fund

Although not described as “blended finance” by its promoters, the proposed structure of the Congo Blue Fund appears to contain some similarities with blended finance. The Congo Blue Fund is a mechanism aimed at helping countries in the Congo River Basin to finance water-related activities (e.g. navigation, hydropower, irrigation, fisheries, and tourism) and thus boost their economies while fostering cooperation and peace between them. The vision is to establish a fund with annual contributions of EUR 100 million that would be used to pay interest on loans from IFIs as well as cover the costs of insurance and other technical charges. As such, the Congo Blue Fund would use its grant funding to potentially help lower the cost of capital for transboundary infrastructure projects. Among suggested contributors to the fund are the GCF and GEF as well as states, IFIs and private donors. The fund would be managed by a governing board, including representatives of governments, regional organizations and IFIs. Although this fund has received considerable attention as a potential innovative means for financing regional cooperation and related development projects, it remains unclear whether the fund has been formally established and has collected any financial resources.

Source: <https://brazzavillefoundation.org/images/nos-actions/congo-basin-blue-fund.pdf>

The case studies presented below will illustrate different ways to harness public and private funding and financing in a PPP structure for transboundary water infrastructure projects.

3.3.1 Bujagali Hydropower Project – Uganda

The Bujagali Project is a 250 MW run-of-the-river hydroelectric power plant on the Nile River in Uganda with an adequate reservoir for daily storage, an intake powerhouse complex, and rock filled dam with a maximum height of about 30 meters. The project sells electricity to the local utility under a 30-year power purchase agreement (PPA). Evacuation of electricity from the



Map 1: The Bujagali Hydropower project in Uganda

Source: Encyclopaedia Britannica. Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations © United Nations Economic Commission for Europe (2020)

project required the construction of about 100 kilometers of transmission line, as well as the construction of a substation. The transmission line is part of a transboundary high voltage power line linking the Bujagali Dam in Uganda to a substation in Lessos, Kenya. Said line connects the electricity grids of the two countries and is promoted by the Nile Equatorial Lakes Subsidiary Action Program, a part of the NBI, as an energy sharing initiative. The project was commissioned in 2012.

Potential for complications arose due to the project’s location. The dam sits at the crossroads of the Lake Victoria basin and the Nile basin. In the Lake Victoria basin, Uganda is the downstream riparian of Kenya and Tanzania; in the Nile basin, Uganda is the upstream riparian in basin shared with nine other countries including Sudan and Egypt. The Lake Victoria basin states, being less affected by the project, expressed minimal desire for involvement; the Nile basin states, being more affected, were

initially nervous of how this project may impact flow rates into their own territory. As Uganda lies within two basins and is exposed to both the upstream and downstream riparian perspective, Uganda may potentially have been seen as more credible in acting towards basin interest and perceived to better incorporate lower basin states' concerns.

Additionally, the project's singular purpose for energy generation helped bypass potential transboundary conflict. Technical studies found that the run-of-the-river hydropower plant would have insignificant impacts on water flow. This mitigated concerns from downstream countries on the Nile that their own water flows would be impacted. Egypt, the downstream heavyweight, signed an agreement with Uganda approving the dam as the "construction [...] had/has no intentions of water abstraction" (Kimbowa 170). With this approval, the project moved forward.

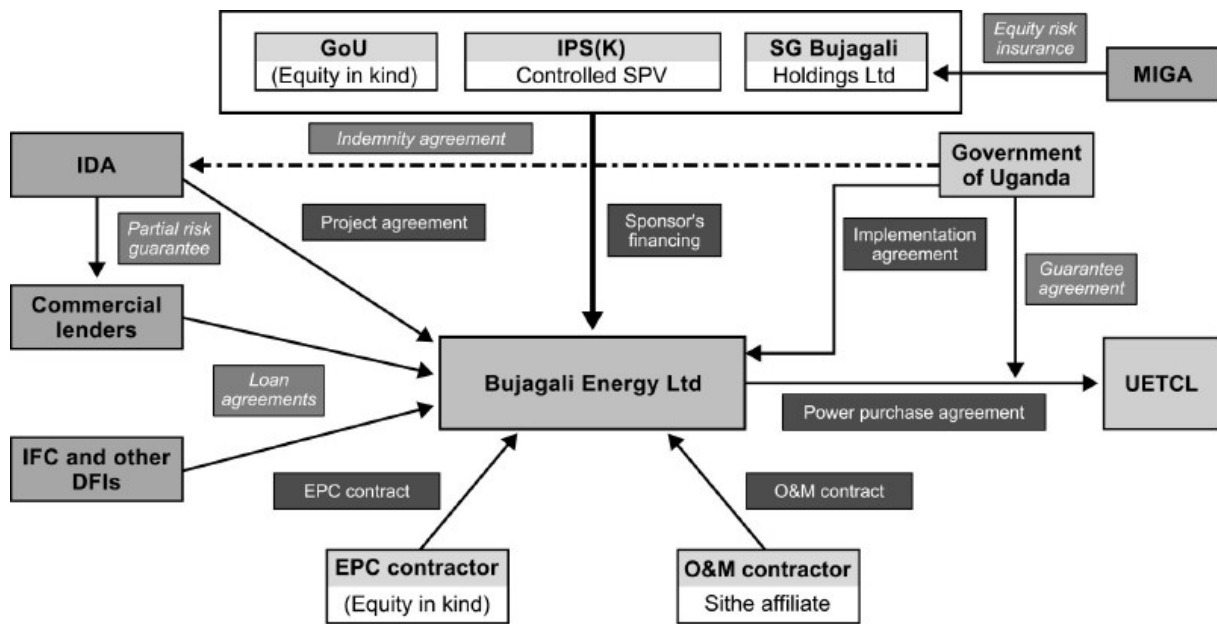
The next challenge came in the form of capital requirements. The project was developed as a PPP to maximize the benefits of private investment but also leveraged public financing. The overall project cost was USD 866 million, with a debt-to-equity ratio of 78:22. A Project Company, Bujagali Energy Limited (BEL), was formed to develop the project. Sponsors of BEL were: Sithe Global Power (58%), Industrial Promotion Services of Kenya (31.5%), and the Government of Uganda (10.5%). By involving downstream basin members, such as Kenya, the Project Company could represent multiple basin interests. The engineering, procurement and construction (EPC) contract was a fixed price turnkey contract between BEL and Salini Costruttori of Italy, with Alstom Power as one of its key subcontractors. The date certain turnkey EPC contract required the EPC contractor to meet BEL's 44-month construction schedule, with delays resulting in the payment of penalties to BEL.

For BEL and its commercial lenders, broad World Bank Group participation was critical to mitigating the other risks associated with the provision of long-term financing for a transboundary hydropower project in Sub-Saharan Africa. World Bank Group participation included:

- World Bank: USD 115 million Partial Risk Guarantee (PRG) to protect commercial lenders, with guaranteed risks including government failure to fulfil payment obligations relating to purchase of power and termination payments due, political force majeure events, changes in law making contractual agreements unenforceable, and currency convertibility or transferability
- IFC: Up to USD 130 million in loans
- MIGA: Up to USD 120.3 million guarantee to protect against political risk
- International Development Association (IDA) support: USD 80 million general budget support, and USD 13.5 million in technical assistance

The involvement of the World Bank Group provided risk mitigation and comfort to commercial banks and other lenders. EIB, AfDB, Proparco, AFD, DEG, KfW, FMO and commercial banks (Abs Capital, Standard Chartered Bank) came into the project under the PRG. The transmission line to evacuate power from the project was financed by AfDB and Japan International Cooperation Agency (JICA). Bujagali represented a significant achievement in project financing, given the risks involved in a large hydropower project in Sub-Saharan Africa. Moreover, despite the complications inherent to large transboundary infrastructure, the project gained acceptance from riparian states and successfully applied for several types of both public and private financing and funding, therefore highlighting the success of a blended finance approach.

Figure 2: Financing Structure of Bujagali Hydropower Project



Source: World Bank

Financial close of the project demonstrated the private sector’s willingness to invest in a large complex transaction, made possible only after extensive power sector reforms coupled with the catalytic role of the World Bank in providing risk mitigation and a contractual arrangement framework underlying the bankability of the project for the private sector.

3.3.2 Nam Theun 2 Hydropower Project – Laos

The Nam Theun 2 Hydropower Project (NT2) is a transboundary and transbasin diversion power plant on the Nam Theun river in Laos, commissioned in 2010. The Nam Theun river, a part of the Mekong River, is a tributary to the Xe Bang Fai river. This interconnectedness added to a complex stakeholder environment as the project impacted not only its immediate basin but also the river from which it flowed (the Mekong) and into which it drained (the Xe Bang Fai). Although located in Laos, the basin extended into Thailand.



Map 2: The Nam Theun Hydropower project in Laos

Source: Encyclopaedia Britannica. Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations © United Nations Economic Commission for Europe (2020)

Such complications led to the USD 1.45 billion multipurpose project spending over a decade under construction, after having spent nearly a decade in the project preparation phase. Commercial export

of electricity from the plant to Thailand finally began in March 2010. The project has an installed capacity of 1,070 MW and generates 6,000 GWh of power a year. A substantial part of the plant's capacity (995 MW) is used to produce electricity for export to the Electricity Generating Authority of Thailand as part of a long-term PPA signed in 2003. In addition, the project will use the remaining 75 MW to supply electricity to the state-owned Electricité du Laos. For both Thailand and Laos, the electricity production counted as a significant benefit; this provided a significant incentive for the basin states to work together to achieve optimal production results.

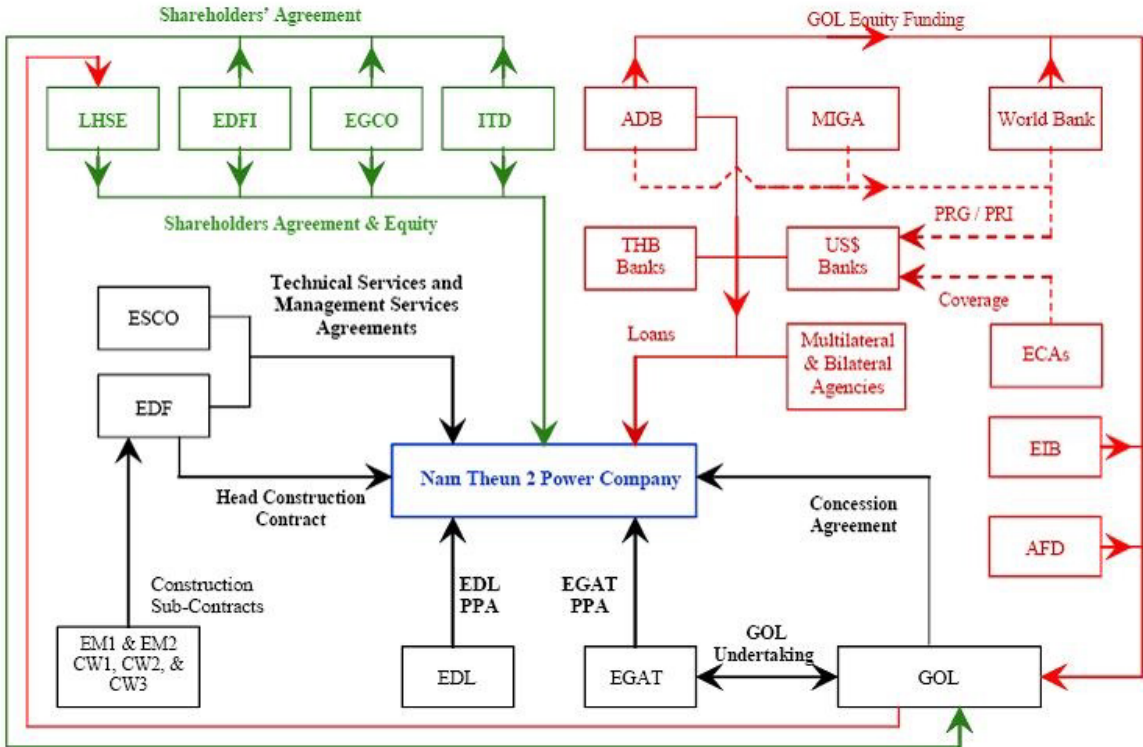
Operated by Nam Theun 2 Power Company (NTPC), the PPP project has a concession period of 31 years including a 25-year operating period. NTPC is owned by a consortium including the Electricité de France International of France (35%), Electricity Generating Public Company of Thailand (25%), Italian Thai Development of Thailand (15%), and the Government of Laos (25%). At the end of the operating period, the project will be transferred to the Government of Laos.

The shared transboundary ownership of the NTPC helped involve diverse stakeholders representing both Laotian and Thai interests. Using a mixture of public and private debt as well as equity under a PPP structure, the project successfully raised the necessary capital despite a (perceived) high cross-border risk. Key to this success were the grants and loans provided by various international financing institutions including:

- World Bank Group: USD 20 million IDA grant to the Laos Government to fund environmental and social expenditure and for the Government of Laos to purchase equity in the project company; USD 91 million MIGA guarantee to cover political risk; and a US\$50 million IDA partial risk guarantee
- ADB: USD 70 million loan and USD 50 million guarantee to cover political risk
- Grants also given by IDA and the Agence Française de Développement (AFD)

The involvement of the international financing institutions and export credit agencies provided risk mitigation and comfort to nine international commercial banks and seven Thai commercial banks.

Figure 3: Financing Structure of Nam Theun 2 Hydropower Project



Source: PPIAF, World Bank

Given its transboundary nature and the involvement of a myriad of international financial actors, debt was issued in both hard currency (USD, 64%) and local currency (Thai baht, 36%). Equity was also sold in both currencies, although the amount of equity purchased with Thai baht was substantially lower than that bought with USD.

4 Challenges and Opportunities in Funding and Financing Transboundary Water Cooperation and Basin Development

This section summarizes the key findings of the report and specifically focuses on the challenges and opportunities related to specific funding and financing resources, which is summarized in Table 2 below. It also outlines the way ahead for improving the financial sustainability of cooperation, management and development of shared water resources.

4.1 Key findings on costs of shared water cooperation, management and development

This report has highlighted that the needs for financial resources for cooperation as well as the management and development of shared water resources in transboundary basins are manifold and often perceived as relatively high. It has also highlighted the great importance of member states' commitment and related financial contributions to transboundary water cooperation and basin development.

The costs relating to the establishment and the maintenance – and the effective functioning – of joint bodies vary considerably across the world's basins. This depends largely on the scope and the focus of joint bodies – itself influenced by factors such as the technical capacity of member states and the mandate of the joint body. The costs for managing and developing shared water resources vary even more – again depending on the mandate and the functions a joint body has been equipped with (or the commitments riparian states to a basin with no joint bodies have made to cooperation). It is important to note here again that the costs borne directly by member states of a joint body through national implementation of jointly agreed upon activities typically do not feature in basin budgets and therefore are difficult to include in calculations.

Joint bodies experience an expansion of their mandate and their functions over time. A periodic review to what extent the mandate – and thus the activities that a joint body implements – are still the ones required to address key water management issues in a basin and meet member states' needs can help joint bodies to direct their limited resources to those water management challenges that are of greatest importance in a basin.

At the same time, it should be noted that although costs of both institutionalized cooperation and joint basin management and development may appear high in absolute numbers, they are generally rather low compared to both the benefits cooperation and joint management and development can provide and the overall budget of riparian countries, even if those are developing countries with limited financial capacity. In the Mekong River Basin, for instance, the contributions of member states to the MRC are currently set at around USD 2 million per year per country. Compared to the overall size of the economy (approximately USD 18 billion for Laos in 2018, for example) or government budgets (USD 3.9 billion for Laos in 2019), and in light of the great importance of the Mekong River for the basin countries, this amount does not appear unreasonably high. It is thus often more the prioritization of government spending – and the importance that is accorded to basin cooperation, management and development – that matters.

Since the benefits of transboundary water cooperation are often not sufficiently clear and visible, it can be useful to carry out efforts to identify and communicate such efforts, for example using the

benefits assessment methodology developed by UNECE (2015)⁹ or other approaches to identify, assess and possibly quantify the benefits for all parties involved.

4.2 Key challenges and opportunities of the different funding and financing sources

Identifying and acquiring source of funding and financing for cooperation over shared water resources and for the management and development of those has been a challenge in many basins around the world. The key source of funding of any type of water cooperation, management and development – whether at the national or the transboundary level – tends to be public funding in the form of direct government contributions. With water resources management being a public good, government funding continues to play (or at least should play) a crucial role.

However, in many regions around the world, direct government funding for (transboundary) water management and development has been insufficient. Various other sources have therefore been used or at least explored in the past. This should, however, not distract from the fact that key functions of transboundary water management will remain a public task and are unlikely to generate private financing interest. This requires riparian governments in shared basins to make financial commitments to their basin and its management and development – a task that might be potentially easier in the context of national budget negotiations if the benefits of cooperation are clear to all involved, including those beyond the water sector (e.g. Ministry of Finance, Ministry of Economic Planning, etc.).

Beyond direct government funding of transboundary water management and development, this study has evaluated numerous other types of public as well as some private funding and financing sources. One key takeaway is that there is no single obvious replacement for direct government funding, at least when it comes to covering the core cost and project, program, and activity cost of transboundary water cooperation. Whereas different funding models have been tried across various RBOs and countries, each come with their advantages and disadvantages, but no obvious “winning strategy” has emerged. As RBOs and countries struggle to meet transboundary water cooperation and basin development funding needs, many have suggested that the private sector may offer relief. This study shows that private capital, by and large, is only available for projects that are able to generate a return for its financiers. By their very nature, the operational activities of RBOs do not typically generate revenues, let alone profits, even though their work can have important social, environmental, and economic impacts on the basin and its riparian states. In this context, private capital can, and should, play a role in transboundary water cooperation and particularly transboundary basin development, but this will likely remain limited to infrastructure projects where there is a clear path for private sector financiers to make a fair risk-adjusted return on their investment.

Whereas the above demonstrates that there is no hidden pot of money available, it does provides RBOs and riparian states with a comprehensive overview of potential funding sources that they could consider. The table below summarizes these different funding and financing sources and highlights their respective challenges and opportunities from the perspective of RBOs and riparian states.

⁹ Policy Guidance Note on the Benefits of Transboundary Water Cooperation: Identification, Assessment and Communication, UNECE, 2005, https://www.unece.org/env/water/publication/ece_mp.wat_47.html

Table 2: Opportunities and challenges of funding and financing sources

	Opportunities	Challenges	Use	Example
Direct Member State Contribution	<ul style="list-style-type: none"> • Reflects the public good function of water management • Demonstration of member states' commitment to institutionalized cooperation and multisectoral joint basin development • Ensures financial self-sustainability and independence from external funds • Can have numerous benefits of riparian states committing to cooperation, incl. for peace, regional cooperation and integration, etc. 	<ul style="list-style-type: none"> • Needs strong legal, institutional, and procedural linkages between basin level cooperation, national planning, and management and budgeting • Budget competition against other national priorities • Can be unreliable year to year depending on national budgets • Cost-sharing decision making can be arduous and fraught with conflict 	<ul style="list-style-type: none"> • Core costs • Project, program & activity cost 	<p>Most joint bodies</p> <p>Section 3.1.1</p>
Regional Taxes	<ul style="list-style-type: none"> • Relative stability in year to year funding amounts allows for more effective, future-looking planning • Overcomes weaknesses in national budgets and limits competition against other national priorities • Can help equalize influence between member states with unbalanced budgetary means • Reflects regional nature and integrated approach to shared basins 	<ul style="list-style-type: none"> • Taxes are disconnected from the transboundary water activities, thus potentially reducing involvement and interest of national governments • RBOs typically have limited influence over budget allocation and cannot set the tax rate • Membership of regional body and RBO may not fully overlap, potentially creating tensions about ownership and contributions • Creates dependence on other regional bodies and vulnerability to changes in those 	<ul style="list-style-type: none"> • Core costs • Project, program & activity cost 	<p>CICOS</p> <p>Section 3.1.2</p>
User and Polluter Fees	<ul style="list-style-type: none"> • Reflects the actual use responsibilities of water resources • Prevents the externalization of costs by individual users/user groups at the expense of the entire riparian community • Large industrial water users/polluters may have significant financial means to contribute 	<ul style="list-style-type: none"> • Difficult to establish at transboundary level given different national regulations on usage and polluter fees • High transaction costs (i.e. cost of collection), especially for small-scale users/polluters • Potentially challenging to demonstrate value add of transboundary water collaboration to water end users, thus limiting willingness to pay 	<ul style="list-style-type: none"> • Core costs • Project, program & activity cost 	<p>None at transboundary level</p> <p>Section 3.1.3</p>

		<ul style="list-style-type: none"> • Mispricing of polluter fees can have unintended side effects (excessive pollution or stifling of economic activity) • So far, no successful example of application at transboundary level available 		
Sale of Data and Services	<ul style="list-style-type: none"> • New approach to funding that monetizes joint bodies' products • Can help popularize work of RBO and give it more recognition among the broader public 	<ul style="list-style-type: none"> • Not expected to generate significant funding • May distract work of the joint body away from key water management issues towards more revenue-generating activities 	Immaterial	MRC, CICOS Section 3.1.4
Management & Administration Fees	<ul style="list-style-type: none"> • Potentially effective way to get donors/partners to cover some of the RBO's operating costs • Adds a layer of accountability to donors/partners 	<ul style="list-style-type: none"> • Depends on RBO's mandate (management/administration fees not applicable to coordination-focused RBOs) • Depends on donor/partner policies willingness to pay, which may decline over time • Associated fee may not cover full staff cost • May redirect staff hours away from main aims of the RBO/key water management issues 	<ul style="list-style-type: none"> • Project, program & activity cost 	MRC Section 3.1.5
Project Management Fees	<ul style="list-style-type: none"> • Can give RBOs higher visibility as they are involved in the preparation of potentially large infrastructure projects • Adds a layer of accountability to owners/financiers • Provides substantial learning opportunities for staff 	<ul style="list-style-type: none"> • Depends on the RBO's mandate (project management fees only applicable to RBOs with an infrastructure implementation mandate) • Associated fee may not cover full staff/other cost • Staff must have necessary (and potentially highly specialize) skill set 	<ul style="list-style-type: none"> • Infrastructure development 	NBI Section 3.1.6
Public Loans	<ul style="list-style-type: none"> • Often offer interest rates below market • Repayment likely not tied to financed activity but instead backed by national tax revenues 	<ul style="list-style-type: none"> • Eligibility for loans depends on RBOs legal status • Repayment obligation plus accumulated interest • Currency fluctuations if loan is in hard currency • Can come with extensive conditionality 	<ul style="list-style-type: none"> • Project, program & activity cost • Infrastructure development 	OMVS Section 3.1.7
Public Grants	<ul style="list-style-type: none"> • "Free money," no repayment requirement 	<ul style="list-style-type: none"> • Dependent on the RBO's mandate (only applicable to RBOs with an implementation mandate/projects) • May come with "strings attached" • May not align with RBOs' strategic plans 	<ul style="list-style-type: none"> • Project, program & activity cost • Infrastructure development 	Many joint bodies Section 3.1.8

		<ul style="list-style-type: none"> • Project specific and typically cannot be applied to day-to-day operations 		
Technical Assistance	<ul style="list-style-type: none"> • Can help kick-starting cooperation with both technical and financial capacity • Leverage external expertise and lessons learnt elsewhere 	<ul style="list-style-type: none"> • Can potentially affect ownership of basin cooperation and management • Can create dependencies on external resources (technical, financial, etc.) 	<ul style="list-style-type: none"> • Core costs • Project, program & activity cost 	<p>Many joint bodies</p> <p>Section 3.1.9</p>
Climate Funds	<ul style="list-style-type: none"> • Innovative funding source with potentially high amounts available 	<ul style="list-style-type: none"> • Long and tedious application procedures that sometimes surpass joint bodies' capacity • Legal arrangements and requirements not always clear • Limited successful examples so far • Can be only used for specifically climate-related activities and not for other basin management and development measures 	<ul style="list-style-type: none"> • Climate-related Project, program & activity cost • Climate-related Infrastructure development 	<p>OSS</p> <p>LVBC</p> <p>NBA</p> <p>VBA</p> <p>Section 3.1.10</p>
Private Grants and Donations	<ul style="list-style-type: none"> • “Free money,” no repayment requirement 	<ul style="list-style-type: none"> • May come with “strings attached” • May not align with RBOs' strategic plans • Project specific and typically cannot be applied to day-to-day operations • Rare as philanthropy tends to prioritize contributing to NGOs with hands-on implementation projects over government-led transboundary water cooperation 	<ul style="list-style-type: none"> • Project, program & activity cost 	<p>GLC</p> <p>Section 3.2.1</p>
Private Equity	<ul style="list-style-type: none"> • Through the PPP structure, equity investors are fully incentivized to help project succeed • More material risk transfer to private sector than under traditional (non-PPP) project structure 	<ul style="list-style-type: none"> • Part of PPP project structure, which is expensive and resource-intensive to procure and set up • Equity investors to earn a positive risk-adjusted return so project must generate sufficient revenue • Equity is more expensive compared to public and private debt as equity investors are taking more risk 	<ul style="list-style-type: none"> • Infrastructure development 	<p>Bujagali</p> <p>Nam Theun 2</p> <p>Section 3.3.1 & Section 3.3.2</p>
Private Debt (loans, bonds)	<ul style="list-style-type: none"> • Through the PPP structure, lenders are fully incentivized to help project succeed 	<ul style="list-style-type: none"> • Part of PPP project structure, which is expensive and resource-intensive to procure and set up 	<ul style="list-style-type: none"> • Infrastructure development 	<p>Bujagali</p> <p>Nam Theun 2</p>

	<ul style="list-style-type: none"> • More material risk transfer to private sector than under traditional (non-PPP) project structure • Private lenders add additional layer of due diligence and market discipline • Using private debt reduces cost of capital when compared to an equity-only financing solution 	<ul style="list-style-type: none"> • Lenders expect to be fully repaid (including interest) so project must generate sufficient revenue • Private debt is more expensive compared to public debt as lenders in a PPP are taking more risk 		Section 3.3.1 & Section 3.3.2
Innovative Financing	<ul style="list-style-type: none"> • Tap into private financing sources with potentially lower return expectations as investors seek modest return in combination with social/environmental impact • Potentially give access to debt financing solutions for RBOs that currently cannot borrow 	<ul style="list-style-type: none"> • Largely untested for transboundary water cooperation • Financiers expect to make a social/environmental impact-adjusted fair return so project must still generate sufficient revenue 	<ul style="list-style-type: none"> • Project, program & activity cost • Infrastructure development 	OMVS OMVG
Blended Financing	<ul style="list-style-type: none"> • Leverage grants to reduce project cost • Leverage public debt to reduce overall cost of capital • Leverage private debt and equity, in combination with grants and public debt, to create a relatively low-cost financing structure that mimics the comprehensive risk transfer of a well-structured PPP 	<ul style="list-style-type: none"> • Complex to put together blended financing solution, requiring substantial resources 	<ul style="list-style-type: none"> • Infrastructure development 	Bujagali Nam Theun 2 Section 3.3.1 & Section 3.3.2

5 Conclusion and Takeaways

This last section summarizes the key findings of this report – focusing both on the financial needs for transboundary water cooperation and basin development and the various sources of funding and financing potentially available to meet these needs. These key takeaways based on the analyses in the report and the different examples reviewed can also provide important insights to basin managers, policy makers as well as representatives of the (public and private) financial sector and strengthen their joint efforts to ensure the sustainable funding and financing of transboundary water cooperation and basin development to the benefit of the world’s shared basins and their people.

Highlighting the benefits of transboundary water cooperation and basin development and building strong legal and institutional framework: crucial steps for states and joint bodies with shared basins to mobilize financial resources

- 1. Transboundary water resources management and cooperation are crucial to preventing and mitigating conflict over shared water resources.** In addition, they can fuel development and economic growth in member states as well as improve quality of life indicators. Transboundary water resources management and cooperation can thus provide benefits in the form of win-win solutions that the unilateral use of shared water resources cannot achieve, which is also why transboundary water resources management and cooperation is included in the SDGs. Inability to access needed funding and financing for transboundary water resources management and cooperation in many basins therefore implies that the potential benefits of transboundary basin cooperation and development are not being fully realized.
- 2. Different types of financial resources are needed for different stages of the cooperation and basin development process.** Financial resources are required to collect and process the data and information required to manage the natural resources in the basin; to launch and sustain the process of transboundary cooperation and its institutional arrangements; and to implement investments and other basin management and development measures.
- 3. International basin treaties and arrangements, joint bodies and specifically River Basin Organizations (RBOs) provide the legal and institutional framework for transboundary water resources management and cooperation and are crucial as enabling environment to raise funding or financing.** These legal and institutional frameworks are unique and reflect the vision of their member states. They serve as the basis for generating and sharing the benefits of cooperation over time, across riparian states, and between users. Effective agreements and strong RBOs are also enabling factors to attract and mobilize financial resources needed for transboundary water cooperation and management. In some cases, financial arrangements between contracting parties are included in the legal framework.
- 4. River basin management plans and investment plans play an essential role in joint bodies’ efforts to encourage transboundary water cooperation – including across sectors through a nexus approach – and advance basin development.** They are also an important instrument for communicating the benefits of cooperation to member states and help attract additional financial resources. Implementing these plans typically requires substantial effort and investment, although certain activities and investments may also be done at the national level.

Despite some challenges, domestic budgetary resources from riparian states is and should be the primary financial source to support joint bodies and basin activities

5. **Member states are typically the main contributor to joint bodies' budgets, especially, but not only for core costs.** This is a logical consequence given the common perception of water management as a public responsibility. RBOs' status as intergovernmental organizations compounds this idea as they are created and maintained by contracting states. Besides their contributions to joint bodies' budgets, member states often mobilize financial resources outside the joint body/basin framework for activities implemented at the national level which also contribute to transboundary water management and cooperation.
6. **Joint bodies often struggle to get funding from member states for programmatic costs and transboundary projects as they compete with many other national priorities for budget allocations, challenging their ability to realize the full potential benefits of cooperation.** Core costs and activity costs can weigh heavily on member state budgets in some regions of the world, although their absolute contribution is typically small when compared to overall government expenditure. Stronger engagement with national and local development planning and budgeting processes is needed to ensure sufficient allocation of budgetary resources to joint bodies.
7. **Joint bodies should better communicate the benefit of their work to their member states and all relevant actors within them.** To the extent possible, RBOs should attempt to quantify benefits derived from their work or use qualitative assessments to help individual Ministries of Finance and other ministries in charge of planning better understand the societal impact of transboundary cooperation, thus strengthening the case for larger budget allocations.
8. **The sharing of a joint body's costs between riparian states (equal cost-sharing vs key-based cost-sharing) requires a careful balancing between the principle of sovereign equality and their potentially unequal economic capacities.** Budgets and cost sharing mechanisms can change over time as challenges in the basin or states' financial capacities change. However, cost sharing mechanisms should always aspire to reflect a commitment to cooperation from all states involved, often reflected in the principle of equality.
9. **As principal funders of transboundary cooperation, riparian states should define and express their expectations with regards to joint bodies' work and activities and review and monitor their activities regularly.** Since the RBO's budget comes largely from member state contributions, and therefore ultimately from individual taxpayers, member states should ensure that these resources are spent efficiently and effectively while meeting their collective needs. Explicit demands, clear expectations, and effective monitoring of the activities of joint bodies and their outcomes are important elements.

Other public financing and funding resources: opportunities for financial sources diversification for riparian states and joint bodies.

10. **While the international community often plays a key role in launching and supporting transboundary initiatives, strong local buy-in and ownership is essential for longevity and sustainability.** Strong commitments by countries expressed through domestic funding of transboundary cooperation can facilitate access to international funds or support, which often comes in the form of grants, loans, and technical assistance. Requiring member state funding for operating costs, even during joint bodies' startup years, in return for donor support for specific activities or purchases can help ensure local ownership. Without member state funding, the project is likely unsustainable once external support runs dry. Strategies for achieving financial self-sustainability are therefore an important element of long-term planning.

- 11. There is not silver bullet nor a hidden pot of gold to cover transboundary cooperation funding shortfalls; however, alternatives and/or complements to traditional member state contributions do exist with some proving to be more promising than others.** Unfortunately, funding transboundary water resources management is not simply a matter of searching hard enough. There is no such thing as “free money”: all funding and financing mechanisms discussed in the study come with some sort of strings attached. Even grants may come with certain conditions or requirements. As such, RBOs and member states must be wise in allocating efforts to search for funding opportunities to ensure they pursue funding opportunities that closely align with the RBO’s overall mandate and plans.
- 12. Different funding and financing sources are required at different stages of river basin management and development** as well as during different stages of individual projects. Early project development will require different financial means than infrastructure construction or later operation and maintenance. Accordingly, member states, donors, financiers and others have the opportunity to contribute at different stages in a way that best aligns with the needs of the basin (and individual projects) as well as their priorities.
- 13. Additional public funding and financing mechanisms do exist to complement and complete member states contributions, with some showing more promise than others.**
- a. **Regional tax:** A limited number of RBOs successfully used taxes collected by regional organizations to fund a variety of initiatives, but there are no examples known in which a tax was created for the sole purpose of funding an RBO.
 - b. **User/polluter fees:** While user/polluter fees mechanisms appear to be in line with the principles of integrated water resources management and have been studied for potential transboundary implementation, there are no known examples in which user/polluter fees are actually used to fund RBOs or transboundary water resources management.
 - c. **Sale of data/services:** The sale of data or services tends to have a very low overall revenue potential. Some joint bodies mobilized management fees, administration fees, and project administration fees, but these effectively require donors or project sponsors to cover a part of a joint body’s operating expenses, thus raising questions about sustainability.
 - d. **Loans:** Joint bodies may be able to attract loans to implement certain activities or projects. In practice, many RBOs face challenges in securing loans as they may lack the legal status that would allow them take on loans and/or lack a revenue stream that can be used to repay the loan. As such, it is more likely that national governments, rather than the RBO, will apply for loans and make the funds available to the RBO. Given that repayment is required, loans may be most appropriate for revenue generating activities or projects, although countries can decide to use loan proceeds to fund non-revenue generating transboundary infrastructure or activities.
 - e. **Grants:** Joint bodies may also be able to attract grants to implement certain activities or projects. Whereas grants do not require repayment, they typically come with limitations on what the money can be used for. For example, grant proceeds are often used to implement specific projects or activities and typically cannot be used for the RBO’s day-to-day operational expenditure.

- f. **Climate funds:** Climate funds is a special category of grants that could potentially fund certain activities for joint bodies, although there are few examples to date of RBOs successfully applying for such funds.
- g. **Technical assistance:** Technical assistance provides a way for joint bodies to acquire funding for capacity building and specific projects, but also come with certain requirements and do not provide a permanent solution.

Private funding and financing: potential opportunities to cover transboundary basin infrastructures development costs

- 14. There are very few examples of private funding without repayment expectation being used for transboundary water resources management.** Although some examples of philanthropic funding of joint bodies activities do exist, these are exceedingly rare and have not been found outside of North America.
- 15. Private financing also has a role to play but is typically limited to revenue generating activities or projects.** As private capital seeks a return on investment, deploying private capital tends to be limited to infrastructure projects with robust revenue generating potential, as is the case, for example, with hydropower projects. Whereas private capital can also be employed for non-revenue generating projects, this would require another revenue stream to repay private financiers. In environments with strong governance and high capacity, this revenue stream could come from the government. However, this is less common in emerging markets. Private capital's return requirement limits its applicability to ongoing operations of joint bodies, which typically do not generate revenues.
- 16. Public-private partnerships (PPPs) have been instrumental in leveraging private capital for transboundary water infrastructure projects.** Under a PPP structure, the private financier takes responsibility for the design, construction, financing, operations, and maintenance of a public infrastructure project, while being allowed to earn a return on that investment. The public agency typically retains formal ownership of the project throughout its life and regains operational responsibilities once the asset is handed back at the end of the project term, typically free of charge. A well-structured PPP can help mobilize private capital in the form of debt and equity while also transferring substantial risk from the government to the private party.
- 17. Transboundary water infrastructure projects are endowed with risks given the complexity of a multi-actor environment, but there are risk mitigation instruments to overcome them.** These complexities are compounded in emerging markets where governance, economic strength, and stability may be in short supply. As such, private financiers may be hesitant to get involved if too much of the risk is placed on their shoulders. However, credit guarantees, political risk insurance, and other instruments can be used to overcome some of these issues, helping mobilize private capital for transboundary water infrastructure projects. Cooperative arrangements where several basin states share the cost and risks through joint management and development may be another way to help mitigate risks.
- 18. Blended finance refers to the use of public funding and financing in conjunction with private financing, which has been used to develop water infrastructure project across the globe.** If structured intelligently, governments can use public funding/grants as well as lower cost public financing to cover part of a project's capital costs while still ensuring material risk transfer through the use of private financing for the remainder of the project cost. Many PPPs around

the world have effectively employed the concept of blended finance, although it may not have always been called that.

- 19. Innovative financial instruments are being developed and tested, which could potentially lead to new solutions to finance transboundary water cooperation and development.** Recent financial innovations include green bonds and social impact bonds. The former is to be used exclusively for projects with a climate or environmental focus whereas the latter links repayment to the achievement of certain predefined social goals. Both types of instruments have a repayment expectation, meaning that they are most appropriate for revenue generating projects. In addition, increasing competition from other environmental or social initiatives may make it challenging for RBOs to take advantage of the growing market interest in these innovative financial products. Another ongoing innovation are Blue Peace Bonds. A key challenge that the Blue Peace initiative is trying to overcome is the costly and time-consuming process of negotiating financing terms between the issuer, banks, and governments, thus simplifying the process of raising financing for project implementation, although the practical implications are still being worked out (in a blended finance context, where also public sources are being used for technical assistance and de-risking; hence the Blue Peace Bonds are also an example of Blended Finance under para. 18).
- 20. There is a continued need for further capacity building and exchange of experience and information about funding and financing opportunities, challenges, and lessons learned.** The platform of the Water Convention¹⁰ (serviced by UNECE), among others, provides an opportunity for such capacity building and exchange. Facilitating financing of transboundary cooperation¹¹ will remain in the Water Convention's work program for the years to come.

¹⁰ <https://www.unece.org/env/water/>

¹¹ <https://www.unece.org/environmental-policy/conventions/water/areas-of-work-of-the-convention/financing-of-transboundary-water-cooperation.html>

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