



Background Document

High-Level Workshop on Financing Transboundary Basin Development

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1 Introduction and rationale – Why does financing matter for effective cooperation?

Water management is facing tremendous investment needs worldwide. These investments are required for achieving the Sustainable Development Goals (SDGs) – especially, but not exclusively, SDG 6 on water and sanitation – as well as for meeting a number of other international development and natural resources management commitments, especially in the fields of agriculture/food security (including fisheries and aquaculture), energy security, but also environmental protection and ecosystems. At the same time, recent analyses show that water insecurity leads to economic losses of nearly US-\$500 billion per year on average if only combining losses from adequate water supply and sanitation, flood damages and irrigation (Sadoff et al. 2015; OECD 2018). As a consequence, shortcomings in the water sector can lead to significant GDP losses (of up to 6% until 2050 in some cases as estimated by the World Bank (World Bank 2016a)), further hampering development progress.

Often, the investments made, and financial resources committed to the water sector fall short of actual financing needs. This is due to a number of reasons that relate not only to a lack of financial capacity in many regions around the world, but also to the nature of the water sector – and that water is public good – and related challenges as well as sometimes limited commitment of especially public sector actors to financing the water sector.

These financial shortcomings are particularly prevalent in the field of transboundary water management¹: While 60% of all freshwater flow worldwide occurs in transboundary basins and transboundary aquifers are of crucial, yet insufficiently understood importance, funding for transboundary water management is even more limited than funding for the water sector. Most international public financing goes into the WASH sector and most private capital flows into large infrastructure projects at the national level. This is due to a number of interlinked reasons, namely a lack of financial capacity in some countries and regions of the world, the fact that water is a public good and water management therefore not per se a profitable activity that markets would invest in (especially in those instances of transboundary water cooperation that do not directly relate to investment opportunities in infrastructure) as well as a lack of commitment of states to allocate scarce financial resources to transboundary water management. And this is the case in spite of the well-known benefits that transboundary cooperation can provide for water resources and beyond. This has led to situations in which challenges relating to the transboundary water resources are not sufficiently being addressed, leading to missed opportunities for cooperation that could provide benefits to riparian populations and countries or even lead to disagreements and conflicts between riparian states over shared resources, eventually creating additional costs and losses.

In spite of the importance of the topic, academic and policy-oriented analyses have so far largely neglected the question of financing transboundary water cooperation. Most of the few existing studies have a narrow scope and focus on specific financial needs or financing mechanisms – often with an international emphasis such as development cooperation (see, for instance, GIZ 2007; EUWI 2013) or international private investments – and frequently only cover one basin or region (see, for instance, the work of the Southern African Development Community (SADC), SADC 2010). Where the funding of transboundary water management has appeared more in recent years is through the financing of climate change adaptation (World Bank 2018b).

This background paper to the High-Level Workshop “Financing Transboundary Basin Development” (9 October 2018), held back-to-back with the 8th Session of the Meeting of Parties of the Water Convention (10-12 October 2018) organized by the United Nations Economic Commission for Europe (UNECE), aims to bridge this gap by providing an introductory overview of financing needs as well as financing sources for transboundary water management. It does so by investigating both the different elements of transboundary water management processes that require financial resources ([Section 2](#)) and the different financial means potentially available for meeting these financing needs ([Section 3](#)), before combining these two dimensions into a comprehensive analytical approach for future analysis

¹ Transboundary waters, in this paper, refers to rivers, lakes and aquifers. For the sake of simplicity, the terms “basin management” or “basin development” are being used here, but intend to include both surface and groundwater.

([Section 4](#)). It concludes that the financing needs for transboundary water management are apparent, albeit of different intensity in different basins, but available financial resources are insufficient and, moreover, vary considerably across the different elements of transboundary water management ([Section 5](#)).

2 The transboundary water cooperation process – When is financing needed?

In a first step, it is important to identify different points or situations during transboundary water cooperation when financial resources are required. This helps to disentangle the complexity of transboundary water management, especially as different dimensions of cooperation have very different financing needs. The transboundary water cooperation process during which states negotiate and decide to cooperate, establish and maintain joint bodies for cooperation, develop and implement basin management and development plans and often also decide to develop, operate and maintain infrastructure (jointly owned or national, yet in line with overall basin planning objectives), can be broken down in many different ways. For the sake of this paper, and for matters of comprehensibility, the elements of transboundary water cooperation are identified as:

- 1) Information;
- 2) Institutions; and
- 3) Infrastructure.

2.1 Financing needs for information

Information refers to the data and information (and related systems) that are required to effectively manage a shared basin. Or, data and information on the state of the basin and its resources, risks and pressures as well as the impacts of measures taken – often captured through different basin monitoring exercises and cooperative analytical work (for an overview of activities and related costs see WMO 2015). Examples include the establishment and maintenance of monitoring networks for hydrological data at the transboundary/basin level, the gathering and analysis of data in qualified laboratories, the assessment of the environmental impacts of specific infrastructure projects (in a consistent manner across countries) or the collection of information in a state of the basin report that provides the basis for basin management.

The gathering and processing of data and information often requires significant resources (although the amount will eventually depend on available data and information as well as related capacities in specific country and basin contexts). For instance, the establishment of a basin-wide hydromet system can easily cost several millions of US-\$ depending on availability of nationally owned stations and other technological requirements. In the case of Afghanistan, the establishment of a hydrometeorological forecasting service (including maintenance for a period of five years) requires, according to World Meteorological Organization (WMO) estimates, at least US-\$2 million of initial investments). The establishment of a flood forecasting system, based on hydrometeorological monitoring and the respective analyses, can amount to similar costs. Also, in the case of Afghanistan, WMO estimates initial investment costs of US-\$ 1.8 million. And developing a state of the basin report – including data gathering, consultations with relevant stakeholders at national and basin-wide level as well as printing and dissemination – can cost around US-\$ 250,000 as was the case of the International Commission of the Congo-Oubangui-Sangha Basin (CICOS)'s first state of the basin report and the Nile Basin Initiative (NBI)'s latest state of the basin report in 2018. But for the Mekong River Commission (MRC)'s latest State of the Basin Report that is currently being developed, the cost is estimated to be around US-\$ 400,000.

Data and information gathering, analysis, dissemination and management in the water sector in general, and for transboundary water management in particular is normally a public sector task. Other (non-public) sources of financing for information are therefore limited in number and are eventually be based on public policy measures (such as developing legislation requiring private actors to collect and disclose certain data, e.g. on their water consumption). However, many governments and specific

agencies (such as hydrometeorological services at the national level as well as basin organizations at the transboundary level) lack these financial resources (see, for instance, WMO 2015) either due to overall financial capacity challenges (limited state or ministerial budgets) or due to government priority setting not allocating sufficient resources out of overall government budgets. This is particularly challenging even though there are clear economic gains to be made from good hydrometeorological data availability and analysis in terms of economic losses (e.g. from floods) being reduced and economic opportunities being acquired (see for instance WMO 2015).

2.2 Financing needs for institutions

Institutions capture the legal and institutional framework for cooperation at the basin (or sub-basin) level. This consists of international water treaties (or other legal or policy documents providing the basis for cooperation by expressing states' commitment to substantive and procedural principles of cooperation for their respective basins) and basin organizations (or other forms of joint bodies through which riparian states have agreed to regularly come together and pursue cooperation activities), including national-level institutions and mechanisms supporting them (such as, for instance, the National Mekong Committees in the MRC). Their financing needs are widely acknowledged (see e.g. GIZ 2014a; UNECE 2018a), yet financing challenges remain and have often prevented the establishment of institutions or have put existing institutions under stress. At the same time, well-functioning institutions are themselves a key prerequisite for attracting financing for transboundary basin development, creating interdependences between financial and institutional capacity.

Such institutional settings typically start with **negotiations** between riparian states having acknowledged challenges in their respective basin that require cooperative instead of unilateral action. These negotiations themselves require – albeit limited – funding. These funding needs include the provision of negotiation platforms (in particularly contested basins this is often in neutral locations outside of the basin), travel costs of negotiators and other representatives of involved basin states, as well as – in many cases – a neutral or 3rd party facilitator guiding riparian states through the negotiations. Examples for such processes include the negotiations for the 1960 Indus Waters Treaty (IWT), which was initiated, facilitated and financed by the World Bank, or the 1995 Mekong Agreement from 1991 to 1994, which was facilitated and financed by the United Nations Development Program (UNDP).

Ideally, these negotiations lead to the adoption of international water treaties and – in most though not all cases – to the establishment of basin organizations providing the institutional framework for long-term cooperation. The **financing needs for basin organizations** are relatively well understood (GIZ 2014a; Schmeier 2013). Generally, one can distinguish between core costs and program costs even though the differentiation can be difficult in basin organizations that do not run two different budget lines for this – particularly common with coordination-oriented RBOs, such as the International Commission for the Protection of the Danube River (ICPDR) or the International Commission for the Protection of the Rhine (ICPR), whose main functions relate to coordinating activities to be implemented in member states and therefore often not running a separate program or operational budget.

Core costs capture costs that occur in relation to the very existence of the organization. They consist of staff costs, building costs (and related costs such as maintenance, electricity, etc.) and other items directly related to the maintenance of the organization. These costs therefore depend significantly on the size of the organization (itself being largely determined by the type of organization – a coordination-oriented one with a small secretariat or an implementation-oriented one with a large secretariat (Schmeier 2010)). A basin organization with a small number of staff tends to incur fewer costs than organizations with large secretariats and thus large staff numbers. The ICPDR's core costs, for instance, amount to less than US-\$ 1 million per year while the core costs of the MRC have amounted to an average of US-\$ 2 million per year over the past years (GIZ 2014a).

Program costs, on the other hand, are costs relating to the organization's program. Typically, this includes the costs for basin management and the different activities that are derived from a basin

management plan and/or implemented as a result of an agreement among member states on what needs to be done to achieve a desired state of the basin. As a consequence, they are highly dependent on the organization's mandate and its nature. Accordingly, program costs vary highly across different basin organizations. In the MRC, for instance, program costs have amounted to an average of US-\$ 20 million per year until its recent restructuring (Schmeier 2013; GIZ 2014a). In the Lake Chad Basin Commission (LCBC), the operational budget amounted to US-\$ 1.5 to 2.0 million per year on average in the past years and an additional US-\$ 12 to 14 million project financing that donors did not channel through the basin organization but implemented directly on its behalf.

Financing for institutions (especially in the form of international organizations, which basin organizations typically are) – in the water sector and beyond – typically comes from the public sector as their tasks are fundamental governmental responsibilities. As states make commitments to become parties of international treaties or basin organizations, they also commit themselves to financing these cooperation mechanisms. This does, however, also mean that opportunities for other financing sources are limited for institutions and depend themselves on states initiating and implementing the required legislation and policy choices (e.g. by collecting water abstraction or licensing fees that will then be used for funding institutions).

2.3 Financing needs for infrastructure

Infrastructure refers to water resources infrastructure developed in the basin – ideally as a result of a cooperative planning exercise. This can, for instance, include dams for hydropower generation or irrigation purposes, water treatment plants, navigation infrastructure such as ports or landing sites as well as navigability improvement measures. It includes the planning and the development of infrastructure and the implementation of these plans (and thus the construction of infrastructure) as well as its operation and maintenance.

The financing needs for infrastructure can be broken down further into:

- 1) Preparation of infrastructure projects;
- 2) Development of infrastructure projects;
- 3) Management of infrastructure projects; and
- 4) Maintenance of infrastructure projects.

The **preparation of infrastructure investments** typically includes conducting pre-feasibility and feasibility studies – together with other required documents such as (transboundary) environmental and social impact assessments, management plans, etc. – and the initial design of the project. These costs are not necessarily borne by the actor that will eventually develop an infrastructure project. Instead, it is often state agencies that – based on national and basin development plans – outline the infrastructure needs and plans and engage in their preparation. Costs for such pre-feasibility and feasibility phases depend considerably on the size of the project – with costs in the case of large projects easily amounting to up to 10-15% of overall project costs. In the case of the Rogun Dam (Tajikistan), for instance, about US-\$ 50 million was spent during the feasibility stage (Eshchanov et al 2011). The preparation of infrastructure projects can also be done through joint investment plans. A recent example is the Niger Basin Climate Resilience Investment Plan (World Bank 2016b), developed with the support of the World Bank. It aims at coordinating investments in the basin, identified from a basin management and development plan, to ultimately implement projects based on incoming investments. Such plans require functioning basin organizations that coordinate between the countries involved, provide a platform for negotiation on priorities of investments and follow-up on the implementation of these plans.

The **development of infrastructure projects** – that is, the actual construction of a project – typically requires the largest amount of financial resources. The MRC, for instance, estimates that investments in hydropower for all planned Lower Mekong Basin dams amount to around US-\$ 50 billion (MRC 2009). With regards to specific projects, costs differ based on the sector, the size of the project, the design and many other factors. In most cases, however, they do exceed the financial capacities of

individual actors, especially government agencies in charge of providing the services for which these projects are needed (e.g. electricity through hydropower) or of individual financiers and their respective lending envelopes, leading to the creation of financing consortia. Examples of such financing consortia include the financing of the Lesotho Highlands Water Project (LHWP) or, more recently, the Rusumo Falls Project jointly developed by Burundi, Rwanda and Tanzania, and jointly financed by the World Bank, bilateral and other agencies.

The **management (and maintenance) of infrastructure projects** needs to be taken into account when planning and developing projects from the beginning. Estimates show costs of at least 2-4% of total investment costs are required for maintenance every year (IRENA 2012: 24). These costs can – in spite of the project already being developed and thus financed – constitute a financial challenge if no actor finds it attractive to manage a specific infrastructure scheme or, in the case of private actors, if the management and operation of such a scheme does not provide the expected returns on investment. Countries can therefore engage in these activities and related costs in a cooperative manner. In the case of the Chu-Talas River, for instance, operation and maintenance costs have been included in the agreement between Kazakhstan and Kyrgyzstan who jointly manage dam projects on the river (World Bank 2018b). This is, however, often not enough to address the financing challenges related to operation and maintenance: In the Senegal River Basin, the Organization for the Development of the Senegal River (OMVS) had contracted the South African infrastructure company ESKOM to manage the Manantali Dam. However, ESKOM refrained from renewing an existing contract in 2014 due to income remaining significantly lower than expected rates, making the initiative not profitable for the company. This also left the OMVS – as the owner of the infrastructure scheme – in a dilemma.

3 The sources of financing for transboundary water cooperation – Who pays for what and when?

After having outlined the financing needs for transboundary water management, this chapter now focuses on the potential sources to meet these needs. It concentrates on public and private financing sources as well as on both domestic and international financing.

Before delving into the different financing sources, it can generally be stated that public investments in the water sector fall short of investment needs in many parts of the world. This is partly due to the lack of public financial resources in many countries that face economic crises or more general development challenges. It is, however, also partly due to the lack of importance that is being accorded to the water sector. At the same time, however, in many countries, even when the public fiscal space for investments in the water sector is available, with interest rates being historically low, water is still not invested in as much as is required. This reinforces the impression that often financing the water sector is more a question of political priorities than actual financial shortcomings.

On the private side, there is ample financing available worldwide for investments. The current economic situation is such that an excess amount of private capital of various sorts (from pension funds to capital ventures) is available on global financial markets and investors are looking for investment opportunities. This private financing has, however, not reached the water sector to the extent needed it could to meet the water sector's investment needs. Similar to the public sector, the challenge is thus not the availability of financial resources per se, but the challenge to channel them into the water sector by making investments in the water sector profitable, efficient and effective by providing bankable projects and ensuring good governance around them.

This holds even more true for transboundary water management: Due to the nature of transboundary water resources and the legal, institutional and management challenges that come with this complex nature, basins around the world have encountered challenges in mobilizing the financial means for transboundary water management.

In spite of these challenges, financial resources are available. The following sections will focus on those resources, differentiating between financial resources that are mobilized within a riparian state (or

several of them in the basin context) (see [chapter 3.1](#)) and international financial resources that originate from outside of basin countries (see [chapter 3.2](#)).

3.1 Domestic financial resources

Financing transboundary water management should, first and foremost, rely on financial resources originating from the basin itself, ensuring ownership of the cooperation process. Within the realm of domestic financing, this can be differentiated between public and private financing (leaving the important domain of public-private partnerships aside for this paper).

3.1.1 Domestic public financing

Public financing refers to financial resources – for information, institutions or infrastructure – that is borne by the public sector, that is, by governments at the national, provincial, municipal or local level and by government associated bodies. Primarily, domestic public financing is borne out of each riparian states' national budget. This national budget is typically fed by government income, that is, primarily taxes as well as other charges (fees for services, levees and other payments).

One can thereby differentiate between financial resources that originate from a government's general budget (raised through taxes and other mechanisms of government income) and financial resources originating out of specific funding mechanisms for the water sector (such as fees and charges directly relating to water use, water pollution, etc.). In any case, strong legal, institutional and procedural linkages between basin level cooperation processes and national or even sub-national planning, management and budgeting processes are required.

In addition to the question of the origin of public financing, it is also important to note the different ways to allocate or share such financial responsibilities in the transboundary context: Basin organizations, for instance, are typically financed by their respective member states, which happens through different mechanisms. Financing can thereby occur both through direct financial contributions (membership contributions) or through in-kind contributions (member states, for instance, providing the building and premises for a basin organization's secretariat – such as South Africa in the case of Orange-Senqu River Commission (ORASECOM) – or travel costs and meeting venues such as each member state in the case of the ICPDR).

Financial contributions in the form of membership contributions are typically borne out of a state's direct budget. There are, however, exceptions: CICOS, for instance, is financed partly through a regional organization, the Central African Economic and Monetary Community (CEMAC), which contributes parts of its income generated through its import tariffs to CICOS for those CICOS member states that are CEMAC members. Financial contributions can be shared by member states in an equal manner or on the basis of a specific cost-sharing mechanism (or a combination of the two). Such mechanisms are typically based on specific indicators (e.g. the share of a country in the basin) or a set of such indicators (e.g. in the case of the MRC, where annual budget increases are shared based on a formula that consists of the share of a state in the basin's territory, its average flow contribution, its irrigated area, its population and its per capita GDP). Often, these sharing mechanisms change over time. The ICPDR, for example, moved towards equal cost-sharing as downstream riparians developed economically, and the MRC is currently revising its cost-sharing mechanism in the context of its overall organizational reform, aiming at establishing an equal cost-sharing principle.

In addition to membership contributions – whether in-kind or through financial means – some basin organizations have tried to explore alternative financing mechanisms such as basin funds, funds for specific purposes or business activities such as providing services against certain fees, etc. ORASECOM, for instance, has explored opportunities for establishing an ORASECOM Conservation Fund that would acquire and provide financing for specific conservation projects in the basin that have been identified through the basin management cycle that is based on a thorough assessment of the state of the basin and the challenges it faces. The fund would be its own legal entity under ORASECOM's management (with the involvement of member countries, donors and other stakeholders) and qualify as a charitable company under South African (ORASECOM's seat) company law (ORASECOM 2009). In spite of

significant interest in this innovative mechanism, it was never set up for a number of administrative and legal reasons. Similarly, the MRC has discussed establishing a fund fed by hydropower charges (of 0.1% of hydropower incomes from mainstream projects) that would fund environmental protection and management measures in the basin, which, however, also never materialized due to the different interests of individual MRC member states. Another type of alternative income can be found in the hydropower charges collected by the Zambezi River Authority (ZRA) from the operation of Kariba Dam and the distribution of electricity, although constituting a specific case as the ZRA is not a typical basin organization, but rather a transboundary infrastructure operator owned jointly by two countries.

3.1.2 Domestic private financing

In addition to public financing, which is particularly important for information and institutions, private financing plays an important role at both the domestic and basin levels. This is particularly the case for infrastructure financing, which can rarely be borne entirely out of public budgets. This section therefore focuses largely on private domestic financing for infrastructure.

Private financing can take many different forms. It can either come in the form of direct infrastructure financing instruments (either through direct investments by one investor in a specific project or via financial instruments such as project bonds, specific green/blue bonds, loans and co-investments, infrastructure equity such as infrastructure or utility stocks) or through market vehicles (such as bond funds, Exchange Traded Funds (ETFs), debt funds or other forms of loans and equities). While this paper does not provide details on each private financing option available in capital markets, it aims to emphasize that a variety of private financing instruments exist, yet they tend to vary significantly across regions and countries. Especially in least developed countries, the domestic private capital market is often insufficiently developed, constituting another challenge for private infrastructure financing – in addition to a potential overall lack of capital resources in that country.

It is, however, important to note that domestic private investments are typically focused on investments within a particular country – even in transboundary basins. There are only a few examples of investments crossing borders and targeting infrastructure schemes of transboundary or even basin-wide nature. They include the LHWP, through which South African investments (secured by the World Bank and other international support) helped build an infrastructure scheme in Lesotho that eventually benefitted both countries.

It is worth to specifically mention green bonds (sometimes also referred to as blue or climate bonds). These bonds aim to mobilize private capital resources (at the domestic – but also at the international level) for specific projects, including water management (potentially also at the transboundary level). Similar to conventional bonds, costs for a project (in this case a climate-sensitive or adaptation-oriented project) are typically defined at a fixed amount of capital needed and are raised from interested parties against the commitment to repay that capital (and agreed upon interests) over a pre-defined period of time. While until now no experiences with such bonds exist in the field of transboundary water management, it could be possible that water management entities – including basin organizations – issue such bonds for specific projects (World Bank 2018a). Concepts for such bonds have been proposed, for instance, by the Global High-Level Panel on Water and Peace (Global High-Level Panel on Water and Peace 2017). Similar to other forms of private financing, acquiring financial means for infrastructure projects through green bonds will be considerably easier than acquiring financing for information or institutions.

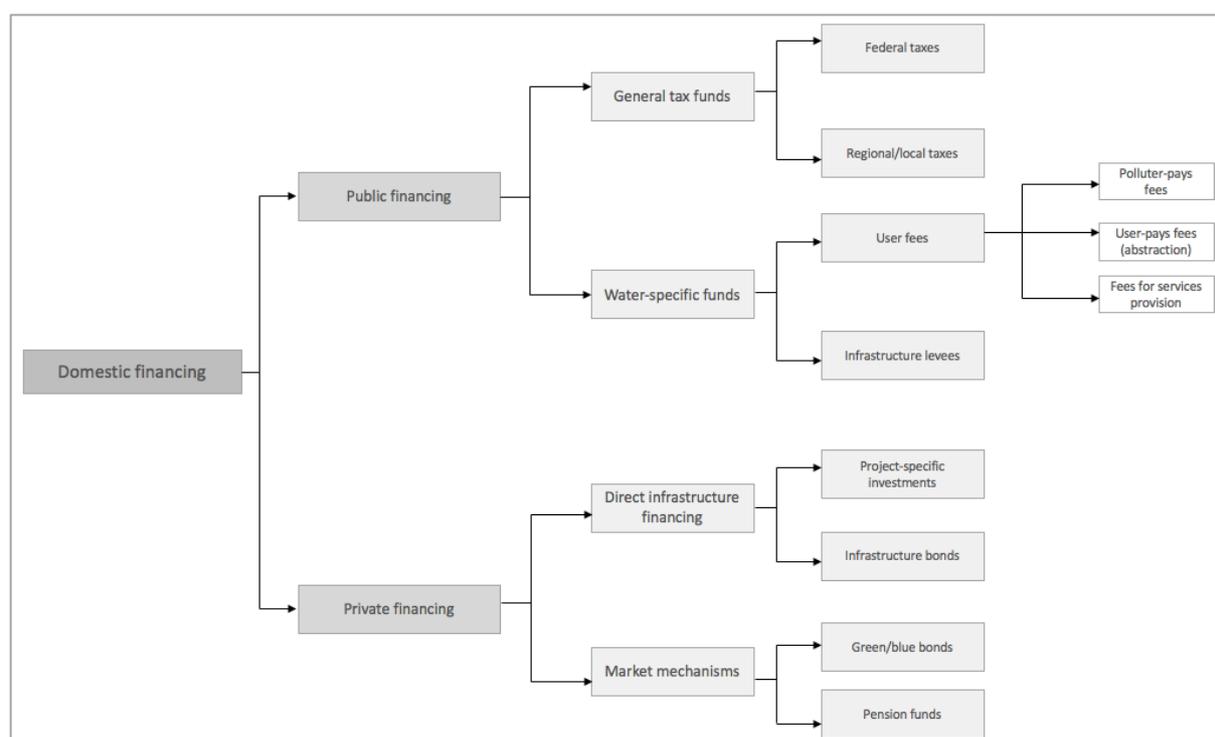
A particular challenge for generating private financing (as for international public financing as well – see below) is the lack of bankable projects. Private financiers require bankable projects in which they can invest based on a risk assessment that relies on information on the risks related to the investment and the expected return on investment. Such information is often lacking – specifically in the transboundary water management context – thus further impeding private investment opportunities. Project preparation facilities have tried to overcome these challenges by pooling project preparation in a more efficient manner and enhancing individual actors' capacity in preparing projects. Examples include the SADC Infrastructure Project Preparation and Development Facility (IPPDF), hosted by the

Development Bank of Southern Africa (DBSA), the Inter-American Development Bank (IDB)'s Project Preparation Facility and the African Water Facility (AWF).

Another way to overcome challenges relating to private investments can be blended financing. Blended financing is a mechanism that uses public (and often international development) finance to mobilize additional private finance in order to scale up overall financial flows into the water sector. The inclusion of public resources helps to improve the risk-return profile of investments that are otherwise not attractive to private financiers due to the high risks associated with them.

Especially for transboundary water management, where risks are (at least perceivably) high and returns on investment not always immediately visible, such blended finance could be an important vehicle to overcome investment shortages. So far, practical experience with the use of blended financing for transboundary water management are, however, limited. If at all, they relate to the development of infrastructure. For information or institutions, such mechanisms have so far not been used. In addition, international development banks such as the World Bank are increasingly developing guarantee mechanisms for facilitating private investments, also reflecting the increasing acknowledgement that due to the specific nature of the water sector a combination of public and private financing is required.

The figure below summarizes the different types and sub-categories of domestic financing and provides some examples.



3.2 International financial resources

In addition to domestic resources – which fall short of financing needs in many regions either due to actual financial capacity gaps in the respective countries or due to a limited importance accorded to transboundary water management – international financial resources often help finance transboundary water management.

While there are many ways to categorize the different financing sources, this paper will focus on:

- 1) Donor financing through development cooperation;
- 2) International financial institutions (IFIs); and
- 3) International climate funds.

3.2.1 Development cooperation and donor financing

In parallel, transboundary water management has been facing severe domestic financing challenges yet has increasingly been promoted by the international community as the way to approach the challenges that arise from the transboundary nature of many of the world's water resources (especially since the 2000s in the context of the paradigm shift towards integrated water resources management (IWRM)). As a result, the international donor community has increasingly engaged in financing cooperation efforts in the developing world.

Since the 2000s – and especially in the 2010s – a number of bilateral donors have supported transboundary water management in different basins. It is interesting to note that the assistance basins have received varies considerably between basins: Some basins have received significant financial support from a number of donors (e.g. the Nile River Basin, which in 2011 was supported by ten different donors or the Zambezi which in the same year was supported by five different donors (EUWI 2013)). While this can be regarded as a signal of priority international attention to these basins, it can also come with challenges relating to donor coordination. Other basins have received limited or no support. Overall, in Africa, in 2011 only 21 out of the 59 transboundary basins have received considerable development financing (EUWI 2013), thus leaving the majority of basins in Africa without external financial support. The support for transboundary aquifers is even weaker.

Within the realm of donor financing, it can generally be differentiated between financial and technical development assistance – although both often come hand in hand in order to ensure that investments made with the help of financial assistance are sustainable by ensuring sufficient human and organizational capacity to manage these investments over time. Financial assistance takes the form of direct financial contributions (e.g. to the budget of basin organizations, by funding individual staff positions of an organization, by directly paying for equipment or by funding individual projects and activities under an organization), grants or loans. These are often provided along specific sectoral focus lines and/or specific conditions. Technical assistance, on the other hand, consists of advisory services and capacity building to actors in the water sector (e.g. ministries, basin organizations, other agencies). Examples include the German government's engagement through the Gesellschaft für internationale Zusammenarbeit (GIZ) in a number of transboundary basins in Africa, supporting the development of capacities in African basin organizations with regards to facilitating dialogue and information exchange, building institutions, harmonizing legal approaches as well as facilitating infrastructure developments (GIZ 2014b). A portion of such capacity building is also implemented by international and/or non-governmental organizations such as the International Union for Conservation of Nature (IUCN) and its Building River Dialogue and Governance (BRDIGE) Program (IUCN 2015) as well as by international organizations such as the United Nations Educational, Scientific and Cultural Organization (UNESCO)

3.2.2 International financial institutions (IFIs)

A specific type of development cooperation is constituted by the support of IFIs primarily in the form of multilateral development banks (MDBs) such as the World Bank, which also include regional development banks in recipient countries such as the Banque de Développement des États de l'Afrique Centrale. IFIs finance projects in the form of long-term loans at market rates, very long-term loans (also known as credits) below market rates, and through grants – depending on the recipient country's economic status and development level. In the domain of transboundary water management, examples include the World Bank's engagement in the Mekong River Basin through the Mekong Integrated Water Resources Management Project, in the Lake Victoria Basin through the Lake Victoria Environmental Management Program and in the Volta Basin through the Volta River Basin Strategic Action Programme Implementation.

In some cases, IFIs such as the World Bank also manage trust funds that bundle financial resources from different donors (often bilateral ones) for a specific region and/or topic. Prominent examples are the World Bank's Cooperation in International Waters in Africa (CIWA) program, which aims to assist governments in shared basins in Africa to cooperatively manage their water resources for sustainable

and climate-resilient growth, the World Bank's South Asia Water Initiative (SAWI), supporting water resources management at the basin level, or the World Bank's Central Asia Energy Water Development Program, addressing basin-level challenges relating to transboundary water and energy issues.

The Global Environment Facility (GEF) is a specific mechanism for supporting – among other topics – cooperation over shared water resources. Through its implementing agencies, it assists countries or entire basins and their countries in the development and implementation of transboundary water management. Basins supported by GEF, among many others, include the Bug and Neman Basins (and the underlying aquifer system), the Danube River Basin, the La Plata Basin, the Nile River Basin as well as the Pungwe, Buzi and Sabi River Basins (GEF 2018). As GEF is also an implementing mechanism for financial dimensions of the United Nations Framework Convention on Climate Change (UNFCCC) and manages a number of climate funds, it is (partly) also a climate finance mechanism and will also be considered in the next section.

Without going into further detail here, it should be noted that IFIs can also support or leverage private funding into water management, e.g. through increasing the attractiveness of investments to private investors through better risk management (e.g. through institutional investment guarantee and risk management schemes such as the one provided by the World Bank's Multilateral Investment Guarantee Agency (MIGA)). These mechanisms are often applied for large projects, especially in the hydropower sector.

3.2.3 International climate funds

In recent years and in the context of the global climate change regime², which commits developed countries to financially support both mitigation and adaptation in developing countries), a new source of international financing has developed that can be of importance for transboundary water management as well: international climate funds. Such climate finance needs to be differentiated from development cooperation as it arises out of a climate change-specific treaty obligation, yet shows some similarities. Any applications to the climate funds need to focus on the climate change impacts in the specific basin and how to increase resilience in this regard as they are an integral part of the UNFCCC framework and intended to help meet these commitments.

While this paper cannot focus on all available climate finance mechanisms in detail, the following paragraphs provide information on some of the key mechanisms of (potential) relevance to transboundary water management³: The **Adaptation Fund** was established in 2007 under the Kyoto Protocol (and is financed through the Kyoto Protocol's Clean Development Mechanism (CDM), which generates funding for projects in developing countries). It is managed by GEF and allows for direct access by countries (if they have established dedicated and accredited national implementing entities (NIEs)) without the involvement of implementing agencies (as it is normally the case with GEF projects). It supports developing countries in coping with the effects of climate change, which can potentially include transboundary water management. The **Green Climate Fund** (GCF) is another mechanism for climate financing potentially applicable for transboundary water management as well. It was established in 2015 with the aim to finance activities that enable enhanced adaptation (as well as mitigation) in the context of developing countries Nationally Determined Contributions (NDCs).

Specific climate funds are available for specific groups of countries. The Special Climate Change Fund (SCCF), for instance, provides support to adaptation projects in developing countries for specific sectors (including water management) and under specific conditions (World Bank 2018a), while the Least Developed Countries Fund (LDCF) supports the preparation and implementation of National Adaptation Programs of Action (NAPAs) in least developed countries, potentially also including (transboundary) water management adaptation mechanisms.

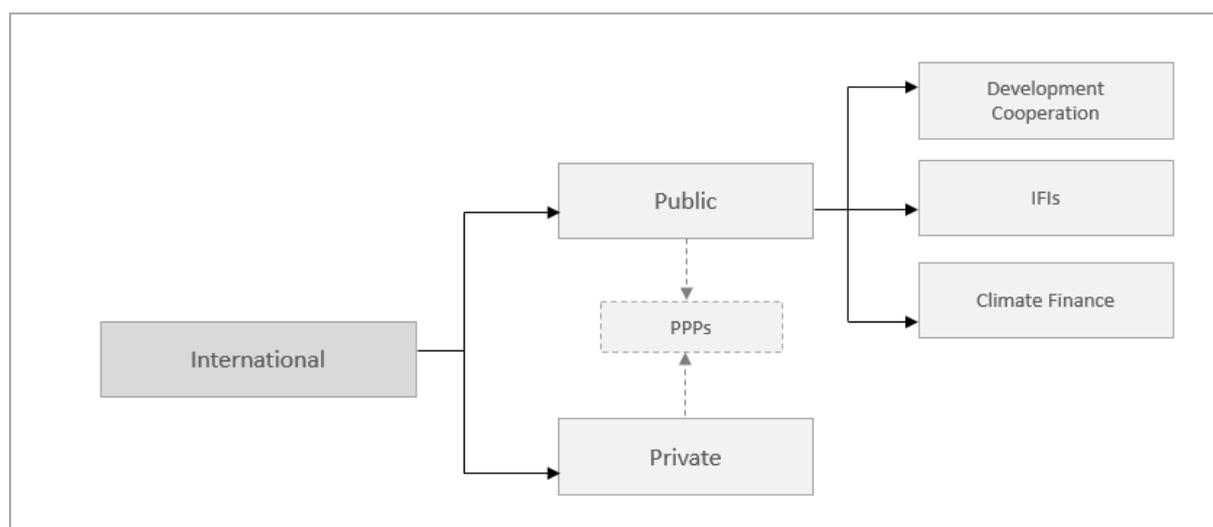
² Article 4.3, United Nations Framework Convention on Climate Change, 1771 UNTS 107; S. Treaty Doc No. 102-38; U.N. Doc. (1992)

³ A comprehensive overview of climate funds (and related financing mechanisms) can be found in World Bank 2018a: 37-40.

The experience of financing transboundary cooperation over shared water resources through climate funds is, however, still limited and only a few examples exist: The Lake Victoria Basin Commission (LVBC), for instance, has developed a proposal for the Adaptation Fund for adaptation projects. It was developed on the basis of a vulnerability assessment and a Climate Change Strategy and Action that were developed by LVBC with the support of external partners (World Bank 2018a), thus requiring significant previous investments in the basin organization, the basin management and planning process and individual projects in order to generate new funding for adaptation. The Sahara and Sahel Observatory (OSS), an organization also in charge of managing the North-West Sahara Aquifer System, has successfully been accredited with the GCF, allowing it to prepare project proposals for (transboundary) water management in the context of climate change.

Overall, however, accessing climate funds for transboundary water management is thus far still in its infancy. This is not only due to limited capacity of basin organizations and other relevant actors in preparing proposals for these funds (an activity that itself requires considerable human, technical and financial capacity), but also due to the fact that transboundary water management does not rank particularly high on these mechanisms' agendas and it often remains unclear whether and to what extent regional entities and intergovernmental organizations such as basin organizations can directly access these funds. UNECE, the World Bank, the African Development Bank (AFDB) and the European Investment Bank (EIB) have supported basins in developing bankable projects by organizing a training on this topic in June 2017 in Dakar and preparing a dedicated publication (in preparation).

The figure below summarizes the different types and sub-categories of international financing, especially with regards to public financing as discussed above.



4 Making sense of transboundary water cooperation financing – An analytical matrix

The main challenge in financing transboundary water cooperation and management is not necessarily – as the previous chapter has highlighted – the availability of financial resources. Instead, it is the difficulty to find a match between available financial resources (stemming from different sources) and the specific needs in the cooperation process. This is further complicated by the fact that financial resources might be available more easily for some steps in the cooperation process than in others (with information and institutions being particularly challenged by the fact that they are a core public sector/governmental responsibility) and/or different providers of (potential) financial resources might prefer engagement in some steps of the process more than in others. It is therefore important to map the different potential sources of financing for transboundary water cooperation against the different steps in the cooperation process during which financial means are required in order to implement different activities and achieve specific outputs and outcomes.

The table below presents a first and still preliminary way to map financing needs against financing sources. For example, it can show that for information and institutions, financing tends to be available through the domestic public sector (although often in a limited manner, not meeting all financing needs) and through international public/development financing, whereas for infrastructure more financing options exist as domestic private financing as well as international private financing (not covered in this report) come in as additional financing sources. Based on this, policy-makers will be able to see not only which financing sources can feed into which financing needs, but will also be able to map where the biggest financing challenges and gaps occur and where additional effort has to be put into identifying and acquiring financial resources. It served as a basis for discussion during the high-level workshop on 9 October 2018 and will later be elaborated further in a more detailed manner (e.g. by differentiating into more sub-categories under the different categories).

		Information	Institutions	Infrastructure
Domestic	Public			
	Private			
International	Development cooperation			
	IFIs			
	Climate funds			

What the analyses and the discussions during the workshop showed thus far is that while transboundary basin cooperation and development are of utmost importance, the financing available still falls short of actual needs – in spite of various different types of financing being available at the different stages of the cooperation process. This is reflected when mapping the financing sources against the needs in the table above, with public sources (domestic and international) largely required – but often insufficient – during the initial stages of cooperation and private financing (domestic and international) coming in with the development of specific infrastructure investment projects only. It is therefore particularly important to explore different existing – but also innovative (such as climate financing) – financing sources (public and private as well as domestic and international) in order to ensure sustainable financing long-term.

5 Conclusions and recommendations

Financing the water sector – and transboundary water resources management and development in particular – is crucial for the future sustainable and peaceful development of communities, states, regions and the entire planet. Due to the tremendous relevance of transboundary water resources for human well-being, economic growth and development opportunities as well as environmental sustainability, it is important that sufficient funding is available for their use, management, development as well as protection. The workshop clearly highlighted that, however, a financing gap exists. In many regions of the world, the needs for financing the gathering or sharing of data and information among riparian states, the establishment and maintenance of institutions that ensure the cooperative management of shared water resources or the development of water infrastructure projects that contribute to harvesting the benefits of cooperation are not adequately met. During the workshop, experiences from different regions also showed that it is often not (or not only) the shortage of financial means that contributes to this gap. Instead, it is the lack of incentives to finance transboundary water resources development – either for riparian states' governments that do not yet see the benefits cooperation can provide and are therefore reluctant to invest in it, or for the private sector – both domestic and international – that does not find sufficient bankable projects or is repelled by the (perceived) risks of projects in basins that are shared by several countries. The financing gap therefore needs to be addressed from a number of angles. The following actions were highlighted by workshop participants:

- **Share information within and between basin on financing needs and financing sources** for mutual learning and exchange, providing water managers and policy makers with a better understanding of the financial aspects of international cooperation over shared watercourses;
- **Raise awareness of the benefits to be harvested from transboundary cooperation** for domestic governments (at all governance levels) as well as for regions as a whole, providing incentives for investing resources into the different dimensions of the transboundary cooperation process;
- **Strengthen legal frameworks** – at the global as well as at the basin and in particular at the national level – that serve as a foundation long-term stable cooperation and by reducing risks for riparian parties as well as domestic and external financiers thus attracting financial resources. The Water Convention provides a useful basic legal framework to facilitate transboundary cooperation between riparian states;
- **Strengthen joint bodies** in basins that institutionalize cooperation commitments over time, generate benefits of cooperation through joint action and therewith reduce risks for financiers;
- **Develop basin management and investment plans** that allow for coherent basin planning, the identification and implementation of the most effective projects in a basin and thus also coherent financial planning;
- **Develop bankable projects** and their adequate promotion towards eligible financiers on the basis of basin management and development plans in a coherent and integrated manner and through effective basin institutions; and
- **Strengthen public sector commitments** towards fulfilling their responsibilities in providing public services in the management of shared water resources through contributing adequate financial capacities.

The workshop also confirmed that knowledge about the financing needs (and the importance of meeting them) and the potentially available financing sources is limited among water managers and water policy-makers. Workshop participants and the organizers – expressed in the Co-Chairs Summary – therefore called for increasing the importance of the financing topic in international processes relating to water, climate and development in order to provide the issue with the relevance it deserves on both domestic and international agendas and to step up both domestic and international financing commitments.

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Acronyms

AWF	African Water Facility
AFDB	African Development Bank
BRIDGE	Building River Dialogue and Governance
CDM	Clean Development Mechanism
CEMAC	Central African Economic and Monetary Community
CICOS	International Commission of the Congo-Oubangui-Sangha Basin
CIWA	Cooperation in International Waters in Africa
DBSA	Development Bank of Southern Africa
EIB	European Investment Bank
ESKOM	Electricity Supply Commission
ETF	Exchange-Traded Fund
GCF	Green Climate Fund
GEF	Global Environment Facility
ICPDR	International Commission for the Protection of the Danube River
ICPR	International Commission for the Protection of the Rhine
IDB	Inter-American Development Bank
IFIs	International Financial Institutions
IPPDF	Infrastructure Project Preparation Facility
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
IWT	Indus Waters Treaty
LCBC	Lake Chad Basin Commission
LDCF	Least Developed Countries Fund
LHWP	Lesotho Highlands Water Project
LVBC	Lake Victoria Basin Commission
MIGA	Multilateral Investment Guarantee Agency
MDBs	Multilateral Development Banks
MRC	Mekong River Commission
NAPA	National Adaptation Programs of Action
NBI	Nile Basin Initiative
NDCs	Nationally Determined Contributions
NIEs	National Implementing Entities
OMVS	Organization for the development of the Senegal River
ORASECOM	Orange-Senqu River Commission
OSS	Sahara and Sahel Observatory
SADC	Southern African Development Community
SAWI	South Asia Water Initiative
SCCF	Special Climate Change Fund
SDGs	Sustainable Development Goals
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organization
ZRA	Zambezi River Authority