

UNLOCKING AFRICA'S TRANSBOUNDARY WATER POTENTIAL



AFRICAN DEVELOPMENT BANK GROUP





Inland Delta of the Niger River, Mali, acquired October 17, 2014

Report production credits

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Background and key messages

This report encapsulates the findings from a study commissioned by the African Development Bank in 2013, and identifies key constraints to managing and developing water resources in Africa's transboundary basins in order to support regional integration. It also provides some guidance on how to address these constraints so that the development of transboundary water resources can support the broader goals of regional integration.

Key messages

Africa's water is underdeveloped, not scarce

- Africa's low-level of water resources development and utilization constrains its growth.
- Only 5% of Africa's water resources are currently utilized. African ministers seek to raise this to 40% by 2030.¹
- The challenge in many parts of Africa is economic, not physical water scarcity.
- The low level of water utilization is often due to underdeveloped user sectors.

Water development and management should support users and build water security

- Africa needs to develop its water resources in support of user sectors.
- The goal of water resources development and management is sustainable social and economic development and water security; on shared rivers, it should also support regional integration.
- Water resources development and management must interface effectively with national development planning at national and regional level.

Shared rivers need not be an obstacle to development

- Many of Africa's rivers are shared by a number of countries.
- Most water scarce countries in Africa are not heavily dependent on shared rivers.
- Even on shared rivers, most water management and development happens at national level.
- Collaboration on shared rivers can nevertheless contribute significantly to regional integration.

Institutions for water resources development and management are critical public goods

- Water management institutions are important public goods that underpin water security and support the development of user sectors.
- Strong national water institutions are the foundation for regional water cooperation as well as for national growth and development.
- There is no ideal organizational architecture for cooperation on shared rivers; institutional arrangements must be designed to meet the specific contextual needs.

'Transboundary', shared river, institutions must be fit for purpose and meet real needs

- Transboundary cooperation is often constrained by lack of trust between riparian parties, limited coordination between user sectors and a lack of finance to promote regional projects.
- The primary functions of transboundary water resources development and management institutions are to build trust, promote communication and information sharing and agreement on water use between countries that share rivers.
- The majority of effective transboundary river investment projects are implemented only by the countries concerned, not by all-embracing river basin organisations.
- For transboundary projects to be feasible, participating countries should benefit in proportion to their contribution.



Inland Delta of the Niger River, acquired October 17, 2014

¹ Decisions of the 11th Executive Committee of the African Ministers Council on Water (AMCOW), Cairo, 2013



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² The donors are: the governments of Denmark, the Netherlands and Canada.



Irrigation projects along the Orange River at the Namibia and South Africa border, acquired February 17, 2010

Abbreviations

ADF	African Development Fund
AfDB	African Development Bank
AMCOW	African Ministers' Council on Water
ANBO	African Network of Basin Organizations
AU	African Union
AWF	African Water Facility
CAR	Central African Republic
CSP	Country Strategy Paper
EU	The European Union
IGAD	Intergovernmental Authority on Development
IRWR	Internal Renewable Water Resources
IWRM	Integrated Water Resources Management
JPTC	Joint Permanent Technical Commission
LCBC	Lake Chad Basin Commission
LHDA	Lesotho Highlands Development Authority
LHWP	Lesotho Highlands Water Project
LUSIP	Lower Usuthu Smallholder Irrigation Project (Swaziland)
MDWPP	Multi-Donor Water Partnership Programme (AfDB)
NBA	Niger Basin Authority
NBI	Nile Basin Initiative
NELSAP	Nile Equatorial Lakes Subsidiary Action Plan
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
OMVG	Organisation pour la Mise en Valeur du Fleuve Gambie (The Gambia River Basin Development Organization)
OMVS	Organisation pour la Mise en Valeur du Fleuve Senegal (Senegal River Basin Development Authority)
OWAS	Water and Sanitation Department (AfDB)
REC	Regional Economic Community
RISP	Regional Integration Strategy Paper
RMC	Regional Member Countries (AfDB)
SADC	Southern African Development Community
SDG	Sustainable Development Goal
SPV	Special Purpose Vehicle
TB	Transboundary
TBWRD&M	Transboundary Water Resources Development and Management
TPTC	Tripartite Permanent Technical Commission
UNEP	United Nations Environment Program
VBA	Volta Basin Authority
WRD&M	Water Resources Development and Management
ZAMCOM	Zambezi Watercourse Commission



Irrigated fields, El Gezira, Sudan, acquired December 25, 2006

Note on terminology:

Rivers that form the boundary between two countries or that cross national boundaries are described as international, transboundary or shared. These terms are used interchangeably in the report.

As well as “river”, the terms watercourse and basin are also used. A river is usually taken to address only “surface waters”, a broader term which includes lakes and wetlands. A watercourse explicitly includes underground water that flows to the same point as a river. A basin, or more specifically a “drainage basin” is the whole area from which water flows into a watercourse, including all land draining to a particular point. A country may thus be a “basin state” although no shared river bounds or crosses its territory.

This report uses the term “basin” to describe an area, including land, where activities may affect the availability or quality of water. It uses river rather than watercourse because the discussion is usually about surface waters unless explicitly provided to the contrary.

UN Watercourses Convention (1997)

(a) “Watercourse” means a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus;

(b) “International watercourse” means a watercourse, parts of which are situated in different States;

Helsinki Rules (1966)

Art. II - An international drainage basin is a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus.

Art. III - A “basin State” is a State the territory of which includes any portion of an international drainage basin.



Flooding along the Shire River, Mozambique and Malawi, NASA, acquired January 26, 2015

INTRODUCTION: Africa's transboundary water potential

Africa's water is underdeveloped, not scarce

- Africa's low-level of water resources development and utilization constrains its growth.
- Only 5% of Africa's water resources are currently utilized. African ministers seek to raise this to 40% by 2030.³
- The challenge in many parts of Africa is economic, not physical water scarcity.
- The low level of water utilization is often due to underdeveloped user sectors.

Overall, Africa uses about 5% of its water resources. Two thirds of African countries have developed less than 20% of their agriculture production potential; less than 5% of the cultivated area is irrigated; ⁴ only 5% of Africa's hydropower potential has been developed. The immediate reason for Africa's low level of water utilization is that potential user sectors – energy, agriculture, industry, urban development – are poorly developed. They are constrained by high cost structures and limited markets. Africa's highly variable rainfall and river flows add to these problems that expose communities and whole countries to climate risk, locking them into poverty. Current climate variability with its droughts and floods will likely be aggravated by climate change, constraining water-based developments.

To overcome these challenges, infrastructure investment is often required to store water and transport it to where it can be productively used. But the high initial costs and long implementation timeframes for major resource development are often unaffordable to users; they also limit the immediate returns from infrastructure investments and uncertain cash flows from water resource infrastructure are unattractive to private finance. Structured development finance is therefore needed.

At continental level, in 2008, the African Union expressed its concern about the underutilization and uneven occurrence of water resources in Africa, which it said, presented a growing challenge to the achievement of food and energy securities. The AU Heads of State committed their countries to “ensure the equitable and sustainable use, as well as promote integrated management and development, of national and shared water resources in Africa”. They outlined a range of interventions and called for “African Ministers in charge of water and finance in collaboration with the African Development Bank and development partners, to hold a meeting of Ministers of Water and Finance to develop appropriate financing policies.”⁵

The African Ministers' Council on Water (AMCOW) is acting to operationalize these commitments. As well as building the institutions needed, AMCOW has proposed a target of increasing “to 40% of harvest potential, the productive use of Africa's water resources under



With its 54 states and low population density, Africa is the most fragmented of continents.

Economic integration is critical to building economies of scale and achieving international competitiveness. It also helps to ensure that the benefits of growth are shared.”⁶

managed conditions”⁷ while the Regional Economic Communities (RECs) have all initiated activities to promote cooperation in water resources development and management. At river basin level, there is a growing network of organizations, coordinated under the umbrella of ANBO.

Neither water management nor regional integration is simple, or well understood. The inherent complexity of water resources management is intensified where water is shared in transboundary rivers, while approaches to regional integration must be adapted to the different dynamics of each region and each shared river.

There is indeed room for improvement and much more that can be done. But action needs to be underpinned by a better understanding of the contribution of water and its management to development and regional integration. Water in its natural state is a common pool resource while the critical water management functions and the institutions required to perform them, at national and regional level, need to be recognized and supported as public goods.

This report identifies key constraints to managing and developing water resources in Africa's transboundary basins in order to support regional integration. It also provides some guidance on how to address these constraints so that the development of transboundary water resources can support the broader goals of regional integration.

³ Decisions of the 11th Executive Committee of the African Ministers Council on Water (AMCOW), Cairo, 2013

⁴ UNEP, Africa Water Atlas, 2010

⁵ AU, Sharm el Sheikh declaration, 2008

⁶ AfDB Development Effectiveness review, 2012

⁷ Decisions of the 11th AMCOW Executive Committee of the African Ministers Council on Water (AMCOW), Cairo, 2013

THE NEED: develop and manage Africa's water resources

Shared rivers need not be an obstacle to development

- Many of Africa's rivers are shared by a number of countries.
- Most water scarce countries in Africa are not heavily dependent on shared rivers.
- Even on shared rivers, most water management and development happens at national level.
- Collaboration on shared rivers can nevertheless contribute significantly to regional integration.

2.1 The challenges of shared rivers and regional integration

The question to be herein addressed is how the management and development of water resources generally, and transboundary waters specifically, can best contribute to regional integration. To answer this, it is necessary to understand how water contributes to development and what factors limit its potential contribution.

Much of Africa's water resources are found in 63 river basins shared between countries (*Figure 1*), with 16 countries depending on flows from neighbours for more than 40% of their water (*Figure 2*). The fact that there are no region-wide cooperative frameworks or agreements to guide the use of shared waters, except for Southern Africa⁸, raises concern that conflict might develop when demand for water increases – though at present there are few active disputes, aside from those involving the Nile river waters. The lack of region-wide cooperation is also believed to impede water use for development⁹.

Unlike other sectors such as roads, railways, power lines or telecoms, water has its own natural infrastructure of rivers, lakes and underground aquifers. It does not need primary networks to link communities and countries. Hence, built infrastructure is required only where the natural infrastructure does not already meet the water needs of communities and countries.

On one hand, until demand grows, it is often neither necessary nor cost-effective to build larger, regional infrastructure. On the other hand, effective institutions are needed at all levels to perform critical water management functions and unlock water's potential contribution to development. As such, fostering regional integration is without doubt a complex challenge.

Africa's water challenges in general — through the broader lens of promoting development and regional integration:

Physical water scarcity is not the dominant challenge

Aside from the special case of the heavily used and increasingly contested Nile River, physical water availability at a national scale is not the dominant concern in sub-Saharan Africa generally, nor is it in its shared rivers in particular (*figure 3*).

Economic scarcity, due to a lack of financial resources, is the major constraint

Low levels of water use are often due to the absence of enabling storage and transmission infrastructure because of financial constraints. It is thus important to distinguish between economic water scarcity and physical water scarcity (*figure 4*).

Downstream dependence is not generally linked to scarcity

Aside from Egypt and Eritrea, the region's water-scarce countries are not greatly dependent on upstream neighbours (*figure 2*).

Infrastructure investment can reduce conflicts arising from economic water scarcity

Conflicts may arise where water is available, but cannot be used, due to lack of infrastructure. Investments in WRD&M can therefore contribute to peace and security in addition to social and economic development.

Limited financial viability of water resources projects

Few opportunities for large water resources investments are immediately financially viable, except for certain hydropower and urban water supply projects.¹⁰ Financial viability challenges are aggravated by high cost structures and the sheer size of many African countries, which impose additional transport costs.¹¹ However, the benefits from investments that reduce the impact of floods and drought or expand irrigation often greatly exceed the costs; they are thus economically viable at the level of the national and regional economy.



SPOTLIGHT

Evidence of the limited number of financially viable water resources projects is provided by the portfolio of the Emerging Africa Infrastructure Fund, which supports private sector engagement in infrastructure. This had no committed water sector projects (although there were two hydropower projects) and only one of its pipeline of 30 projects in 2012 was for an urban water supply in Ghana; there was also a possible additional hydropower project.

⁸ The SADC Protocol on Shared Watercourses (revised in 2000) provides a framework for all countries in the sub-region to manage their shared water resources.

⁹ This concern is specifically raised in the Terms of Reference for the present study (Annexe1)

¹⁰ This issue is discussed in detail in Financing of water resources management: Experiences from sub-Saharan Africa, EUWI Finance WG Report, 2012.

¹¹ Can Africa Claim the 21st Century?, World Bank, 2000



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Only 5% of renewable water resources are being used.



Much of the continent's surface water resources are found in 63 river basins that are shared between countries with many cases where there are multiple basins per country and multiple countries per basin.

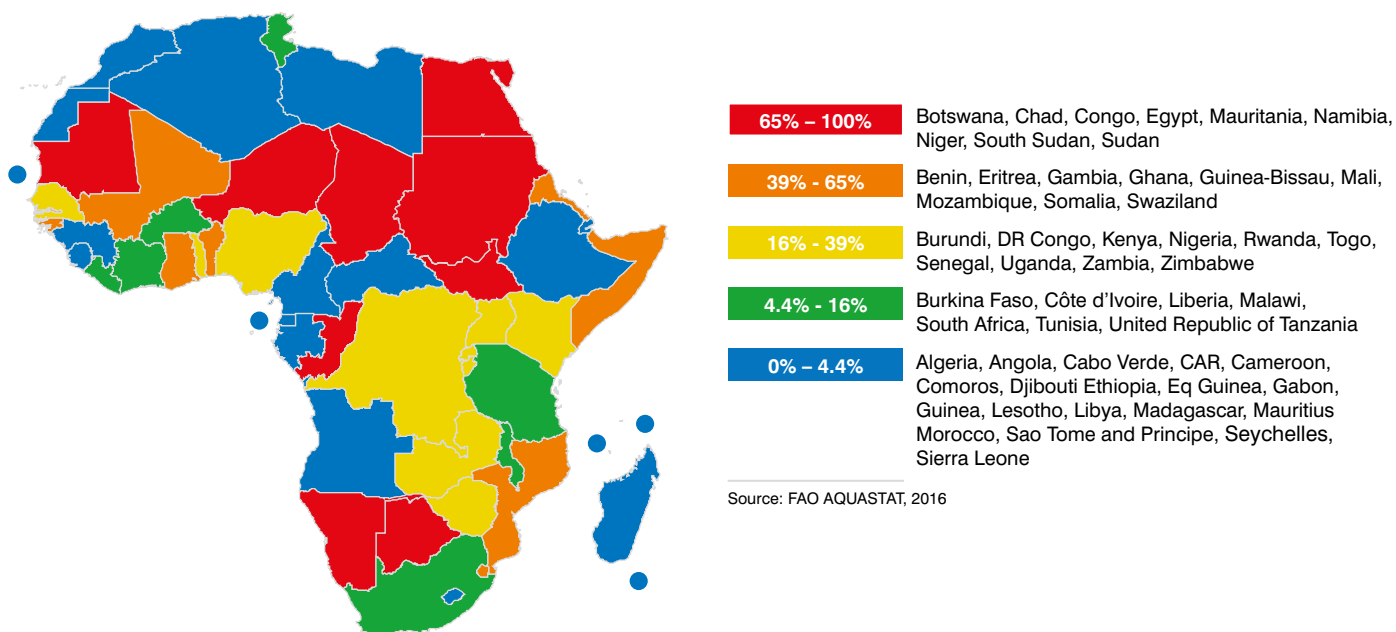


Figure 2 Africa's water dependency ratios (%)

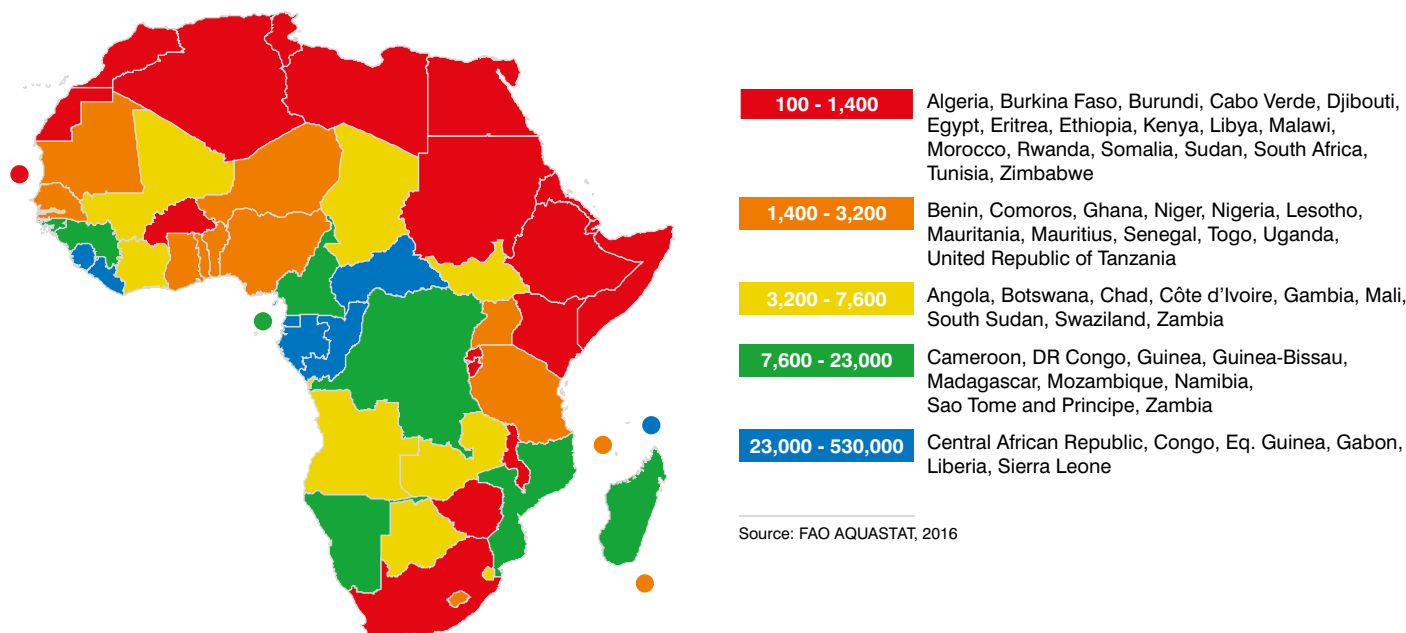


Figure 3 Africa's water resources total renewable per capita (actual) (m³/inhab/yr)

Indicator expressing the percent of total renewable water resources originating outside the country. This indicator may theoretically vary between 0% and 100%. A country with a dependency ratio equal to 0% does not receive any water from neighbouring countries. A country with a dependency ratio equal to 100% receives all its renewable water from upstream countries, without producing any of its own. This indicator does not consider the possible allocation of water to downstream countries.

Only three water scarce countries, Egypt, Eritrea and Sudan, depend on upstream neighbours for more than 60% of their water, as illustrated in *table 1*.

M³/cap/yr

1,400 - 3,200

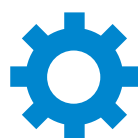
7,600 - 23,000

7 - 1,400

3,200 - 7,600

23,000 - 530,00

Source: FAO AQUASTAT



Two-thirds of the African countries have developed less than 20% of their agricultural production potential and less than 5% of the cultivated area is under irrigation in most countries.¹²

¹² UNEP, Africa Water Atlas, 2010

Dependency ratio 2015		Renewable/capita
Egypt	96,9	
Mauritania	96,5	
Sudan	96,1	
Niger	89,7	
Namibia	84,6	
Botswana	80,4	
Congo	73,3	
Chad	67,2	
South Sudan	65,8	
Gambia	62,5	
Eritrea	61,7	
Benin	61,0	
Somalia	59,2	
Mozambique	53,8	
Mali	50,0	
Guinea-Bissau	49,0	
Ghana	46,1	
Swaziland	41,5	
Zimbabwe	38,7	
Uganda	35,1	
Senegal	33,8	
Kenya	32,6	
Democratic Republic of the Congo	29,9	
Rwanda	28,6	
Zambia	23,5	
Nigeria	22,8	
Togo	21,8	
Burundi	19,8	
Liberia	13,8	
South Africa	12,8	
United Republic of Tanzania	12,8	
Tunisia	9,1	
Côte d'Ivoire	8,7	
Burkina Faso	7,4	
Malawi	6,6	
Algeria	3,6	
Cameroon	3,6	
Gabon	1,2	
Angola	0,3	
Cabo Verde	0,0	
Central African Republic	0,0	
Comoros	0,0	
Djibouti	0,0	
Equatorial Guinea	0,0	
Ethiopia	0,0	
Guinea	0,0	
Lesotho	0,0	
Libya	0,0	
Madagascar	0,0	
Mauritius	0,0	
Morocco	0,0	
Sao Tome and Principe	0,0	
Seychelles	0,0	
Sierra Leone	0,0	

Table 1 Dependency ratios, data

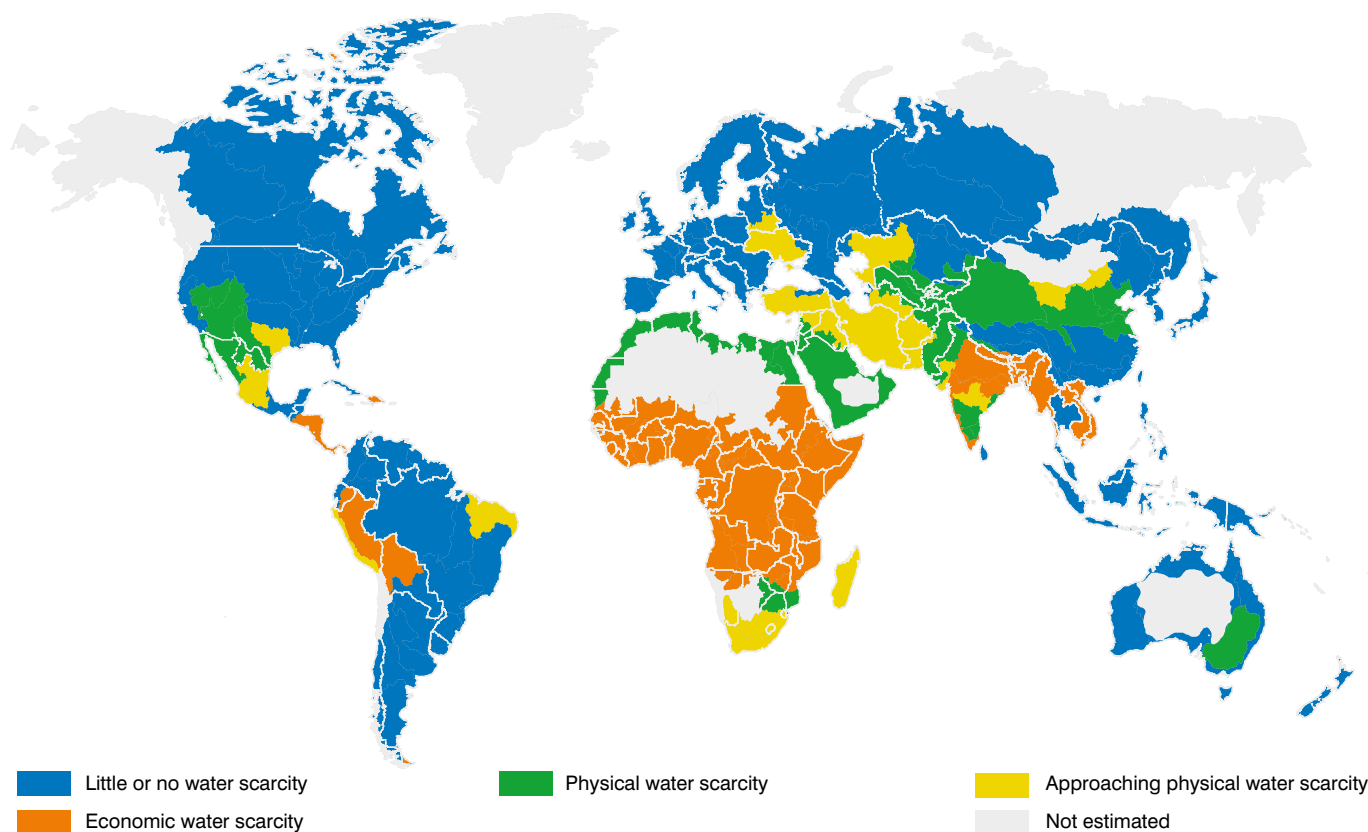


Figure 4 Areas of physical and economic water scarcity¹³

2.2 How water can contribute to regional integration

Water resources development and management can support national and regional economic and social development generally, and regional integration specifically, in numerous ways. Most immediately, it provides an essential input to economic activities and to meet social needs. Even where that input is effectively and efficiently provided by a project in one country, all countries in a region may actually benefit. In Africa, hydropower generation is the most obvious and immediate example of how WRD&M contributes to regional development and integration. Not only does it provide reliable electricity supply but it usually also reduces its cost, making countries more competitive. Increasingly also, a portion of the power produced is made available to neighbouring countries through power pools.

Cooperation between countries on shared rivers may contribute even more directly to integration: joint projects have expanded power production and irrigation. For instance, the development of lake and river transport on systems such as Lake Victoria, and on rivers such as the Congo, Niger and Volta, reduces costs and increases the competitiveness of the economies of landlocked countries. Another case in point, the regional public goods of hydrological information systems and dam management help to mitigate the impacts of floods and droughts. Collaborative management of the Kariba dam on the Zambezi between Zambia and Zimbabwe has proved critical to the prediction and reduction of flooding in Mozambique along the lower Zambezi River. Hydrological data from the Shire tributary in Malawi has been of further assistance and contributed to a reduction in flood fatalities.

The development of infrastructure in transboundary basins is more likely to serve multiple purposes if only because there is a greater variety of potential complementary uses (see Spotlight box on next page for examples). This, in turn, may help to make infrastructure more affordable. Shared projects can also capture economies of scale that are not always achievable with single country investments.

Practical and visible cooperation of this nature can have an important impact that is even broader. If successful, such cooperation helps to develop social capital and build trust between parties that is then reflected in other, perhaps more difficult areas of interaction. Hence, an important contribution of cooperative WRD&M to regional integration may be to create a conducive climate for wider cooperation¹⁴.

Some of these benefits can only be realized on transboundary rivers that link neighbouring countries. But WRD&M can in fact also contribute to regional development and integration even when only one country is involved, by enabling different countries to focus production and trade in their areas of greatest comparative advantage. This increases intra-regional trade and can benefit the region as a whole. For instance, aside from power generation, regarded by many commentators to be Africa's biggest infrastructure challenge (30 countries face regular power shortages, many paying high premiums for emergency power¹⁵), increased irrigated food production in one country can help meet the food security requirements of its neighbours in the event of a drought.

¹⁴ Regional cooperation, and the role of international organizations and regional integration, Schiff and Winters, World Bank Policy Research Working Paper 2872, 2002

¹⁵ The Africa Infrastructure Country Diagnostic: Overview – Africa's Infrastructure: A Time for Transformation. The World Bank, 2010.

¹³ IWMI, 2007, *Comprehensive Assessment of Water Management in Agriculture*

Definitions and indicators

- Little or no water scarcity. Abundant water resources relative to use, with less than 25% of water from rivers withdrawn for human purposes.
- Physical water scarcity (water resources development is approaching or has exceeded sustainable limits). More than 75% of river flows are withdrawn for agriculture, industry, and domestic purposes (accounting for recycling of return flows). This definition – relating water availability to water demand – implies that dry areas are not necessarily water scarce.
- Approaching physical water scarcity. More than 60% of river flows are withdrawn. These basins will experience physical water scarcity in the near future.
- Economic water scarcity (human, institutional, and financial capital limit access to water even though water in nature is available locally to meet human demands). Water resources are abundant relative to water use, with less than 25% of water from rivers withdrawn for human purposes, but malnutrition exists.

Source: International Water Management Institute analysis done for the 'Comprehensive Assessment of Water Management in Agriculture' using the Watersim model; chapter 2.

2.3 AfDB's role

The AfDB has an extensive portfolio of water-related projects in agriculture, power, transport, human development and domestic water supply as well as in land and nature conservation. The Bank's current integrated water resources management policy considers transboundary water management as a sub-set of overall water management policy. In response to country structures, most water resources-related investments are sectorally driven in activities such as, water supply and sanitation, agriculture and hydropower. These sometimes however miss opportunities for multi-purpose water investments that could also address poverty and disaster reduction as well as environmental protection.

In 2006, following AMCOW's initiative, the Bank took on the responsibility of hosting and managing the African Water Facility, under which the Bank approved another 66 projects. The average size of water operations increased from UA 4.97 million to UA 13.76 million for African Development Fund operations and from UA 19.5 million to UA 43.65 million for African Development Bank operations.

The Bank has increasingly diversified its water portfolio, but most investment projects are still concentrated in water supply and sanitation, though projects in water and the environment are gaining their shares. In addition, since 2000, following the adoption of its IWRM Policy, the Bank has increased its focus in the water sector as a way of assisting RMCs to achieve the objective of poverty reduction and economic growth.

2.4 Obstacles to WRD&M in support of regional integration

A number of obstacles to the promotion of WRD&M projects that could support regional integration have been identified in a study commissioned by the AfDB, as outlined below. These obstacles will have to be addressed if water is to make an effective contribution to the goals of integration.

Lack of trust and related factors

One fundamental obstacle to cooperation in the use of shared resources and the development of regional public goods is a lack of trust between parties. "A major problem in reaching a cooperative solution is likely to be the lack of trust. If neighboring countries, because of past problems, do not trust each other, they may fail to reach a cooperative solution, with each trying to maximize its gain from the regional public good and losing because of the spillover effects which are not taken into account in the decisions of the various parties."¹⁸ This suggests that greater cooperation may be achieved either a) when there are clear "win-win" benefits for all parties involved, or b) paradoxically, when the potential overall benefits are relatively small, since this reduces the incentive to try to maximize each one's national share of the gains.

Long-term horizons

The time taken for water resources management and development interventions to produce results is often measured in decades rather than years. The Nile Basin Initiative suggests "medium-term impacts from many of the programmes and projects will be achieved after 10 – 20 years with short term outcomes after 5 – 10 years."¹⁹

SPOTLIGHT

The development of hydropower potential in one country may support a much wider region: in Europe, one third of Norway's hydropower generation is exported and helps its neighbours to deal with peak demands. In West Africa, the Koukoutamba hydropower project of the OMVS will provide power not only to the OMVS states, but also to other basins, the OMVG states and the West Africa Power Pool system. The Kaleta power project in Guinea is another example in which 30% of the power generated is intended to be made available to the other three OMVG countries. The Akosombo hydropower project on the Volta produces power for both Togo and Benin.

Some countries in North Africa and the Middle East look to Sudan as the region's breadbasket, thanks to the irrigation made possible by the Nile River; and similar considerations are arising in Southern Africa¹⁶. The concept of "virtual water" trade describes how local water scarcity can be overcome through production of water-intensive goods in areas that do not face water constraints.¹⁷

¹⁶ Regional approaches to food and water security in the face of climate challenges, DBSA/ GWP, 2012

¹⁷ Watersheds and Problemsheds: Explaining the Absence of Armed Conflict Over Water in the Middle East, Allan A, MERIA, 1998

¹⁸ Regional cooperation, and the role of international organizations and regional integration, Schiff and Winters, World Bank Policy Research Working Paper 2872, 2002

¹⁹ NBI Secretariat Strategic Plan 2012 – 2016, Annex 3NBI Corporate Results Chain and Updated Linkages of Programs and Projects (p.29)

User sector demand and country priorities

One reason African countries give low priority to water resources development projects is that there is no firm and committed demand for their output, whether the project is meant to support power generation or irrigated agriculture or a public good such as flood protection. Many hydropower projects that have been developed to pre-feasibility stage for instance, do not progress to implementation because their generating capacity exceeds projected power requirements. Even where there is sufficient demand in a region, whether for irrigation or hydropower, countries may choose to develop national rather than regional projects, for strategic reasons.

Failure to identify potential synergies and multiple benefits

Potential synergies, where multiple water uses can be satisfied from the same investment project, are often not identified. If they were, it would be easier to promote cooperative projects between countries that share a river.

The challenges of user sector coordination and multipurpose approaches

Projects are still frequently identified for the benefit of a single user sector and it is difficult to coordinate sectors so as to promote multi-purpose investments, even when this offers better returns. Water resources agencies commonly lack the capacity and authority to promote integrated and coordinated approaches: already a problem at national level, this is exacerbated at regional scales. As a result, the potential of hydropower projects to contribute also to flood control, drought management, navigation and environmental protection, at both national and transboundary scales, is often missed. In addition, individual sectors are sometimes concerned that multi-purpose projects will fail because other partners will fail to deliver on their responsibilities.

Inability of poorer countries to use available finance

Poorer countries have a limited capacity to absorb loans due to inadequate financial resources and usually have borrowing ceilings determined by economic fundamentals. They have to prioritize the deployment of their borrowing capacity and often prefer projects that offer immediate and obvious economic returns. That may open opportunities for water resources investment in sectors such as power and, to a lesser extent, urban water supply and agricultural projects. But multi-purpose projects to provide public goods, whether national or regional, are less likely to be prioritized unless they have clear and immediate economic and social benefits.

Financial constraints for public good investments

User sectors such as flood control and environmental protection may have no 'effective demand' as there is no source of funds to address them within projects. Securing loans for such projects is difficult due to the fact that there are no revenue flows associated with them. This problem is not limited to WRD&M but rather a challenge pertinent to the capacity of national economies and the structure of development finance instruments.

Competition with projects at national level

Projects involving cooperation between riparian countries in transboundary river basins have to compete with other projects of national scope. Most African countries display a range of opportunities in different regions, for the development of irrigated agriculture. The sequencing of their development will usually depend on a wide range of factors, wherein the availability of water will only be one of the determining factors, and the choice of a project that involves regional cooperation may not be a primary criterion.



SPOTLIGHT

An example of competition between national and regional projects is provided by the Lesotho Highlands Water Project (LHWP) Phase2, currently being prepared in Southern Africa to supply water to South Africa and generate hydropower for the regional market: this project has had to compete against another water supply project within South Africa (on the Thukela river), which is entirely national in its scope, as well as with a range of alternative power projects. While the LHWP water supply has been demonstrated to be superior to the alternative with respect to cost and risk, the energy project has yet to demonstrate that it is competitive against other options.

Objections to development on shared rivers

Even for national projects on shared rivers, there is still a requirement for cooperation. For any large project, a minimum of interaction between riparian countries is expected and can be demanded in terms of international law. Good practice requires the developer to inform other countries of its intention to develop a project; those countries should, in turn, confirm that they have no objection (or otherwise) and to consult on any concerns that may be raised.

Large numbers of basin states

For some of the larger shared rivers, a serious constraint to cooperation is the number of states involved. It is easier to promote a cooperative transboundary project between a limited number of parties. NBA officials cite the large number of member states as one of their difficulties. Meanwhile, the success of the OMVS is attributed, in part, to the fact that it has relatively few members. One response is to create sub-basin structures as the NBI has already done on the Nile and could be done on rivers such as the Niger and Zambezi.

Financial constraints for public good investments

One indicator of a lack of trust between countries is the shortfall in country contributions to the running expenses of formal RBOs. This is aggravated by a perceived lack of evidence or understanding of the relevance of and benefits from the approaches adopted by them and is particularly acute where the RBOs have been promoted with external support.

Practical barriers to cooperation at water sector level

Where regional shared river projects are demonstrably superior on technical and financial grounds, there may still be barriers to their selection and implementation, such as:

- Transactional costs, including greater risk because of number of parties involved
- Absence of specific incentives for cooperation for all critical parties
- Inappropriate selection of partners for project implementation
- Absence of enforceable mechanisms for cooperation, such as:
 - Agreements
 - Harmonisation of policies/approaches
 - Resource-related information
 - Institutional arrangements for planning
 - Institutional arrangements for implementation and operation
- Policy barriers (e.g. opposition to dam construction)
- Poor definition of benefits from cooperation
- Absence of equitable cost and benefit sharing arrangements
- Lack of commitment to regional institutions.

SPOTLIGHT

For a number of RBOs in West Africa (VBA, NBA, and LCBC), there is a recurring issue with arrears in member contributions to run their secretariats. As of May 2013, arrears for the LCBC had reached 5 billion FCFA. This affects the staffing and technical performance of the secretariats. In many instances, the failure of government to pay their contributions stems from the lack of evidence or understanding of the relevance and benefits from the RBOs. This perception of lack of relevance could arise from failure to explain the importance of activities such as data collection programs. Government officials have indicated that their governments expect the RBOs to work on economic development and physical infrastructure projects. For this reason, there is a trend to focus on investment projects. Both the NBA and the LCBC have developed investment programs. The VBA is also seeking a modification of its mandate to enable it to undertake the preparation of investment programs for the basin.



As of 2010, Africa had developed only 5% of its hydropower potential.



The White Nile and the Blue Nile meeting in Khartoum, Sudan, NASA acquired April 26, 2013

THE GOAL: water security for regional development and integration

Water development and management should support users and build water security

- Africa needs to develop its water resources in support of user sectors.
- The goal of water resources development and management is sustainable social and economic development and water security; on shared rivers, it should also support regional integration.
- Water resources development and management must interface effectively with national development planning at national and regional level.

3.1 The goal of water security

Water is a social necessity and an essential input to economic activities including agriculture, industry and power generation (both hydropower and thermal). All these water users require

- reliable availability, of the
- requisite volume of water, at the
- required quality, with
- protection from the impact of extreme events such as flood and drought.

A general objective is that this should be achieved

- in an environmentally-sustainable manner
- without irreversible damage to important ecosystems.

Finally, water use should not

- cause significant harm to other users; or
- be subject to significant negative impacts from other users.

The objective of water resources development and management has thus been summarized as the achievement of “water security”, defined as “the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability”²⁰. This includes building resilience to current climate variability as well as to future climate change.

The AfDB’s Strategy for 2013-2022 states: “To drive sustainable growth, Africa must develop and manage its vast natural resources sustainably, with water central to agriculture, energy, industry and mining.” Further, for sustainable green growth to be achieved, critical interventions include building resilience to climate shocks, providing sustainable infrastructure, and making more effective, efficient and sustainable use of natural resources (particularly water, which is central to growth but most affected by climate change) and ecosystem services generally.

20 UN-Water, 2013, *Water Security and the Global Water Agenda*

3.2 Regional integration goals and strategies

Regional integration is a fundamental objective of the African Development Bank, reflecting the priorities of its African member countries and continental organizations. Regional integration is expected to address three fundamental development constraints:

- the small size of most African economies;
- the lack of structural complementarities, with most countries producing the same narrow range of low-value primary export products and minerals; and
- Africa’s dependence on import of intermediate and final goods.

The regional agenda aims to promote trade, growth and the reduction of poverty in Africa. Cheap and reliable availability of key inputs to the economy, such as water, power and transport, should both contribute to, and result from, effective economic integration. Interventions to improve competitiveness and productivity may be in both hard (physical) infrastructure and soft infrastructure (such as regulatory frameworks, harmonization of policies and efficient institutions).²¹

The Bank’s guiding principles on economic cooperation and regional integration include:

- **Open regionalism**, with a focus on integration into the global economy as well as integration of regional economies;
- **Progressive integration using variable geometry approaches** adopting a flexible, bottom-up, approach rather than focusing on a single normative model;
- **Rationalizing the plethora of regional integration activities** into a more coherent set of interventions.²²

A distinction can be drawn between formal (top down) governance and more flexible (bottom-up) approaches. These approaches, also characterized as ‘institutional’ versus ‘functional’, are not mutually exclusive and are also reflected in different strategies for regional water resources management. Many commentators have noted that the European Union, the most advanced (and studied) case of regional integration, began with a very functional approach to the management of its members’ coal and steel industries. “It seems that results – like jobs – are more important than symbols and rhetoric”²³.

21 Regional Operations Selection and Prioritization Framework (Revised Framework), AfDB, 2014

22 The Economic Cooperation and Regional Integration Policy Paper, AfDB, 2000

23 Theory and Practice of Regional Integration, Laursen, 2008d

3.3 Rivers as conduits for regional integration

Several of the continent's RBOs also have a regional integration agenda, namely:

- The SADC through its Revised Protocol on Shared Watercourses, which aims to foster closer cooperation among Member States for protection, management, and use of shared watercourses in the region.
- The intergovernmental OMVG platform whose purpose aims to ensure a better socio-economic integration and development of the Gambia, Kayanga/Géba and Koliba/Corubal river basins.
- The NBI for the 10 countries bordering the Nile, to pursue cooperative development, share substantial socioeconomic benefits, and promote regional integration.
- The intergovernmental NBA for the sustainable development of the Niger.

Such benefits are more likely to occur on transboundary rivers if only because, by definition, they provide physical inter-linkages between neighbouring countries. The development of infrastructure that serves multiple purposes is also more likely in transboundary basins because the greater variety of complementary uses may make infrastructure affordable when costs are shared between countries in jointly owned projects. Shared projects may also make it possible to capture economies of scale that are not achievable with single country investments.

But WRD&M can also contribute significantly to regional development and integration, without involving more than one country or even a transboundary river, by enabling different countries to focus production and trade in their areas of greatest comparative advantage (as already outlined in 2.2).



Africa is the region with the greatest potential to increase food and energy production to spur economic development, and water has an important role to play in this.



SPOTLIGHT

Current transboundary water protocols:

Niger Basin Authority (NBA), 1980: between Niger, Benin, Chad, Guinea, Côte d'Ivoire, Mali, Nigeria, Cameroon and Burkina Faso. The NBA's purpose is to promote cooperation among the Member States and to ensure an integrated development of the Niger Basin in the fields of energy, water resources, agriculture, animal husbandry, fishing and fisheries, forestry, transport, communications and industry. More specifically, the Convention provides that the NBA is responsible for harmonizing and coordinating national development policies; assisting in the development of an integrated development plan for the Basin; promoting projects of common interest; assuring the regulation of navigation consistent with the 1963 Act; and requesting assistance and mobilizing financing for studies and research on Basin resources.

Nile Basin Initiative (NBI), 1999: The Nile Basin Initiative (NBI) is a regional inter-governmental partnership led by 10 Nile riparian countries, namely Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania and Uganda. Eritrea participates as an observer. NBI provides riparian countries with the only all-inclusive regional platform for multi stakeholder dialogue, information sharing as well as joint planning and management of water and related resources in the Nile Basin.

Organisation de mise en valeur du fleuve Gambia (OMVG), 1978: The OMVG is an intergovernmental organization with membership from The Gambia, Senegal, Guinea and Guinea-Bissau. OMVG aims to foster socio-economic integration through the management and development of the transboundary basins of the Gambia, Kayanga/Géba et Koliba/Corubal rivers.

Organisation de mise en valeur du fleuve Sénégal (OMVS), 1972: The OMVS is an institutional and legal framework between Guinea, Mali, Mauritania and Senegal, which oversees the multi-sectoral and integrated development of the Senegal river basin.

SADC Revised Protocol on Shared Watercourse Systems, 2000: promotes the establishment of shared watercourse agreements and institutions and enshrines the principles of reasonable use and environmentally sound development of the resource. It supports IWRM and the Regional Strategic Action Plan for Integrated Water Resources Development and Management (RSAP-IWRM).

4. KEYS: to unlock the potential

Institutions for water resources development and management are critical public goods

- Water management institutions are important public goods that underpin water security and support the development of user sectors.
- Strong national water institutions are the foundation for regional water cooperation as well as for national growth and development.
- There is no ideal organizational architecture for cooperation on shared rivers; institutional arrangements must be designed to meet the specific contextual needs.

‘Transboundary’, shared river, institutions must be fit for purpose and meet real needs

- The primary functions of TBWRD&M institutions are to build trust, promote communication and information sharing and agreement on water use between countries that share rivers.
- The majority of effective transboundary river investment projects are implemented only by the countries concerned, not by all-embracing river basin organisations.

TBWRD&M can be vectors for broader regional integration goals

- TBWRD&M policies developed with a broader regional integration perspective, in cooperation with other countries, contributes to growth and poverty reduction.
- For transboundary projects to be feasible, participating countries should benefit in proportion to their contribution.

4.1 Regional integration, growth, development and water

As the AfDBs Bank Group Regional Integration Policy and Strategy (RI-PoS) 2014-2023 outlines: regional integration is imperative for Africa. Its 54 states need “to create larger, more attractive markets, to link landlocked countries, including fragile states, to international markets (so as to participate in and share the benefits of an increasingly collected global marketplace) and to support intra-African trade”. The continent’s growing middle class and its youthful population could become a key source of demand for producers of goods and services as expansion in African retail and financial services has demonstrated. With the appropriate skills, infrastructure and business environment, Africa could enhance its attractiveness to investment leading to inclusive growth through better opportunities for all.

Regional integration is a strategy for regional growth and development

Regional integration is a strategy to promote countries’ growth and development and that of their neighbours as well as to maintain regional peace and security. This perspective should guide support to transboundary water resources management.

A balance is needed between institutional and functional approaches

An appropriate balance is needed between top-down “institutional” approaches and bottom-up “functional” approaches to regional integration. The development of regional institutions should go hand-in-hand with the identification and promotion of specific projects in general and in the water sector in particular.

Regional integration is not the same as regional cooperation

Some commentators emphasise that “... regional cooperation is not the same as regional integration, and, indeed, there is generally rather little connection between them.”²⁴ However, “bundling” a number of cooperation agreements can make it easier to structure mutually beneficial packages that enable the parties concerned to move to deeper regional integration.

Practical regional cooperation in water may support broader integration

Some regional integration practitioners commented that, while cooperation in water was often slow and yielded limited direct results, it helped to build trust between governments and their wider national communities. This was an important and distinct contribution by regional water projects to regional integration.

4.2 Mobilizing water resources for regional integration

According to a number of regional integration practitioners from national and regional organizations, while cooperation in water is often slow and yields limited immediate and direct results, the process helps to build trust between governments and their wider national communities. This highlights an important contribution to regional integration in its own right and should be considered as a separate and significant benefit of regional water projects.

A shared benefit approach is needed

A precondition for successful transboundary projects is that all parties involved should benefit from them. A common challenge is that the flow of benefits generated is unevenly distributed. For the projects to be feasible, all participating countries should benefit in proportion to their contribution. Contributions need not be financial but may include cooperation that enables benefits to be mobilized. Where direct benefits are not equitably shared between partners, financial compensation may be appropriate. However, the shared benefit approach should be understood as a guiding principle for conceptualizing and guiding cooperation rather than as an accounting methodology in the selection of projects.

²⁴ Regional cooperation, and the role of international organizations and regional integration, Schiff and Winters, World Bank Policy Research Working Paper 2872, 2002

The challenge of identifying beneficiaries in large regional projects

Relatively large projects can provide a range of different benefits in circumstances such as those that prevail in the West African cases of the OMVS and the OMVG. However, while large projects that regulate river flow may benefit downstream riparian communities by mitigating flood impacts as well as providing a reliable supply of water, it is often difficult to identify direct beneficiaries who can contribute to the costs of construction and operation for these purposes.

SPOTLIGHT

The principle of distributing a range of different benefits between countries according to their needs and their contributions is demonstrated in West Africa's OMVS project where hydropower, irrigation and navigation improvements benefit the partner countries to different extents. The share of project costs in the OMVS is proportional to the share of the perceived benefits, and calculation of benefits is based on an agreed formula. Its completed Manantali and Diama Diama dams were designed for power and irrigation support for benefit and cost sharing by the three member countries of the OMVS at that time, as follows:

Benefit Allocation	Mauritania	Mali	Senegal
Irrigation Potential	31%	11%	58%
Hydropower Potential	15%	52%	33%
Navigation Potential	12%	82%	6%
Total Cost Allocation	22.6%	35.3%	42.1%

A further example of benefit sharing is provided by Phase 1 of the Lesotho Highlands Water project where infrastructure for water storage and transport has been built in Lesotho while the water is used in South Africa. The cooperation agreement between Lesotho and South Africa was designed to ensure that there was fair sharing of benefits. In this case, the primary benefit to South Africa was the saving in costs made possible by capturing the water at high altitude and transferring it efficiently, without pumping, to South African users. These savings were shared with Lesotho receiving payments for allowing the use of its territory as well as benefitting from other economic and social infrastructure development, including hydropower generation that was built as part of the water project.



In February 2016, water levels near the dam in Lake Kariba, along the border between Zambia and Zimbabwe, declined to near-record lows, acquired November 10, 2015

Multi-sector reviews can help to identify opportunities for regional cooperation

A wide range of potential investment opportunities in shared rivers has been identified through basin focused multi-sector investment opportunity studies in Southern Africa (the interim Zambezi River Commission ZAMCOM)²⁵ and the Nile Basin Initiative (NBI).²⁶ These studies have demonstrated the potential for this methodology to generate a new investment project stream by taking both a regional as well as a basin perspective. They have also highlighted the benefits that can be derived from a parallel stream of public good investments to underpin project development. Similar, multi-country, multi-sector investment projects are at various stages of preparation in the Senegal, Gambia, Niger and the Lake Chad basins in West Africa.

Other studies have helped to build the case for cooperation at regional scale by demonstrating the benefits to be derived from coordinated planning and operations of shared water resources systems. In the Zambezi basin, regionally coordinated operation of national storage infrastructure could deliver significant production and efficiency gains for agriculture and hydropower generation²⁷ while multi-purpose regional projects would yield greater returns than single focused national projects. Greater environmental protection could also be achieved through such coordination.

National projects in shared rivers contribute to regional integration

Given the low level of development of water resources in Africa, national projects on shared rivers will often give better returns on investment than transboundary projects that involve more than one country. However, they still require regional cooperation to ensure that the countries concerned understand and agree to any potential impacts on the shared resource. Through such processes, they can contribute directly and indirectly to greater regional integration, as is now recognized in the Bank's definitions of regional operations²⁸.

4.3 Institutions for transboundary water resources development and management

As indicated above, the design and implementation of effective institutional arrangements is critical to the success of transboundary water projects. A wide range of institutional architectures is already used to promote cooperation and development on Africa's transboundary rivers. The AfDB-commissioned study underpinning this report found that no single institutional architecture is optimal.

Many architectures for cooperation and development in transboundary rivers

Some of the different institutional arrangements that have been used successfully to undertake the variety of functions required are shown in Table 2 below. They range from specialized River Basin Organizations (RBOs) in which all riparian countries participate to ad-hoc groups of countries, to national structures or even, to more locally based stakeholders. Many of the most effective investments

in transboundary rivers have been undertaken by institutions that involve only some basin countries, rather than through formal RBOs involving all basin countries.

Strong national institutions are the foundation for regional water cooperation

While regional institutions have an important role to play, the effectiveness of regional cooperation in WRD&M depends on the existence of strong and effective national institutions. National institutions are often responsible for the collection and analysis of hydrological data within their borders; in addition, they are gatekeepers for participation in regional schemes. Most decisions, ranging from the negotiation of initial cooperation frameworks to joint consultation on key issues and commitments to joint investments, can only be taken by national political leaders. In order to promote a sound regional cooperation agenda, those leaders need to rely on trusted agencies, with the capacity to analyse issues, and the ability to advise them on appropriate courses of action. Support for national water resources management capabilities thus contributes directly to enhanced regional cooperation. This has recently been identified as a priority in the IGAD region.

The different, specialized, roles of RBOs

Given the difference in context and approaches in different locations, there is no generic prescription for the roles, functions and structures of formal RBOs.²⁹ It is, however, generally agreed that RBOs have a specialised role in building trust, promoting communication and information sharing and supporting the development of agreements between countries. All of these activities may provide the foundation for the identification and promotion of cooperative investment projects, particularly where there is competition for scarce water resources. Other institutional arrangements have also been effective and regional differences in approach have emerged.

SPOTLIGHT

As demonstrated in a number of successful projects, notably the LUSIP project in Swaziland, a requirement to formalize agreements or to obtain statements of non-objection to national projects can be an important instrument to encourage greater cooperation and to demonstrate its benefits.³⁰

Moreover, the potential for more general cooperation agreements to help underpin cooperative water management arrangements should not be ignored. The Nigeria-Niger Joint Commission for Cooperation shows that formal instruments of cooperation between countries, in which shared water is simply one agenda item, may allow mutually beneficial national projects to progress forward. As a result, investment in dams in Nigeria and coordinated management is allowing for agricultural development across the border in Niger.³¹

25 Transboundary Water Management in SADC: Dam synchronisation and flood releases in the Zambezi river basin project, SWRSD Zambezi Basin Joint Venture, Final Report, Executive Summary, 2011, Doc No: FR – MR

26 Nile Equatorial Lakes Multi-Sector Investment Opportunity Analysis, NBI/NELSAP, 2012

27 The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Summary Report, World Bank 2010

28 Regional Operations Selection and Prioritization Framework (Revised Framework), AfDB, 2013

29 Schmeier S, Gerlak A, Schulze S. Who Governs Internationally Shared Watercourses? Clearing the Muddy Waters of International River Basin Organizations. Earth System Governance Working Paper No. 28. Lund and Amsterdam: Earth System Governance Project. 2013.

30 Swaziland: Lower Usuthu Smallholder Irrigation Project (LUSIP). Project completion report, ADF/BD/IF/2010/206, 2010

31 Niger - proposal for a grant of UA 21.02 million from the GAFSP resources and an ADF loan of UA 9.34 million to finance the water mobilisation project to enhance food security in Maradi, Tahoua and Zinder regions (PMERSA-MTZ), ADF/BD/WP/2011/93, 2011

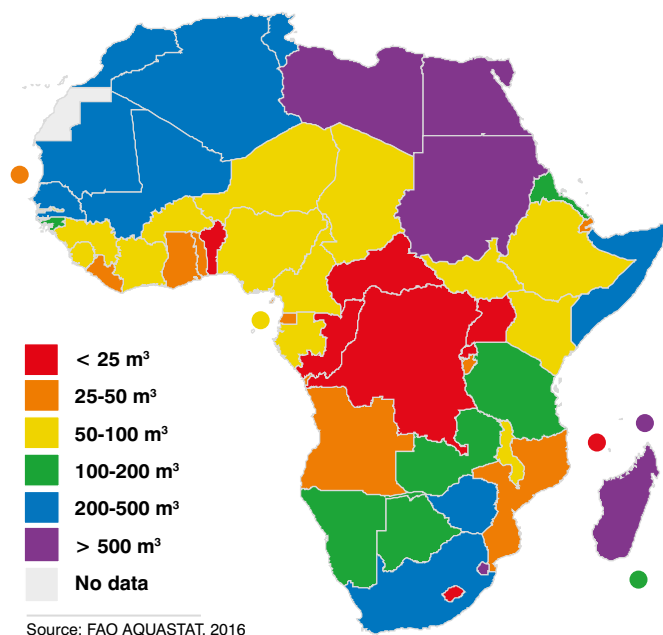


Figure 5 Annual water withdrawal per inhabitant

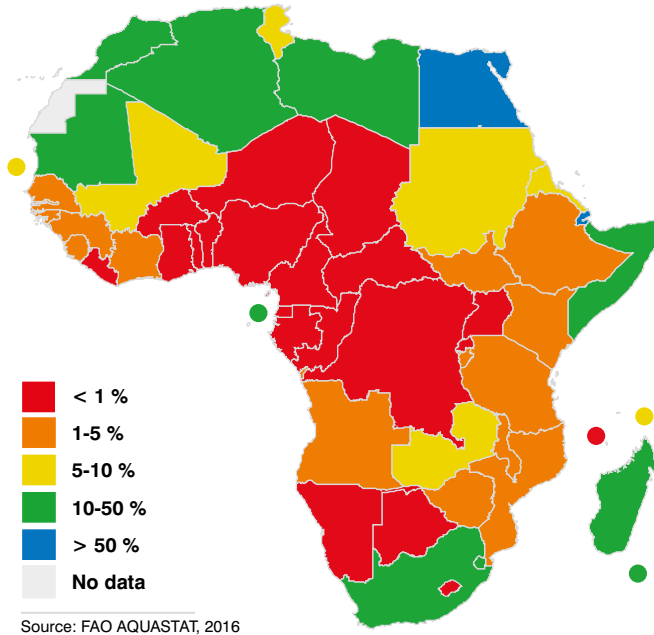


Figure 6 Irrigation as percentage of cultivated area

Function	Institutional options	Example	Comments
Communication	Ad hoc committee; Permanent committee; Facilitator; Specialized org	West Africa: Nigeria-Niger Joint Commission for Cooperation Southern Africa: JPTCs, Interim ZAMCOM E Africa: NBI	Many options with little distinction as long as they are perceived as honest brokers and not promoting a sectoral agenda
Agreement	Meeting of national principals, supported by one of above	JPTCs RBOs NBI	Need to convene and support formal government participation
Resource characterization	Committee Ad Hoc or Permanent, commissioning consultant review; RBO with appropriate tech support	TPTC Incomaputo RBOs	Jointly executed review to provide common basis for discussion; needs access to national information. Institution needs to have status to manage contracting and oversight of technical work, even if undertaken by WG of national entities.
Resource planning	As above	Interim ZAMCOM	Need to collate national inputs on relevant user sectors
Project i.d.	Study management as above	Many options including joint technical Commissions (JPTC for Incomaputo) or RBOs (as for Niger, Nile or Zambezi)	While project opportunities are often identified at a national level, an objective comparative review requires appropriate institutional structure.
Implementation	National agencies, SPVs, RBOs	Rusumo Falls SPV Manantali Hydropower Project in OMVS RBO	Even if RBO present, may require an SPV to implement partner agreements over cost and benefit sharing
Operation	Generic bilateral, National agency/ies, SPV, RBO	LHDA, Lesotho SPV Rusumo Falls OMVS, Manantali Hydropower Project Nigeria-Niger Joint Commission for Cooperation	Must reflect location but also provide oversight and involvement for partners
Resource monitoring	National agencies; Regional Economic Communities; National/regional regulator/s; RBO	Regional hydromet programmes (e.g. SADC) RBOs in West Africa	National resources require common communication platform; data collection can remain national

Table 2 Types of institutional arrangements

Comparative international shared basin organization architectures and their limitations

The structure and role of river basin organizations in other continents vary significantly but is usually focused on facilitation and coordination, rather than on operation. In Europe, the Rhine, one of the most heavily used rivers in the world, is shared between five countries (Switzerland, France, Germany, Luxemburg, the Netherlands with small contributions from Italy and Belgium). The collaborative organization, the International Commission for the Protection of the Rhine (ICPR) whose members are the five main riparians and the European Commission was established in 1950, primarily to deal with pollution incidents. It has subsequently expanded its mandate to include floods and other issues. There is a small core secretariat, which lists only 14 fulltime staff, with most of its work undertaken by Working Groups involving national experts.

There is a separate Central Commission for Navigation on the Rhine, which claims to be the oldest international organization in modern history (dating back to the 1815 Congress of Vienna). Although the CCNR has significant operational responsibilities, it too has only a small secretariat of 20 people. The secretariats coordinating cooperation on other European rivers are even smaller. The Meuse Commission (Germany, France, Netherlands and Belgium) is reported to have four people on its staff, while the International Scheldt River Commission (Belgium, Netherlands and France) secretariat has five. Operational activities are undertaken by staff from organizations of the member states working both individually and collectively.

The Mekong River Commission (MRC) in South East Asia is amongst the oldest formal River Basin Organizations in the world. From its origins in 1960 as the Mekong Committee, it has been in existence for over half a century. However, its membership does not include China, the major source of water for the Mekong system, nor Myanmar, another riparian country. The MRC Secretariat, with over 150 staff, undertakes the technical and administrative functions. Although nominally run by its member countries since 1995, 85% of the MRC's 2012 US\$27 million budget was financed by donor contributions.³² Despite its long history and extensive programme of technical work, member countries are still not formally consulting with their neighbours on major planned infrastructure developments and the MRC has no joint investment projects.³³

Regional approaches to RBOs in Africa

In West Africa, the OMVS RBO model has been replicated, with a focus on investment projects. However, while the transboundary basin projects in the OMVS (Senegal river) and OMVG (Gambia river) are jointly owned by the basin states, the investment projects that have been identified in the NBA (Niger) and the LCBC (Lake Chad) basins are proposed to be nationally, not jointly, owned (although proposals have been made to move towards the OMVS model of joint ownership by a formal RBO). On the other hand, a formal protocol for cooperation on the management and use of shared rivers, as has been established in Southern Africa, can provide an effective architecture for cooperation in regions where there are a number of shared rivers rather than a single dominant basin. In this region, the dominant architecture is that of dedicated "special purpose vehicles" (SPVs) which are tailored to the specific project requirements. In East Africa, there is a similar trend towards the use of SPVs for cooperative investment projects in addition to support for national projects. This variation in structure and approach reflects the diversity of approaches that prevail globally.

The size and structure of formal RBOs

The size and structure of formal RBOs should reflect their role. In Europe, where there are also many shared rivers, the well-developed institutional arrangements for cooperation are coordination-led in nature and have only very small permanent secretariats. The bulk of the cooperative work is done by technical teams from the respective country organizations and most water resources management functions are carried out at national level. Proposals to make the establishment of formal RBOs mandatory were seemingly not accepted by member countries.

Institutions for implementation

While RBOs have a useful role to play in promoting communication between countries, such as providing objective information on resources and identifying potential projects for cooperation, the implementation of projects that support regional integration has generally been carried out by different types of organizations. These may include national agencies (particularly where the actual project is located in one territory, as in Ethiopia's Gibe III dam), bilateral organizations (such as the ZRA which operates the Kariba dam on the Zambezi) and SPVs set up solely to promote a single project (such as the Rusumo Falls project or the Sogakope/Lome pipeline project in the Volta Basin). In these cases, the architecture used will be determined by the specific nature and location of the project as well as the financial arrangements.

Water is unlike other infrastructure sectors such as transport, energy and telecommunications where primary networks have to be built to link communities and countries. Rivers, lakes and underground aquifers are the natural infrastructure of water, which only has to be complemented when it does not reliably serve the communities that need it. As a result, most developments that use water resources are undertaken at local or national level, even when they involve rivers shared between countries. Until demand grows, it is often neither necessary nor cost-effective to build large regional infrastructure. However, water development in one country should not impact negatively on its neighbours. The communication and engagement required to review such issues is often the first step in cooperative management and requires support and encouragement.



In the majority of shared African basins outside Southern Africa³⁴, there are no effective region-wide cooperative frameworks or agreements to guide the use of shared waters.

³² <http://www.mrcmekong.org/publications/governance/financial-reports/> January 2014

³³ For a critical review of the history and performance of the MRC, see National Interests and Transboundary Water Governance in the Mekong, DANIDA, 2006

³⁴ The SADC Protocol on Shared Watercourses (revised in 2000) provides a framework for all countries in the sub-region to manage their shared water resources.

4.4 AfDB: policy and strategy matters

A multitude of actors throughout the continent are involved in TBWRD&M from regional to national and local actors and authorities. Cooperation through deliberate concertation and alignment of policies and strategies of the various actors (i.e.: AMCOW, GWP, development banks, etc.) can better yield the benefit potentials of TBWRD&M.

The GWP has established a program of capacity-building promoting transboundary cooperation, initiated in Southern Africa. AMCOW is addressing transboundary water cooperation through its agenda, with the transboundary issue being one of four themes addressed in its workplan. As for the AfDB, it is building on its unique position to facilitate effective dialogue in the water sector on difficult issues such as sector reforms, water security and adaptation to climate change from a TBWRD&M perspective. In so doing, OWAS is maintaining sustained dialogue with regional institutions such as AMCOW, AU/NEPAD, UN-Water Africa, and is engaging strongly with RMCs in sector dialogue.

The **Africa Water Vision 2025**, co-issued by the UNECA, AU and the AfDB, outlines in a united voice four guiding pillars to frame the continent's water-related actions:

1. Strengthening governance of water resources
2. Improving water wisdom
3. Meeting urgent water needs
4. Strengthening the financial base for the desired water future

In considering the Bank's overall goal in TBWRD&M, it is necessary to align the water-related goal in relation to the goals outlined in the long-term strategy and, in particular, to consider the regional integration dimensions of the strategy. Against that background, the overall goal is: **To support and encourage RMCs to develop, manage and use water resources effectively, optimally and sustainably, in cooperation with other countries, to achieve growth and poverty reduction.**

AfDB's Strategic Pillars guide AfDBs operations:

- SP1: Promote sector governance and knowledge management
- SP2: Assist RMCs to develop sustainable infrastructure and inclusive services for water security
- SP3: Enhance water sector collaboration to achieve integrated water resources management and development in Africa

AfDB strategy to TBWRD&M

The strategy to achieve the Bank's objectives is to support activities that help to identify water resource-based economic development opportunities and address actual or potential development constraints and conflicts that may impede effective actions. Those activities include supporting:

- actions to improve understanding of water resources and their potential including the identification of opportunities to improve the sustained availability of water as well as threats to its availability or its quality;
- planning at multi-sectoral and sectoral levels to identify water resources related opportunities and constraints and conflicts and ensure the inclusion of relevant projects and programmes in the appropriate CSPs and RISPs;
- infrastructure investments and other interventions required to achieve the overall goal, through the development of financial instruments and technical assistance; and

- the development of institutional capacities at local, basin, national and regional level to undertake the technical and governance work inherent in the above activities.

All of these actions guided by a recognition that TBWRD&M cannot be addressed in isolation from national WRD&M and that actions at regional, basin and national levels should always be complementary. Furthermore, WRD&M interventions should be made in support of water-using activities and need to be considered in the context of the strategies and programmes of those sectors.

In order to effectively implement this strategy, the Bank will continue to pursue water resources investment projects and to support public good interventions in institutions for water management in shared rivers, both nationally and regionally. However, it should encourage a more integrated approach that seeks to address the needs of all users not just individual sectors. Based on a new "water for growth and development" policy, it must build on existing experience and support initiatives that address practical needs in a manner that strengthens regional integration, focusing on a few "regional flagship projects" in "target basins". Support for regional public goods will help to identify investment opportunities.

Moreover, the AfDB, along with other development partners, will be providing support to its RMCs in Africa in implementing the United Nations SDGs by mobilizing additional resources and providing technical assistance and policy advice.

Strengthen national institutional capacity. Institutional capacity in the water resources sector is needed at a variety of levels in order to translate national and regional opportunities into implementable programmes of action. Capacity is also required to coordinate with the activities of the water user sectors or with other water administrations, for instance in neighbouring countries in the case of shared rivers. The effective exploitation of water resources for development also requires the existence of sufficient institutional capacity in the water using sectors to enable water to be effectively used and the necessary coordination established with the water authorities. Regional institutions may be used as a channel for national institution building.

Engage at basin and regional level. Building on the work done at national level, the initial regional/basin interventions will seek to collate and compare national level perspectives. This must go beyond water resources issues; it is also important to understand the potential challenges and opportunities in different sectors that may have an impact on water resources. The objective will be to identify regional level opportunities for water resources development and management interventions that support development in water using sectors.

Identify and strengthen basin and regional institutional capacity where strategically needed. Where the use of shared water resources requires coordination between countries, either for joint investment or simply to ensure equitable use of the resource by all parties, appropriate institutional arrangements will be needed. These arrangements should take account of the custom, practice and existing arrangements in the relevant region (there may for instance be existing generic mechanisms for regional cooperation that can be used, such as the RECs or joint committees). Specific river based arrangements can be established (which may simply require regular bilateral meetings or the establishment of formal sub-basin or basin-wide organizations) while, for the promotion of specific programmes of intervention, a range of "Special Purpose Vehicles" may be considered.

Ensuring that transboundary water resources support regional integration

Call to countries which share rivers and to TBWRD&M stakeholders in Africa, to:

- Put in place measures to achieve equitable and sustainable sharing of benefits from water resources development at regional and national levels.
- Make efficient and fair use of the water resources that are available in their shared river basins.
- Establish and sustain collaborative arrangements for efficient and equitable utilization of resources and to achieve national and regional development imperatives.
- Align water resources development policies and strategies with regional integration goals.
- Integrate transboundary water issues in investment decision-making.



16 countries depend on external sources for more than 40% of their water and it is feared that this situation may lead to conflict when demand for water increases.

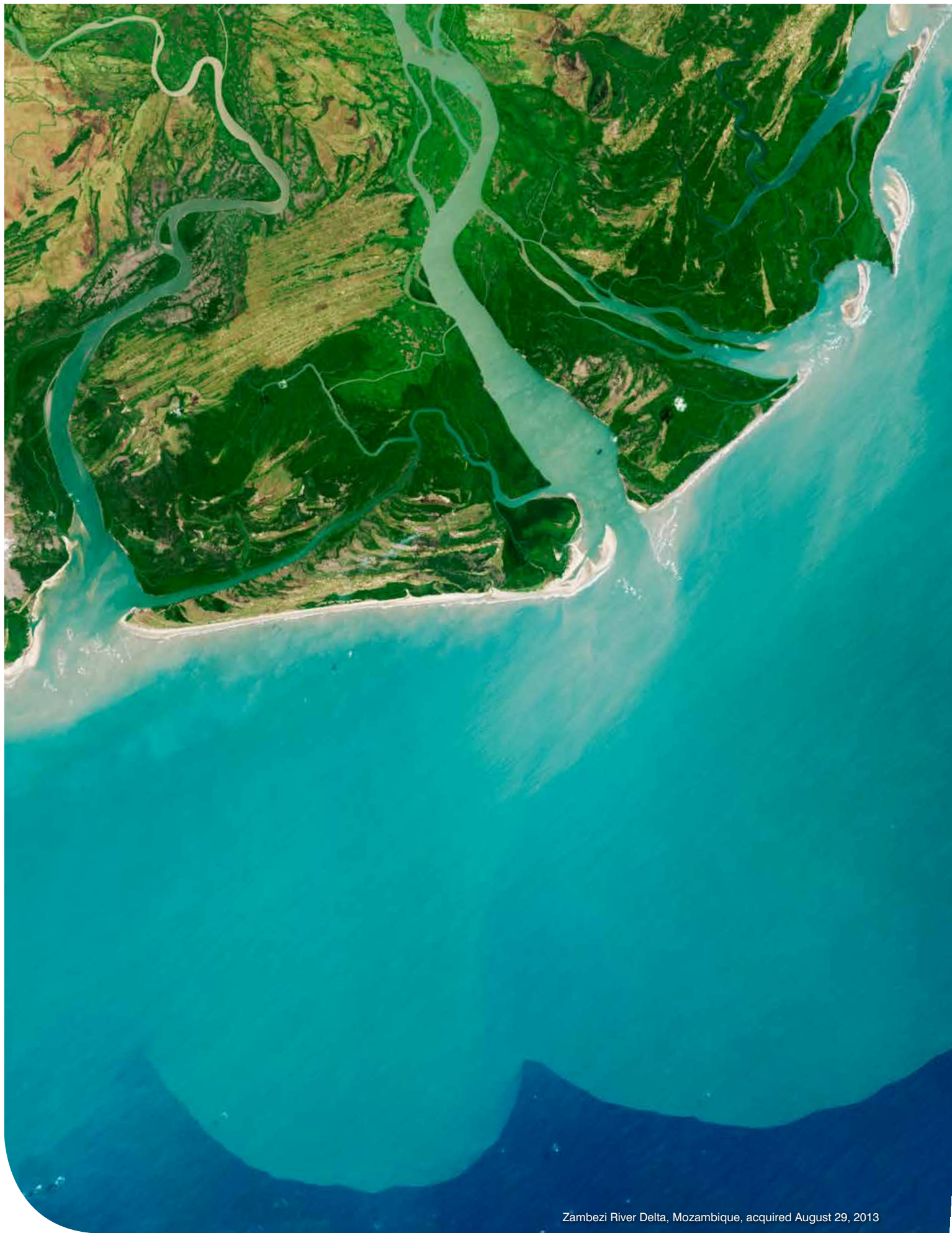
Africa's transboundary water resources development and management will play a central role in achieving the Africa Water Vision 2025 and in ensuring that, together, we build: "an Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation, and the environment."

Transboundary waters hold great potential as key instruments for regional cooperation and integration as well as for national development and growth. However, the water cycle involves processes and natural systems that cut across administrative boundaries at local, national and regional levels. This means that development activities must be planned and implemented in a coordinated manner that supports sustainable development and growth and is consistent with the carrying capacity of the watershed. This will often require cooperation between countries sharing the basin to ensure that there is equitable and sustainable sharing of benefits at regional and national levels. Cooperation in shared river basins should promote trade and the transfer of resources to scarce regions and countries for development and growth while sustaining ecosystems.

Cooperation for the sound development and management of transboundary basins needs to be supported by good communication between the countries concerned. In the majority of African basins, where there are not yet formal agreements, the capacity of national water resources administrations to engage with each other needs to be strengthened. This will contribute to more efficient and equitable utilization of resources, and to supporting national and regional development and integration. It will also create opportunities to develop multi-purpose infrastructure and achieve economies of scale.

Water resources development, while not an end in itself, is a necessary and indispensable prerequisite for national development and regional integration. Though it may not play the same role as connective infrastructure in other sectors, it can make an equally important contribution to regional integration. Water resources development policies and strategies should be aligned with those for regional integration as well as those of individual water-using sectors.

The Bank's overall investment business will benefit from more strategic engagement in water resources development and management. The feasibility of many African economic development opportunities depends on water resources availability. In order to make this possible, it will often be necessary to take account of transboundary considerations because so many of Africa's major rivers are shared by a number of countries. Such transboundary water issues need to be identified and addressed at an early stage of investment decision-making through a structured approach that identifies, analyses and then responds to them. AfDB's support for and funding of strategic interventions in important transboundary river basins can make a significant contribution to regional integration and thus enhance Africa's sustainable social and economic development.



Zambezi River Delta, Mozambique, acquired August 29, 2013

