

## Difficulties and challenges regarding institutional processes for Transboundary water management

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### ABSTRACT

Cooperation mechanisms for Transboundary watercourse, lake or groundwater management are usually set up when riparian countries recognised that cooperation provides more benefit than non-cooperation. Driving forces for cooperation can be the need to improve scientific knowledge for alleviating misunderstanding and impact of the climate change, the need of rules for sharing hydropower, and the will to reduce pollution, to respect an ecological minimum flow or to prevent food damages. The 1992-Dublin conference on Integrated Water Resource Management and the 1997-New-York conference on Transboundary Watercourses provided principles and momentum for international river basin cooperation. Stakeholders' consultation and public participation are promoted for developing a well-accepted policy. New Transboundary institutions or cooperation mechanism are created, but the cooperation process is often difficult and costly. Implementation of cross-border activities required rather complex mechanisms of cooperation including local and national representatives from riparian countries. Based on project implementation experience, an analytic approach is proposed. Factors impacting the cooperation and institutions efficiency have been identified for various Transboundary areas. Among these factors are a common language and culture, the political climate, the integrity and capacity of local administrations in-charge, donor Agencies influence, etc. However, the process of institution building may sideline issues such as filling improving data quality or local socio-economic development. Analyse of this kind could be useful to quickly identify bottlenecks and better understand, who benefits from Transboundary water cooperation, what could be the gains for the local people affected by cross-border water management and what is the overall efficiency of the process.

**KEY WORDS:** *Transboundary institutions, cooperation difficulties, efficiency, benefits.*

### INTRODUCTION

Cooperation mechanisms for Transboundary watercourse, lake or groundwater management are usually set up when riparian countries recognised that cooperation provides more benefits than non-cooperation. The issue of fairness in the benefit sharing process is also considered as critical (Jägerskog and Zeitoun, 2009). For identifying the factors leading to difficulties or influencing positively cooperation between riparian countries or local authorities, Transboundary areas have been selected in Europe and Africa. The situations prevailing in these areas offer a wide range of geographical, socio-economic and institutional conditions. For each of them, there are driving forces for cooperation or factors generating difficulties. In Ibêr river basin, the political situation hampers formal cooperation, in Drini River Basin, Kosovo and Albania strong cultural links play a key role. In Rwanda and Burundi, a trans-national structure for the upper Nile River Basin supports the development of local investment projects. In Volta River Basin, donor Agencies' policy influences the cooperation activities. In the Rhine River Basin the well-established cooperation between riparian countries results in significant achievements. By analysing the situation in these areas, driving forces were identified (Table 1).

The 1992-Dublin conference on Integrated Water Resources Management (IWRM) and the 1997-New-York conference on Transboundary Watercourses provided principles for water management (Wouters, 2005) and momentum for international river basin institutions establishment. Donor Agencies as well as influent international organisations have provided technical IWRM guidelines for Transboundary water management including its institutional aspects (Brachet & Valensuela, 2012). To

facilitate information sharing, a data base on Transboundary river basins has been created (Kim & Glaumann, 2011). Guidelines are also dedicated to enhance the local authorities' role in the appropriate uses of Transboundary water bodies compatible with ecosystem protection for the benefits of people who are sharing these natural resources (Philip *et al.*, 2008). Guidelines on IWRM recommend the involvement of stakeholders to develop a well-accepted policy. But costs to involve many representatives of interest groups can be high in a Transboundary context. This is due to the complexity of cooperating with national and local authorities together with stakeholders on both side of the border. In particular case (low income countries) a large part the functioning of River Basin Organisations is support for by external funds. Hence, a main concern is the efficient use of public resources and the donor Agencies' role and influence for water Transboundary management (Mostert, 2005).

Therefore, legitimate questions could be the following:

- How to evaluate the efficiency of riparian countries cooperation and the performance of Transboundary institutions? What are the bottlenecks? How the international public money can be best allocated?
- Who, which group, is benefiting from the cooperation mechanism and to which extent?
- How to balance IWRM activities with related issues such as filling data gaps, improving data quality and water use development and poverty alleviation?

Activities such as "data quality improvement" are often sidelined due to insufficient attention of policy makers. When the conditions of employment are not very encouraging, the public institutions in charge of data

production (water quantity and quality) are not always staffed with motivated specialists.

## METHODS

Several areas were chosen for the proposed analytic approach: in Europe, the Drini Basin, and the Ibër Basins in Balkan and the Rhine River Basin; in Africa, the Basins Transboundary lakes and Akanyaru marshes which are shared by Burundi and Rwanda within the Nile basin and the River Basin of Lake Victoria. The information which was used for this analysis comes from the author's experience in these areas, his participation to collaborative process within countries administration as well as the review of literature available on Internet.

The analysis was carried out in several steps:

- **1 - The identification of driving forces** impacting cooperation for Transboundary water management, and to which extend (Table 1 ),
- **2 - A summary characterisation of the cooperation mechanism** and institutional settings, as well as of the achievements and difficulties faced (article text),
- **3 - An identification of factors influencing cooperation** which can be useful for understanding or evaluating the institutions performance and the efficiency of cooperation processes (Table 2).

## RESULTS

The description of the driving forces for cooperation and institutional setting are presented in Table 1 for the selected international River Basins (area 1 to 5).

**Area 1. The Drini River Basin** is shared by Albania, Kosovo, Montenegro, and Macedonia. The Drini Basin and its main rivers are shown in Figure 1.

The *main Driving forces* for this basin are the following:

- the process of EU water Directives implementation which is fuelled by the countries will to access to EU membership,
- the support of the Global Water Partnership (GWP) for Transboundary cooperation and institutions establishment,
- the need to reduce the pollution impacting the ecology of Transboundary lakes in Ohrid, Prespa and Shkodra



Figure 1: Drini river Basin, sub-basins; Transboundary lakes and riparian States

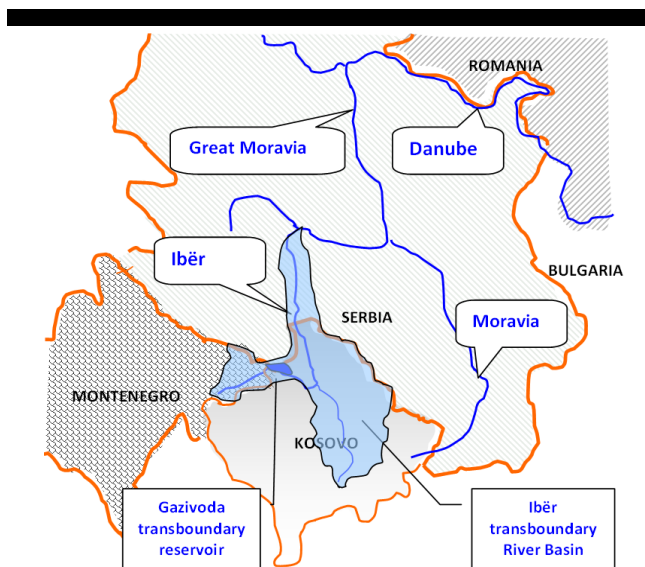


Figure 2 : Transboundary Ibër river Basin and Gazivoda reservoir

(Figure 2).

- Dams security as far as the Drini river hydropower infrastructure/dams are concerned, and the need to manage flooding risks in the Shkodra plain.

As for the institutional aspects, there are increased cooperation and technical exchanges between the riparian countries universities and water administrations since 2008. On top of that, in 2011, a meeting was held in Ohrid regarding the setting up of an institutional mechanism for the Drini River Basin. The strong cultural links between Kosovo and Albania facilitate the cooperation process.

**Area 2 - The Ibër River Basin and Gazivoda reservoir** are located in the upper west Danube basin as shown in Figure 2. Since Yugoslavia broke down, the Ibër River Basin and Gasivoda reservoir are shared by the now independent countries of Kosovo, Montenegro, and Serbia. To improve water security in central Kosovo, investments are planned to rehabilitate the Transboundary Gazivoda water system taking in consideration the possible futures corresponding to various scenario of climate change. Heavy loads of pollutants are discharged in the Ibër in Kosovo. Pollution, which is discharged directly in the Ibër, is coming from the northern Kosovo Province of Mitrovica and its industrial and mining areas. Additional pollution is coming from the Ibër affluent called Sidnica since there is no wastewater treatment plant to date for the Prishtina agglomeration (Baudry *et al.*, 2012). Master plan to build such infrastructure is under preparation (Baudry *et al.*, 2010).

Serbia did not recognise the Kosovo State. The resulting tense political situation in the northern Serbian populated part of Kosovo. As a result, sharing information with the Serbian State on water issues is difficult. For instance, all groundwater documentation from Yugoslavian time is not accessible for Kosovo administration and partners. This hampers the development of river basin and ground water management. As for infrastructure operational management, rules which were established during the Yugoslavian period, (when the Gazivoda dam, hydroelectric and irrigation facilities were built), are still applied. These

rules include the release of an ecological minimum flow in the Ibër River. It might even happen that, for specific maintenance operations, the Serbian specialists, who have particular skill or specific know-how, cross the borders.

On the larger scale of the whole Danube Basin, the riparian countries of the Ibër River are entitled to be member of the Protection of the Danube River. Serbia is full member since 2003 but for Kosovo State, the situation is complicated by the political situation. This case shows how, on one hand, the political situation has a decisive impact on formal cooperation and how, on the other hand, collaboration between specialists is still practiced for operational matters.

**Area 3 . The Lake Cyohoha and lake Rweru as well as Akanyaru marshlands** are shared by Rwanda and Burundi (Figure 3). These water bodies are located in the Kagera sub-basin which itself is part of the River Basin of Lake Victoria in the upper Nile River Basin. Investments are planned to use the water of Transboundary lakes to foster the socio-economic development of the dense populated areas on both side of the border.

The driving forces leading to the development of local Transboundary cooperation are mainly the following:

- the observed reduction of the fish size and the need to regulate fishery in the Transboundary lakes,
- the need to protect soils and land from erosion and to preserve biodiversity in Akanyaru marshlands,
- the development opportunities laying in the use of Transboundary waters through fishery, irrigation, transport, tourism, agriculture infrastructure, etc.
- the need of improved operational hydrological monitoring and of better exchange of information,
- the planed hydropower infrastructure in Rusomo Falls at the border between Rwanda, Burundi and Tanzania. The dam to be built will impact Transboundary management upstream by increasing the Akanyaru/Kagera river water level.

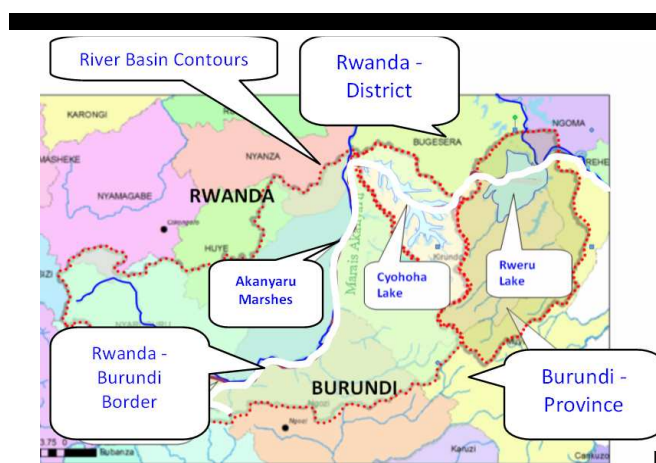


Figure 3 : Transboundary water bodies between Rwanda and Burundi - lakes Cyohoha, Rweru, Akanyaru marshes & administrative units: District (Rwanda) & Province (Burundi)

On the institutional side, in 1981 the Kagera Basin Organisation (KBO) was created. Rwanda, Burundi and Tanzania were members at this date. Its team formulated project documents for investments including for the construction of hydropower infrastructure at Rusumo Falls.

The KBO was dissolved in 2004. One of the reasons was difficult political relationship between riparian countries. In addition, at that period, the East Africa Community was playing increasingly an influential role in the water field. There was also a risk of redundancy between KBO activities and the Nile Equatorial Lakes Subsidiary Action Program (NELSAP) of the 1999 initiated Nile Basin Initiative (NBI). NELSAP took over most of the KBO functions including identification, feasibility and implementation of development projects for Transboundary lakes. At bilateral level, Rwanda

Table 1: Driving forces for water cooperation between riparian States on selected Transboundary areas -

**Legend** (driving force : existing x , significant xx: important xxx), according to author judgment

Driving forces for cooperation Transboundary Area /	Drini	Ibër	Volta	Rwanda-Burundi	Rhine
Navigation				xx	xxx
Risk of misunderstanding due to insufficient scientific information	x	xxx	xxx	x	
Hydroelectricity infrastructure	xxx	xx	xxx	xxx	xxx
Polluants, Solid Waste abatement	xxx	xxx			xxx
Fishery regulation				xxx	xxx
Invasive species			x	x	x
Ecological minimum flow	xx	xxx	x		
Biodiversity :National park / Ramsar zone			Kompienga, Bagré	Akanyaru marshes	xx
Membership of a River Basin Organisation		Danube	Volta	Victoria Lake	Rhine
Promotion of IWRM and external funding		xx	xxx	xxx	xxx
Migratory species					xxx
Ground water management				x	xxx (Alsace)
Erosion, land degradation	x		xx	xxx	xx
Transboundary lakes	Lakes Ohrid, Prespa Shkodër xxx	Gazivoda Reservoir xxx	Bui dam (under construction) xxx	Lakes Rweru and Cyohoha xxx	Lake Constance x
Risk link to dam overflow and high waters	xxx	Gazivoda reservoir	Bagré Bui, Sourou xxx	xx	x

and Burundi organised meetings with the aim either to identify Transboundary priority actions or to solve urgent issues such as border and land conflicts linked to the change of the Akanyaru river bed. In effect, this river contours is the reference for border delineation.

Transboundary stakeholders meetings, capacity building activities have a large positive impact for the establishment of well-accepted development plans. They foster the coordination and collaboration between local and national stakeholders of riparian countries' administration (Vollmer, 2009). It generates also significant functioning costs. For the implementation of investment projects, proposals were put forward to set up Rwanda-Burundi bilateral Committees for each Transboundary water body (Lakes and Akanyaru marshes). Their mandate could be to improve coordination, promote information sharing, develop and approve joint investment plans. It was proposed that the Committee comprise a limited number of representatives of national administration and local Province (Burundi) and District (Rwanda) (Figure 3). The equitable implementation of measures stakeholders and investment and the transfer of know - how from one country to the other are considered as key factors in this process (Hamel & Baudry 2012). The situation in this area highlights the importance of local authorities' role as well as the positive impact of a common culture and language in bilateral cooperation and the need of a leader to put in motion the whole cooperative process.

**Area 4.** The Volta River Basin is shared by Burkina Faso, Ghana, Mali, Togo, Benin, Ivory Coast (Figure 4). The IWRM principles have been supported by donor Agencies since the early 1990's. River Basin Organisations (RBO) have been set up in Burkina Faso and Ghana and the Volta Basin Authority (VBA) was created in 2007. International donor agencies including the environment and development NGOs support the establishment of RBO and VBA programmes. They also promote stakeholders involvement at local and regional levels. These development Agencies cooperate but also compete for implementing projects. This generates risks of redundant activities or studies. As a matter of facts, when functioning costs of Transboundary institutions are supported by external donors, coordination difficulties between Agencies affect the implementation of Transboundary activities. In such a context, the benefit of the financial and human resources committed for IWRM on the population socio-economic situation should not be.

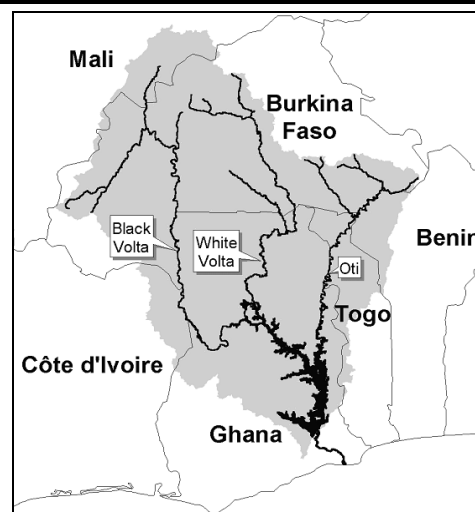


Figure 4 : Volta River Basin and riparians countries

In area 4, the risk of flooding affects bilateral relations. Several times, on the White Volta, the opening of the Bagré Dam gates (in Burkina Faso), in order to avoid the dam destruction by overflow, have led downstream to people's death in Ghana. Tensions between Ghana and Burkina also occurred in the late 1990's, in a context of energy crisis in Ghana. In 1998, the level of water in the Akosombo reservoir was very low. This affected hydropower production. The authorities of Ghana linked the energy crisis to the construction of many dams in Burkina Faso. Then, research programmes on the climatic, hydrological, land cover evolution were carried out. They played a key role in understanding evolutions and climate change possible impacts in the future. They provided evidences that the quantity of water flowing from Burkina Faso into the Lake Volta was small compared to other sources (Leemhuis, 2009). The effect of land cover modification on hydrology was also studied. The 1972 and 1983 droughts in the Sahel led to erosion of river beds and the degradation of land cover. It was found that in the upper part of the Volta River Basin, the runoff increased after land cover degradation (Mahe, 2010). As a result, during exceptional rainy events

Table 2 : factors influencing water Transboundary cooperation **Legend** (influence - x : low, xx : medium, xxx : important)

Factors / Area selected	<i>Drini</i>	<i>Ibër</i>	<i>Volta</i>	<i>Rwanda-Burundi</i>	<i>Rhine</i>
Common language	Albania/Slavic	Albania/Slavic	French/ English	Kirwanda	French/English/ German
Common culture	Ex-Yugoslavia/ Albania	Ex-Yugoslavia/ Albania	x	xxx	x
Political relations	xx	Tensions between Kosovo and Serbia	xx	xx	xxx
Administrative capacity and integrity	Rather low	Low salary and budget	Improving (ex: Ghana) but low salary & budget	Improving ( ex: in Rwanda) but low salary & budget	High
Population income, human development index	Low	low	Very low	Very low	High
Technical channels and availability of expertise	x increasing	x Management of infrastructure	xx	xx	xxx
Unbalance of power between riparian countries,	No	Yes in Danube river basin	No	Yes in parts of Nile basin	No
External donor influence	xx	xx	xxx	Program NELSAP	No
Complexity, Difference of scale local / whole Basin	x	xxx	x	xxx	xxx



the water flowing through the dam spillway could be larger than the one estimated based on historical data. Hence, works to secure the Bagré dam was decided. As for Lake Volta (Akosombo), after decades of low waters, in 2010, the level was the highest ever recorded. This was a surprise for those who were putting forwards that the climate change might lead for years to the low level in Lake Volta. Another issue is the difficulty to apply the internationally recognised Transboundary watercourse management principles. For instance, a Chinese bank and the Ghana government decided to finance the construction of the 400 MW hydropower dam at Bui (Black Volta). The dam is under construction in 2013. When the reservoir is filled, it will have a cross-border impact on an Ivory Coast national Park. A preliminary agreement of riparian States through VBA was not obtained before starting construction. Moreover, the storage of water at Bui dam will make difficult the construction of another dam upstream in Nounbiel near the border between Burkina Faso and Ivory Coast. This project, however, never received sufficient donors' support.

**Area 5. On the Rhine River Basin**, the 1986 accidental pollution from Sandoz chemical plant and later, the 1995 large scale flooding, played a key role in the enlargement of the mandate of the International Commission for the Protection of the Rhine (ICPR). Since 2000, the E.U. Water Framework Directive (WFD) rules the IWRM process in the E.U. More recently, the 2007 Flood Directive and the E.U. climate change policy influence the ICPR activities. The long lasting cooperation through ICPR and Rhine Action Plan led to significant results, such as the return of Salmons and dramatic pollution abatement. Cooperation was also developed on Transboundary groundwater. Franco-German scientific work on the Rhine aquifer in Alsace is continuously developed. Even though, interpretation and translation in different languages generate costs, the common cultural and scientific heritage is critical for efficient cooperation in the European context (Barraqué, 2006). In the Rhine River Basin, the high level of education, the socio-economic development and the quality of scientific expertise have a positive influence on Transboundary water management. The experience gained has been used through E.U. funded project such as "Twin Basin" or for worldwide institutional support to water administration and River Basin Organisation. In this connection, since the 2006 Oudin - Sandini law, the French Water Agencies, including Rhine-Meuse Water Agency, are committed in institutional collaboration with River Basin Organisations. They also finance small water projects in developing countries.

## CONCLUSION

Experience gained while implementing Transboundary water management projects is not easily conceptualised but still, represent an interesting perspective. Taking into consideration the experience gained through consultant work as well as reviewing literature, it was possible to identify factors impacting the cooperation process between riparian states. This kind of analysis can be useful as background picture for designing project, reviewing the quality of the cooperation process and weight the efficiency of public resources allocation. In addition, there is often a large gap between people concerns at local level and the very large perspective of Organisations in charge of wide international Basin (Nile, Rhine, Volta). While considering basin wide issues, the interests of the various local

populations which are using the waters and are impacted by water management should not be forgotten. Finally, long term difficult efforts for enhancing the quality of the production of water related data should not be sidelined, especially in low income countries. Another issue is the difficulties of improving of data quality without long term commitment. In a Transboundary context, these activities might not be as much in the spot lights as more rewarding IWRM activities but good data are assets for the future.

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