

The Institutional and legal Arrangements in the Nile River Basin: Suggestions to Improve the Current Situation toward Adaptive Integrated Water Resources Management

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Abstract

A comparative Study was conducted in this work in order to investigate the current situation in NRB regarding the institutional and legal arrangements needed to support the AWRM strategy. Two similar river basins were selected to seek the desired situation and to introduce suggestion to reform the current situation in the basin. Before that, the ideal situation is investigated to be as a yard stick for the desired situation. The study indicated that the necessary AWRM criteria may include regulatory as well as implementation organizations that support shared-vision reaching with its all necessary features (cooperation, stakeholders' participation, subsidiarity, and information and knowledge exchange). Thus, the main features of the desired situations regarding AWRM in river basins are stakeholders' participation, learning-driven ability, quick response to risks and uncertainties, and finally a legal framework that could support these criteria. Although the AWRM criteria seem to be satisfied in NRB, the basin lacks the necessary regulatory institutions as well as the legal framework. According to this, this study recommends to reform the current situation in NRB by creating regulator institutions (pol-

icy and decision making level) as well a legal framework to legitimate them.

Keywords: Ideal situation, desired situation, shared vision-reaching, legal framework regulatory organizations.

Notation

AWRM	Adaptive Water Resources Management
AIFP	Agricultural, Irrigation and Forestry Program
DCG	Donors Consultative Group
CCILM	Committee for Coordination of Investigation of the Lower Mekong
CEO	Chief Executive Officer of the Secretariat of Mekong River Basin
IRB	Incomati River Basin
IWRM	Integrated Water Resources Management
MRB	Mekong River Basin
MRC	Mekong River Commission
NBI	Basin Nile Basin Initiative
NMCs	National Mekong Committees
NRB	Nile River Basin
SRBM	Shared River Basin Management
SADC	South African Development Community
SAPs	Subsidiary Action Programs
SVPs	Shared Vision Programs
TIA	the Tripartite Interim Agreement for Cooperation and Sustainable Utilization of Water Resources of the Incomati and Maputo Watercourses.
TPTC	Tripartite Permanent Technical Committee.

1 Introduction:

1.1 Geographical background

The Nile River Basin (NRB) is a unique system amongst the basins of Transboundary Rivers. The geography of the Nile basin is both distinct and varied. From the most remote source at the head of the River Luvironzo near Lake Tanganyika, to its mouth on the Mediterranean Sea, at 6,500 km the Nile is the longest river in the world. Some 2.9 million km squared in extent, overall the basin drains

about 10% of the continent. But the geographical and political linkages go beyond the basin itself – the ten Nile Basin states embed Nile Basin processes within the wider social and economic development of Africa across all major parts of the continent. The ten Nile countries link processes in southern Africa to northern Africa and the Mediterranean, development in Central Africa to the West Africa Atlantic coast, and the regional systems of the Middle East to Indian Ocean (Nicol & Shahin, 2003).

1.2 Justification of the study

Many scholars have argued that a holistic management attitude is needed in the river basin management (RBM). Because of these arguments, the concept of integrated water resources management (IWRM) emerged. Since the UNCED ‘Conference on Water and the Environment’ in Dublin (1992) with its concluding ‘*Dublin Principles*’ the term IWRM became the keyword for all attempts of innovation in water management (Pahl-Wostl *et al* 2006). The efficiency of river basin management based on IWRM concept varies from basin to other. In some basins its major criteria are well established while in some others they are not even found. For instance, in the NRB Abdalla (2006) described its current situation regarding IWRM elements by concluding that: NRB lacks many essential elements that needed to establish the desired situation regarding legal and organizational set-ups (higher authority, higher basin commission(s), legal framework, and conflict resolution mechanism). Nevertheless, the implementation of the concept faced real obstacles. Biswas (2004) and a couple of respondents to his article pointed out several barriers to implementation. Integration of sectors and issues would require more centralized policy development, implementation, and thus larger, slower, and more bureaucratic authorities to handle all policy aspects. Furthermore, objectives like stakeholder participation and decentralization would be unlikely to promote integration.. Further implementation obstacles suggested by C. Pahl-Wostl *et al* (2006) as:

- Abstractness: there is no clear ontology of IWRM concepts, e.g. on ‘related resources’. Are related resources just neighbouring resources or does it includes all interrelated multi-sectoral areas?
- Uncertainty in management process, system understanding, modelling, knowledge, etc.

- Lack in scientific basis: as pointed out by Jeffrey & Gearey (in press) there is no reported empirical evidence for the benefits of IWRM. It can be characterized as a normative pragmatic approach without a deep scientific basis building on verifications and observations;
- No guidance how to deal with contradictory or competing demands on water usage; little implementation guidance generally;
- Missing operable indicators or criteria for indicating implementation success;
- No concrete convincing implementation has been reported so far. These statements and obstacles provide evidence for the need to reconsider the underlying paradigms of policy-making and water management. It can be claimed, that in reality the ideal IWRM approach is rarely implemented completely, often in part. Only selected sub-sets of IWRM issues that fit to specific, local circumstances are implemented in river basins.

It is obvious that most of the scholars are strong supporters of an integrated approach to water resources management but claim that IWRM cannot be realized without rethinking fundamental assumptions and paradigms underlying current management approaches. In the way of making this conception more feasible Pahl-Wostl, 2002 suggested that:

- Expand technical management to truly integrate the human dimension.
- Make management more adaptive and flexible to make it operational under fast changing socio-economic boundary conditions and climate change. This poses considerable challenges to the tradition of water management characterized by a prediction-and-control approach and an emphasis on technical solutions. To face those challenges *adaptive water management under uncertainty* is advocated as a timely extension of water management and a requirement to really move towards IWRM (Pahl-Wostl *et al*, in press) where uncertainties of the system are being investigated through an efficient information systems. The knowledge gained by this process is a feedback that prescribes water managers to introduce new objectives and measures to cope with the new situation.

Kranz et al (2005) suggested two main pillars that support the adaptive water management under uncertainty are the structure and constellation of institutions in the water governance of trans-boundary basins, and the role of information management in such regimes. The author of this study, in addition to these, suggests the legal frame work that gives these institutions their legitimacy as a third pillar. Reviewing the facts mentioned above, one can conclude that

the **basic institutional and legal criteria** of adaptive integrated water management (AWRM) may involve those institutions that support information management and knowledge exchange. The institutional criteria are: learning-driven, quick response to risks, information management and knowledge exchange ability, shared-vision reaching willingness, stakeholders' participation, and subsidiarity. While legal principles are: the prevention, precaution, the common but differentiated responsibility, the prior notification, the prior environmental assessment, and the prior consultation principles.

The selection of the institutional criteria in this study is based on the fact that the main target of AIWRM is dealing with the risks and uncertainties in a system, while the selection of the legal criteria is based on the need of these institutions to be supported legislatively.

1.2 Assumptions of the study

This study assume that in spite of the fact that NRB lacks most of the proper institutional and legal arrangements for sound AWRM, there are some indicators that the criteria of adaptive integrated water management are there at their minimum levels.

1.3 Objectives of the study

This study attempts to:

- Investigate the criteria of the ideal situation regarding institutional and legal setups in river basins that enable them to meet the strategy of adaptive water management under uncertainties, and,
- Examine these criteria against the current situation in the Nile River Basin and other two similar river basins, to Investigate the desired institutional and legal situation regarding adaptive integrated water resources management, and finally
- Introduce suggestions to improve the current situation in NRB.

1.4 Scope of the study

This study confines itself to investigate the criteria that could support the strategy of adaptive integrated water resources management regarding institutional and legal arrangements between the NRB riparian countries rather than those arrangements within the countries per se. In addition to this, the institutional and legal criteria of information management are also investigated at the large scale only.

The Nile River Basin Initiative (NRBI) is used as a framework since it represents the only arrangements in the basin that have acceptance from all the basin's countries.

1.5 Methodology

A descriptive as well as analytical approach is used to conduct this work. A comparative study has been carried out on three river basins (NR MR, IR), which have been chosen according to their similarities specially their high level of uncertainty and risks in order to investigate the current institutional and legal arrangements regarding adaptive integrated water resources management in the Nile river basin and suggest the necessary reforms needed. To achieve this, many materials were used; among them were using published and unpublished literature, and using the Internet.

2 Ideal Situation of Institutional and legal arrangements regarding Adaptive Integrated Water resources Management

2.1 Institutional Principles and indicators of Adaptive Water Resources Management

2.1.1 Characteristics and Functions of basin Organizations

For the management of shared rivers, two types of organizations are needed: one is regulatory (policy-level) and the other developmental (implementation-level). Certain executive powers may be further delegated to lower levels at sub-basin or river-board level. River basin institutions should see it as their first duty to share relevant data sets on rainfall, hydrology, dam operations and related aspects (Jaspers 2002).

One of the important organizations in the international river basins is the international river basin commission. It plays the role of a higher authority in the national level that always triggers and enforces cooperation between different organizations in the basin. However, in international level it is created voluntary. The significance of such a body has been widely recognized (e.g. Petersburg declaration and Dieperink, 1997). River basin commissions may coordinate monitoring and research efforts, add legitimacy to the monitoring and research results and in this way provide a common,

generally agreed upon factual basis for management. They furthermore offer the basin states a platform for coordinating their policy and management. River basin commissions can also prepare RBM plans and programs, but after adoption by the Commission, they still have to be adopted by the basin countries or a “Ministers Conference”. River basin commission may also oversee the implementation of the plans, programs, but implementation remains the responsibility of the basin countries. Finally, river basin commission can play a significant role in resolving river-related international conflicts (Csiti & Wessel 1993).

Successful institution arrangements should be composed of several complementary structural components, and a set of these components can be assumed by the basin organization:

- Organization(s) to conduct the management, and capital investment. One of these is the basin organization proper, but other organizations, notably governmental technical departments, utilities as well as bodies that deal with land management, have to assume their part of the overall task.
- Incentive systems (subsidy rules, prices, regulations, etc.).
- Regulatory systems (the formal and informal sets of regulation and rules, including mechanisms of accountability).
- Capacities and skills as embodied in the individual staff, and in the way the organizations manage to employ and develop these capacities.
- Trust and confidence of the stakeholders and civil society (Alaerts and Moigne, 2003).

2.1.2 The role of shared vision in the shared river basin management process

The author of this study suggests that the shared vision in international river basin management is a continuous process, which is needed at the beginning to develop the motivation and willingness to cooperate between the riparian countries. At the middle of the process as a result of the activities that the pillars of the important IWRM concept (political, operational and institutional) are providing; stimulated by the initiating shared vision, a new kind of vision, which supports the roof of the temple. This suggests an ideal feedback mechanism that enable decision makers to adjust their vision, which the core element of AWRM.

2.1.3 Information Management and knowledge exchange institutions

The operational institutions are the centrepiece of the process. Technical cooperation between riparian countries is a must if such issues as flood control; drought abatement, soil erosion and siltation are arising up. These issues require sophisticated real-time monitoring of hydrological and climatic phenomena. Subject matter specialists and technical staff, dealing with variety of uses of the water resources, may play an important, and often decisive, role in ensuring continuity in international cooperation. Technical experts are thus often the locus of “institutional memory”. There is scope for technical cooperation on a large number of issues: information, crises procedures, artificial floods, human recourses development, joint research, joint plans and joint ventures (Alaerts & Moigne, 2003).

2.2 Legal Principles of Adaptive Water Resources Management

The logic and indeed practical attitude in order to select legal principles that can support adaptive integrated water resources management is looking toward environmental law. It is known that most of environmental law principles came from international law system (Gupta 2004).

The United Nations Law on Non-navigation Uses of International Watercourses is the international legal framework, which represents the outcome of a long global negotiation on how to deal with international watercourses in equitable and sustainable manner. The manifestation of this law is the United Nation Convention on International Watercourses. The main features of this law are depicted according to Gupta (2004) as follows:

Objectives: Art. 1	Definition: Art.2	Right to Participate: Art. 3, 4
Equity Principles: Art.5, 6	Duty not to Cause Harm: Art. 7	Duty to Cooperate: Art. 8, 9
No Priority of Use: Art. 10	Planned measures: Art. 11, 19	Duty to protect: Art. 23
Regulation Installation: Art. 24-26	Emergency Situations: Art.27, 28	Dispute Settlement: Art. 33

3-Current Situation in the three river basins (Nile, Mekong, and Incomati River Basin)

3.1 Current Situation in the NRB

3.1.1 Institutional Arrangements of the Nile (Nile Basin Initiative)

The Nile Basin Initiative (NBI) represents the only institutional arrangements that involve all basin riparian countries. The NBI describes itself as “transitional arrangement until a permanent legal and institutional framework is in place”(NBI, 2000) and comprises a Council of Ministers of Water Affairs of the Nile Basin (Nile-COM), a Technical Advisory Committee (Nile-TAC) and a Secretariat (Nile-SEC) (Nicol & Shahin, 2003).

Focusing a process-oriented approach, the NBI sought to establish a common point of departure for all stakeholders, namely the NBI “Vision”. This aimed at farming the task to be institutionalised within subsidiary action programs (SAP) at a sub-basin level (Nicol & Shahin, 2003). These SAPs aimed to “identify and implement investment projects that confer mutual benefits at the sub-basin level and that the riparian countries agree to pursue cooperative activities.” (NBI, 2000).

The backbone of NBI is the shared vision, which should be reached by all riparian countries. Jaspers (2002) demonstrated the features of the shared vision for Transboundary Rivers. He claims that shared vision for the management of international rivers can be described as a common understanding between relevant decision makers from each of the riparian states on the projection of the desired future situation with regard to the common and sustainable utilisation of the natural resources in the entire river basin. This understanding is reached after consideration of challenges, opportunities and bottlenecks with regard to management of the basins resources. The vision is developed in close consultation with platform of relevant stakeholders and interested parties.

To translate the shared vision into action, the NBI has also initiated a Strategic Action Program, which includes two complementary components: (1) a basin-wide Shared Vision Program (SVP) and (2) Subsidiary Action Program (SAP). The SVP includes a series technical assistance and capacity building-type projects to be

implemented basin-wide to create an enabling environment for cooperative development. The SVP project portfolio includes 7 projects. Four of these are sectoral in nature; addressing issues related to environmental management, power trade, efficient use of water for agriculture, and water resources planning and management (Efficient water Use for Agriculture project, Water Resources Management project, Transboundary Environmental Action Project, and Socioeconomic, Benefits Sharing Project, and Regional Power Trade project); while the remaining 3 address the cross-cutting themes of confidence building and stakeholders involvement, applied training, and benefit sharing and integration (NBI 2007)

3.1.2 Current Legal Arrangements in NRB

The current status of the United Nation Convention on International Watercourses is that it is not yet in force because it needs 35 ratifications. Currently it has 16 signatures and 12 ratifications/ Accessions (Salman, 2003). As of August 15th, 2002 none of the Nile Basin countries have ratified the convention El-Khodari (2002).

The historical background regarding legal arrangements in the basin influenced strongly the riparian countries' position against the convention. None of the riparian countries is satisfied with its current allotted amount of waters. The feelings of inequity and being harmed are dominant among the up stream-down stream countries. This resulted in lack of trust between the basin's countries. During the International Conference on Fresh Water, Bonn, Germany, 3-7 December 2001, the Egyptian delegation objected on using the term "International Watercourses" and favoured the use of "transboundary waters" in formulating the conference final report (El-Khodari, 2002). This explains why the NBI is still lacking a legal framework till now and of course reflects strongly on the strategy of AWRM.

3.2 Current Situation in Mekong river basin

The Mekong River Basin consists of six countries: Cambodia, Lao, Thailand, Viet Nam, China and Myanmar. However, the two upstream countries (China and Myanmar) are not included in any arrangements regarding the basin; they are, rather, dialogue partners (Rai 1995).

The main features of the institutional sets up and legal framework in Mekong River are: The 1995 Treaty, as a legal framework. The history of this agreement is mentioned by the MRC (2002): The Mekong River Agreement is a multi-lateral international agreement signed by Thailand; Cambodia, Viet Nam and Lao PDR. It is primary a cooperative not a regulatory agreement by setting out the framework for cooperation between the four signatory countries based on consensus seeking. The agreement establishes objectives, principles, processes structure and procedures. It seeks to achieve the “sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin”. Its key principles are those of sustainable development, environmental protection, cooperation and mutual benefits, basin wide management and equitable water use. It therefore includes the two underlying principles mentioned above, those of sustainable development and equity (Buxton et al, 2002)

On the other hand, Mekong River Commission (MRC), which represents the organizational set up, branches to:

- Council of Ministers: consists of one member from each countries of each country at ministerial or cabinet level. The council formulates policy, makes decisions and provides other necessary guidance concerning the promotion, support, cooperation and coordination of joint activities and programs in order to implement the 1995 treaty..
- Joint Committee (JC): consists of one member from each country at no less than Head of department level. It implements policies and decisions of the Council and supervises the activities of the MRC Secretariat (MRC, 2001).
- MRC Secretariat: provides technical and administrative services to the council and the Joint Committee. Under the supervision of the Joint Committee, the Chief Executive Officer of the Secretariat (CEO) is responsible of more than 100 professional and general support staff. The counterparts for MRC activities in the four member countries are the National Mekong Committees (NMCs) (MRC, 2001).
- National Mekong Committees: they serve the needs of the national Council and Joint Committee members of each country. Their overall goal is to strengthen cooperation by providing a link between the MRC and national governments and by coordinating MRC related activities at the national level. The structure and composition of the NMCs varies from one country to another. Each NMC is supported by a Secretariat (MRC, 2001).

- National Mekong Committee Secretariats: They support the NMCs by helping to identify and coordinate MRC programs, assist national line agencies with MRC-related activities, and facilitate arrangements for international events, including the Joint Committee and Council meetings (MRC, 2001).

3.3 Current Situation in Incomati river basin

The Incomati river basin is situated in the southern eastern corner of African continent. The basin is shared between South Africa, Swaziland, and Mozambique, and discharges in Maputo Bay in the Indian Ocean. The adjacent basins, the Umbeluzi and Maputo basins, also discharge in Maputo Bay, and are also shared by the three countries. In fact, the three basins cover the entire territory of Swaziland. The Incomati Basin is small compared to some other international rivers. Yet, its history of water sharing commands attention for two main reasons as Carmo Vaz and Zaag stated (2003):

- Water use is intense, with 50 percent of water generated in the basin being withdrawn. Water scarcity has been evident since the mid-1980s, has become more severe in the last decade. Competition over water is real, and water abstractions are fast approaching the limits of sustainability. The effects of drought, but also floods, become ever more pronounced.
- The basin is situated in a part of Africa that over the last forty years has experienced a dynamic, sometimes turbulent and volatile, political history. The basin has seen a change from colonial rule to independent one-party states and subsequently a transition to democratic rule as well as the end of the apartheid regime. These changes were frequently accompanied by violent intervention (Carmo Vaz and Zaag, 2003). This shows the high level of uncertainties and risks.

The current legal framework in Incomati river basin is composed of bilateral agreements to form a Joint Water Commission between South Africa and Swaziland, Mozambique and South Africa and finally an agreement between Swaziland and Mozambique. The Tripartite Interim Agreement for Cooperation and Sustainable Utilization of Water Resources of the Incomati and Maputo Watercourses, which was signed in 2002, represents the multilateral agreement between the three countries of the basin. This agreement is abbreviated as TIA. The legal aspects of this framework are based on the South African Development Community (SADC) Protocol on Shared Wa-

tercourses. SADC is a regional organization, which includes the Republic of Angola, the republic of Botswana, the Democratic Republic of Congo, the Kingdom of Lesotho, the republic of Malawi, the Republic of Mauritius, the Republic of Mozambique, the Republic of Namibia, the republic of Seychelles, the Republic of South Africa, the Kingdom of Swaziland, the United Republic of Tanzania, the Republic of Zambia and the republic of Zimbabwe (Carmo Vaz and Zaag, 2003). In article 3 of SADC protocol legal environmental principles such as equity principle, precaution principle, prevention principle, and principle of sustainable development are stated clearly. While in article 4 (specific provision) prior notification principles, the prior environmental assessment principles are adopted.

According to TIA, the organization set up in Incomati river basin is composed of the Tripartite Permanent Technical Committee (TPTC), which was established in February 1983, consisting of three representatives from each of the three government concerned. The TPTC is convened on an ad hoc basis, as and when circumstances required. All decisions are to be taken by consensus. The functions and duties of the TPTC are mainly of an advisory nature with regard to:

- Measures to alleviate short-term problems regarding water shortages on rivers of common interest during drought periods.
- The division of flows in rivers of common interest, arrangements for the investigation of watersheds, and joint water schemes on rivers of common interest.
- Mechanisms to coordinate and integrate the findings and plans of each country. Report on the optimum joint schemes catering for the needs of all three countries.

Also, according to TIA, the existing bilateral watercourse agreements will remain in force as far as they are not in conflict with this agreement. The agreement uses the same definition of watercourse as used in the UN Convention and the SADC Protocol. The general principles of the SADC protocol apply especially, the following: sustainable utilization, equitable and reasonable utilization and participation, the prevention principle, and the cooperation principle (Carmo Vaz and Zaag, 2003).

4 Designing of Desired Institutional and Legal Arrangements in Nile River Basin

Desired institutional and legal arrangements of international river basins are something different from the ideal situation of these arrangements. Designing desired situation depends largely on different geographic, historical, political, ecological, and socio-economic factors of the real situation in these basins e.g. in arid regions the main concerns of river basin management is water allocation, ecological sustainability, drought and soil erosion issues, whilst in humid areas the main concerns are flood control and pollution abatement (Hendriks, 1996). However, trust and confidence between riparian countries are intangible assets and usually need long lead time to develop. Outsiders can play a crucial facilitating role in building trust. This suggests that it can be successful strategy to start working towards cooperative river basin management arrangement with low ambitious and simple, transparent and easily understandable activities. Once trust is built, the cooperation can take on more complex assignment. The medieval adage should be borne in mind “Trust comes on foot, goes on horseback” (Alaerts & Moigne, 2003).

This section attempts to conduct a comparative analysis using data from two international river basins: Mekong River Basin and Incomati River basin. Selection of these two river basins is due to their similarities to the Nile River Basin. All the three basins are suffering from similar problems: up stream-down stream conflicts, water allocation issues and ecological sustainability issues. The two selected river basins have more advanced institutional and legal arrangements in term of structure and experience. This attempt is to investigate what are found in these two river basins regarding the organizational sets up and legal structures that could support AIWM and to seek the possibility of adopting and applying them in Nile River Basin in order to reform and upgrade the current situation in the basin. The criteria used in this comparative analysis can be summarized into the following:

- **Stakeholders' participation:** This concept should be rooted in the river basin management as legal obligation as well as organizational structure. This characteristic and task is of critical importance for all river basin organizations. The review of all case studies strongly suggests that one of the most specific features of river basin organizations is their functioning as forums in which stakeholders

interests can be represented and that can serve as mechanism to address and resolve conflicts, and achieve consensus both on the vision on the future of the basin and on its development, and on the allocation of the water resources. This forum always is at least to some extent empowered i.e. has statutory rights in the organizational set up. International organizations, on the other hand, appear to not have such direct link and legitimating, possibly because of the large geographical scale of the basin but the idea remains there (Alaerts & Moigne, 2003).

- **Learning-driven:** institutions that enable specialists and decision makers to learn from their experiences are the must. These should have obligatory framework in order to obligate decision makers to make use of new knowledge to renew and strengthen their points of view. **Cooperation in information exchange within the subsidiarity framework between all stakeholders is strongly required.**
- **Quick response to risks and uncertainties:** this requires a good networking process amongst the different stakeholders with effective legal framework that support **transparency and duty to translate the feedbacks to new vision, view and actions.** Useful feedback should be based on effective technical organizations. Cooperation, subsidiarity and information management are also needed here.

On the other hand, legal principles of AIWRM should be examined against their ability to serve the criteria of the desired institutional arrangements that mentioned above. For instance, learning driven criterion needs to be stemmed on the following legal principles: the prior notification principle, the prior environmental assessment principle, the prior consultation principle; while institutions that serve risks assessment and uncertainties analysis require legal principles such as: precaution principle, the prevention principle, the principle of sustainable development. Nevertheless, the presence the same principles are also a prerequisite for the other criteria of AWRM.

Table 1 shows basic institutional criteria of the desired situation regarding adaptive integrated water resources management and its indicators in the three river basins (Mekong, Incomati, and Nile).

Criteria Examined	Indicators in Mekong River basin	Indicators in Incomati River Basin	Indicators in Nile River Basin
Learning-driven	Vision of MRC +1995 Treaty (article 1) + AIFP from 2001 to 2025 + NMCs	TIM	(SVPs) as implementation institutions only, no regulatory institutions are found
Quick response to risks and uncertainties	Vision of MRC +1995 Treaty (article 1) + AIFP from 2001 to 2025 + NMCs	TIM	(SVPs) as implementation institutions only, no regulatory institutions are found
Stakeholders participation	Vision of MRC +1995 Treaty (article 1) + AIFP from 2001 to 2025 + NMCs	Not clear	(SVPs) as implementation institutions only, no regulatory institutions are found

Table 2 shows basic legal criteria of the desired situation regarding adaptive integrated water resources management and its indicators in the Nile River Basin.

Criteria Examined	Indicators in Mekong River basin	Indicators in Incomati River Basin	Indicators in Nile River Basin
The prevention principle	1995 Treaty: article 7+10	TIM: article 3+8	Absent
The precaution principle	1995 Treaty: articles 7+10	TIM: article 3+8	Absent
The prior notification principle	1995 Treaty: article 10	TIM: article 11	Absent
The prior environmental assessment principle	Absent	TIM: article 13	Absent
The prior consultation principle	Absent	TIM: article 12	Absent
The principle of sustainable	1995 Treaty: arti-	TIM: article 6+7	Absent

The comparative table suggests the following:

The first lesson learnt from these two comparative tables is the fact that AIWRM is not easy to be traced within any system especially where those systems are managed without prior concrete perception on AIWRM. For instance, the indicators used to prove, or not to prove, the existence of one criterion can be used for the other one e.g. the indicators of any criteria of the institutional set up in MRB can be the same for all the remaining criteria. On the other hand, more than one indicator is used for each criterion. This is because each criterion has many aspects, which require many manifestations. It is obvious that each criterion could embed other criteria. For instance, learning-driven criterion embeds other criteria such as stakeholders' participation, transparency, shared-vision reaching, and information exchange. These features are more obvious in MRB.

In some cases where AWRM elements gathered together in one process as in NRBI, where SVPs involve most of these elements, it is easy to be traced. The same thing can be told about IRB concerning the legal framework. This may be because they have been designed recently and most of the new water management concept have been used either tangibly or not.

For the NRB, although SVPs represent a good institutional base for AWRM, all their organizations are implementation ones, it lacks the regulatory organizations responsible of making policies and decisions. On other hand, since there is no legal framework in NRB most of AWRM legal principles adopted in this study are absent.

In IRB, the scene seems different. The collection of institutional set up with all its regulatory and developmental aspects, and the legal framework in one framework gives it its practical features.

5 Recommendations:

From these results one can recommend the following:

Although the SVPs in NRB seem to be one of the best institutional arrangements regarding AWRM, their implementation nature may inhibit their efficiency. Thus it is recommended to create those regu-

latory organizations especially the high commission(s). Generally speaking, this is what Abdalla (2006) have recommended to strengthen IWRM process in NRB. On other hand, it is highly recommended to collect all these elements in one organization as it is found in IRB

6 Conclusions

This study can be concluded as follows:

- The ideal institutional and legal arrangements regarding AWRM in river basins must include regulatory as well as implementation organizations that support shared-vision reaching with its all necessary features (cooperation, stakeholders' participation, subsidiarity, and information and knowledge exchange).
- The main features of the desired situations regarding AWRM in river basins are stakeholders' participation, learning-driven ability, quick response to risks and uncertainties, and finally a legal frame work that could support these criteria.
- Although the AWRM criteria seem to be satisfied in NRB, it lacks the necessary regulatory institutions as well as the legal framework.
- This study recommends to reform the current situation in NRB by creating regulator institutions (policy and decision making level) as well a legal frame work to legitimate them.

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