Legal Arrangements for Water Governance

Water and Environmental Resources Management Tools

Frank Jaspers, Associate Professor of Water Governance
UNESCO-IHE Institute for Water Education

Lecture Notes
April 2011
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water and Environmental Governance and Law</td>
<td>1</td>
</tr>
<tr>
<td>1.1</td>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>Governance and management</td>
<td>1</td>
</tr>
<tr>
<td>1.3</td>
<td>Legislative function for water and environmental law</td>
<td>5</td>
</tr>
<tr>
<td>1.4</td>
<td>Sources of law and legal binding</td>
<td>7</td>
</tr>
<tr>
<td>1.5</td>
<td>Execution</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>Instruments of Governance</td>
<td>15</td>
</tr>
<tr>
<td>2.1</td>
<td>Governance instruments and effective decision making</td>
<td>15</td>
</tr>
<tr>
<td>2.2</td>
<td>International discussion: policies and principles</td>
<td>16</td>
</tr>
<tr>
<td>2.3</td>
<td>From policy principles to strategic instruments</td>
<td>18</td>
</tr>
<tr>
<td>2.4</td>
<td>Legal instruments</td>
<td>22</td>
</tr>
<tr>
<td>2.5</td>
<td>Enforcement and sanctioning</td>
<td>29</td>
</tr>
<tr>
<td>2.6</td>
<td>Synthesis</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Water Rights and Water Allocation</td>
<td>35</td>
</tr>
<tr>
<td>3.1</td>
<td>Introduction</td>
<td>35</td>
</tr>
<tr>
<td>3.2</td>
<td>Water rights and water use rights</td>
<td>36</td>
</tr>
<tr>
<td>3.3</td>
<td>Water allocation principles in historic perspective: an imaginary case</td>
<td>40</td>
</tr>
<tr>
<td>3.4</td>
<td>Economic allocation: mobility of water allocations (iv)</td>
<td>44</td>
</tr>
<tr>
<td>3.5</td>
<td>Water allocation by plan (v)</td>
<td>47</td>
</tr>
<tr>
<td>3.6</td>
<td>International comparison</td>
<td>48</td>
</tr>
<tr>
<td>3.7</td>
<td>Recommendations: challenges of sustainability</td>
<td>49</td>
</tr>
<tr>
<td>3.8</td>
<td>Conclusions</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>River Basin Organizations: Guidelines for Design</td>
<td>56</td>
</tr>
<tr>
<td>4.1</td>
<td>Introduction</td>
<td>56</td>
</tr>
<tr>
<td>4.2</td>
<td>Terms and definitions</td>
<td>56</td>
</tr>
<tr>
<td>4.3</td>
<td>Justification for integrated river basin management</td>
<td>57</td>
</tr>
<tr>
<td>4.4</td>
<td>Types of River Basin Organizations</td>
<td>58</td>
</tr>
<tr>
<td>4.5</td>
<td>Aspects of implementing IRBM</td>
<td>60</td>
</tr>
<tr>
<td>4.6</td>
<td>Stakeholders and representation in platforms</td>
<td>62</td>
</tr>
<tr>
<td>4.7</td>
<td>Decentralization and subsidiarity</td>
<td>64</td>
</tr>
<tr>
<td>4.8</td>
<td>Development of River Basin Organizations in historic perspective</td>
<td>66</td>
</tr>
<tr>
<td>4.10</td>
<td>The mechanics of designing new river basin organizations</td>
<td>73</td>
</tr>
<tr>
<td>4.11</td>
<td>Integrated planning system</td>
<td>78</td>
</tr>
<tr>
<td>4.12</td>
<td>Water pricing and cost recovery</td>
<td>79</td>
</tr>
</tbody>
</table>
List of figures

Figure 1: Typical distribution of power ................................................................. 2
Figure 2: Water in the global water cycle .............................................................. 4
Figure 3: IWRM and its complexity (To Savenije 2001) ....................................... 5
Figure 4: Typical traditionally tiered government organization ......................... 10
Figure 5: Functionally decentralized river basin organization (platform) ........... 10
Figure 6: Steps in decision making (theoretical) .................................................. 15
Figure 7: Instruments of cost recovery ................................................................. 28
Figure 8: Example of hydrological cycle (simplified) .......................................... 37
Figure 9: Example (simplified of capacity sharing (public private partnership)) ... 46
Figure 10: Ladder of characterization of stakeholder participation (Adeoti, 2004) ........................................................................................................ 63
Figure 11: River basin organization in Zimbabwe ............................................... 75

List of tables

Table 1: Types of plans and policies relevant to river basin management (Mostert 1999) ........................................................................................................ 25
Table 2: Functional tasks ...................................................................................... 31
Table 3: Organizational actors ............................................................................ 31
Table 4: Legal instruments ................................................................................. 31
Table 5: Comparison of types of water rights ...................................................... 39
Table 6: Types of RBOs according to Hooper (2006) ........................................... 59

List of boxes

Box 1: Land tenure In Zimbabwe ......................................................................... 7
Box 2: Dublin Principles ...................................................................................... 17
Box 3: Consolidation of river basin organizations in The Netherlands (Mostert 1998) or balancing bottom-up with top-down ......................................................... 66
Box 4: Development of Councils in Mongolia .................................................... 69
Box 5: Catchment and Sub-catchment Councils in Zimbabwe (to Jaspers 2001) .................................................................................................................. 74
Box 6: Progressive delegation in South Africa (Jaspers 2001) ............................ 76
Box 7: Sample functions for river basin level .................................................... 77
Box 8: Sample functions for sub-basin level ..................................................... 78
1 Water and Environmental Governance and Law

1.1 Introduction

This publication is intending to offer basic insight in processes of governance for natural resources management and in particular for water and aquatic environmental resources. The targeted readers are mid career professionals with at least a relevant bachelor's degree in a water management related discipline or students with some years of practical experience in water management. The intention is certainly not to produce exhaustive overviews of comparative water and environmental law, although substantive reference is made to that field of work. The objective is to identify legal and other institutional arrangements to make integrated water resources management operational and where possible to foster adaptive management. The focus is on identifying legal instruments for quantitative and qualitative water management, water allocation and water rights and the development and strengthening of river basin organizations.

In chapter one generic background information on water and environmental governance is introduced. Relevant legal instruments to support IWRM policies and approaches are described in a nutshell in chapter two. In chapter three the basics of water allocation processes and a thorough description of water right systems are introduced. Chapter four zooms in on river basin organizations as instruments of integrated river basin management. Decentralization concepts and institutional development arrangements are assessed and discussed.

1.2 Governance and management

Water governance

In any society or culture at a certain moment the need will arise to structure human behaviour for sharing scarce resources or for protecting against life endangering natural disasters like floods. In our case where we are focussing on the understanding of human behaviour towards its natural environment, this means that we want to bring order in the social actions impacting on natural resources and the physical environment. Based on customs and traditions, social agreement and consensus determines how human behaviour should be structured in rights, duties and the framework within which activities can be carried out in a society (Gupta 2011). With the origin of social agreement also the need for effective action and enforcement will develop and consequently authority structures are needed. As soon as authority structures develop also the demand for the application of governance arises either in a formal or an informal way.

What is governance?

The Commission of Global Governance defines governance as: 'the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken' (Dellapenna and Gupta 2008). In an operational sense we thus envision the process of taking care of (public) interests (of general application) through leading, ruling and managing the institutional resources. This means that authority is actively applied, and in the process of application of authority also power
is exerted. This process, however, is not without restriction, but is ruled by the Constitution of a state and the relevant laws. The application of authority is supported by a comprehensive set of constitutional, organizational and operational competencies, tasks and responsibilities (functions) to manage the specific field (World Bank 1995). In our case these competencies are applied for the field of water and environmental resources management.

Governance is normally regulated and restricted by law, although in many other systems the function of legislation may also be considered part of governance. This is not necessarily a contradiction and it depends on the definition or specific legal tradition. In practice governance and law are interdependent.

Question: Is there a difference between law and legislation? What is the difference?

Important fields (non-exhaustive) to be covered by governance are:
- Policy development
- Primary and secondary legislation
- (Other) Regulation
- Planning
- Decision making
- Control
  - Monitoring
  - Sanctioning
  - Enforcement

In the eighteenth century the French philosopher Montesquieu launched his ‘trias politica’ theory based upon the concept that separation of the main powers is needed for balanced and democratic governance of the public interests and to avoid conflicts of interests. According to Montesquieu the legislative, executive and judiciary powers have to be separated.

**Trias Politica Application**

![Trias Politica Application](image)

*Figure 1: Typical distribution of power*

Most of the contemporary forms of government (state governance) have (to a certain extent) evolved in line with this principle. In practice, legislative and executive powers may not always be separated in terms of institutional set-up, but often the functions are clearly distinguished. Therefore it is useful to introduce the term ‘function’ as a comprehensive set of tasks, competencies and responsibilities to carry out a public
domain. The term function can encompass various dimensions and levels of administration.

**Water management**

Interested people, experts and non-experts, will have a rooted idea on what should be understood by the term ‘management’. However, it is not easy to come to a comprehensive definition; one will find difficulty in sizing and shaping the umbrella under which relevant functions of (water) management can be covered and summarized.

**What is management?**

Management in a public sense can be defined as the process of taking care of public interests (issues of general application) through decision making, planning, controlling and correcting the organizational resources (Van Hofwegen and Jaspers 1998). As such this description comes close to the definition of governance. The difference is that governance includes the constitutional activities of creating organizations for leading and ruling and also covers management. So, governance includes management; management only covers part of governance. Further, governance is dealing also with other than organizational resources and covers the full institutional spectrum of creating policies, strategies, procedures etc.

What is the difference between institutions and organizations? When and to what extent can you say that institutions are organizations or that organizations are institutions?

Water management relates to the management of water as a resource as well as to the management of organizations and other institutions, who in one way or another are dealing with the supply, conservation and the management of the resource. In this document we will zoom in on water resources management as a function and especially on application of integrated water resources management.

**And what is IWRM?**

The Global Water Partnership describes integrated water resources management (IWRM) as a process that favours the co-ordinated management and development of water resources and of related land and other resources for the purpose of maximising in an equitable way the economic and the resulting social welfare without compromising the sustainability of vital ecosystems (GWP 2000).

In an attempt to become a bit more operational, to my opinion IWRM can be understood as the management of surface and subsurface water in qualitative, quantitative and environmental sense from a multi-disciplinary and participatory perspective and focussed on the needs and requirements of the society at large with regard to water for now and in the future (Jaspers 2003, Van Hofwegen and Jaspers 1998). Water resources management is thereby approached in a holistic way and aiming at various elements of sustainability.

IWRM deals with:

ALL WATER (spatial)
ALL INTERESTS (social)
ALL STAKEHOLDERS (participatory)
So, it means that all water wherever it occurs in the hydrologic cycle is subject to management: surface water, subsurface water, seawater, rain, vapour, wastewater etc. All interests are covered through the specific sector management of the respective water use. For instance: the consumptive uses for drinking and domestic water, agriculture, industry, aquaculture, nature and wildlife and the non-consumptive uses of power generation, cooling, transport, recreation, environment, fishery etc. In the following picture the spatial coherence of water resources is portrayed.

Figure 2: Water in the global water cycle

Ideally all stakeholders are consulted or participate in decision making and other management functions. We could distinguish direct users, potential users, government as water management custodians, (quasi) non-governmental organizations, experts, politicians, society at large etc. Further, all levels of (semi)-public administration are comprised: the functional levels of the river (sub) basin, but also the general levels of district, province, state, national and international level. Water management is interacting with all relevant scientific ($\alpha, \beta, \gamma$) disciplines so not only civil engineering, hydrology, agricultural and environmental engineering, life cycle sciences etc., but also law, economics, (rural) sociology, public, private and business administration etc.

It goes without saying that such a concept is theory. It would be ambitious, if not unrealistic to assume that all this should be made operational for every situation.

IWRM as such is a sort of visionary or utopian situation that one could aim at, but this state will probably only be reached on the long term or maybe, will not be reached completely. IWRM could also be seen as a framework of reference, a cluster of useful
policies and management instruments from which a selection can be used in a specific situation (Moriarty e.a, 2004). There may also be no absolute need to apply each and every IWRM concept or tool. Depending on the water scarcity, water security and economic situation for the specific local circumstances the need for certain instruments to attain or to make IWRM operational should be identified. The challenge is to prioritize the use of instruments in the time in line with specific needs and available resources. In this publication we will try to highlight useful institutional instruments with the river basin as logical unit for management. We expect that this can help in the process of prioritisation, integration, co-ordination of the necessary activities to support and fulfil the ambitions to an acceptable level.

Figure 3: IWRM and its complexity (To Savenije 2001)

This schematic metaphor picture illustrates the complexity of IWRM (by the way: not all dimensions have been reflected in the picture).

1.3 Legislative function for water and environmental law

Law and legislation

The law of a society or state, as distinct from the laws of physics or chemistry, is a ruling of human conduct, imposed upon and enforced among, the members of a given state (Gupta 2011). The law creates:

- legally enforceable expectations (rights);
- duties to respect those rights;
- means of redressing violations of rights (remedies) (Goldfarb 1988).
The law also creates powers that should be responsibly exercised and privileges that can be enjoyed. The law provides the framework within which activities can be carried out in a society. The law attempts to create a certain amount of order in a state by developing specific rules of conduct, by upholding culture and society-specific norms, and by promoting a degree of certainty about the nature of the rules in a society (Gupta, 2011).

Thus, for example, the law recognizes the fundamental rights of all citizens, even though these rights may be defined differently in different countries. When the political system or the policymakers make policies and decisions that could have a negative impact on some of the citizens in the country, the law is expected to provide a balancing force by providing these citizens the possibility of objecting to those policies and decisions. The judiciary or appropriate administrative authorities will then decide between the competing claims using the existing legal principles of justice and rule of law applicable in the country (Gupta 2011). The law is distinct from legislation; the latter usually refers to written laws adopted in accordance with the procedures applicable in a particular country. The law is wider than legislation, in that it also covers unwritten rules, customs and procedures that regulate behaviour.

At the level of the State, there are different kinds of laws:
- Constitutional law is the basic public law of a State which guarantees the fundamental rights of the citizens and which provides the framework within which other laws and policies must operate;
- Issue specific laws including laws on civil law issues such as property, contracts, water, environment etc.;
- Criminal law;
- Administrative law concerning the relationship between the government or public administration and the people.

**What is water law?**

There is no well-defined field called water law and water policy. Water law and policy covers a combination of laws and policies that have been developed in one or more of the various fields of law somehow with a connection with water. However, judicial systems are moving in the direction of establishing one comprehensive water law (e.g. in the Netherlands, Indonesia, South Africa, Brazil and the European Union). Water law has been defined as the creation, allocation and distribution of water rights and further consists of those aspects of the law that are of primary concern in the management of water resources (cf. Goldfarb 1988). Water law is made up of all the provisions which in one way or other govern the various aspects of water management, i.e. water conservation, use and administration, the control of the harmful effects of water, water pollution and so on (Caponera 1992). Traditionally, water law tended to cover the consumptive or non-consumptive use and the sharing of water resources. In the last few decades the environmental aspects of water have also become central features of water legislation. Any well-conceived water legislation facilitates the implementation of water policy decisions on the rational utilization of water resources, while inadequate water law can act as a hindrance to water management. In many countries the water law is an inheritance from the days when water was considered an inexhaustible resource and is, therefore, out of date with current circumstances (Caponera 1992, Dellapenna and Gupta, 2008). In other countries sensible customary legislation was replaced by colonial statutory laws, in the
process changing the basic water usage patterns to the detriment of the community (Gupta 2011).

Neither is there a well-defined field of environmental law and policy. Environmental laws and policies in most developing and developed countries tend to be spread through a large number of other specific laws, policies and administrative orders. Many of these concern land-use, forests, water as well as issues like biodiversity conservation. Also in this field unification efforts are done in many countries to come to one overarching environmental framework law administered by (often) a central Ministry of Environment.

1.4 Sources of law and legal binding

Where legislation may be appearing under a strict formal format, it should be stressed as previously explained, that law concepts are by no means restricted to written codification or statutory instruments. Sources of law may be manifold:

- Formal or statutory law
- Customs, usages or vested norms
- Jurisprudence or court orders from the judiciary
- Soft law or law derived from guidelines, conventions etc.

There are plenty of examples where mature civilisations have been functioning without any codification of legal instruments. In fact, even a number of cases are known, where formalization of customary relations and codification of law has led to ignoring of balanced social relations and hence to chaos and inequity.

Box 1: Land tenure In Zimbabwe

Traditional system of land tenure

Access to land in Zimbabwe used to be a right for all households. The limited labour force in each household in effect meant a natural limit to the size of land any household could cultivate. Access to land was thus quite evenly distributed, through ‘natural’ means.

Although you cannot physically ‘see’ it, access to land in a communal area in Zimbabwe is highly regulated, mainly through kraal heads and chiefs. This system works because of social pressure: infringements are monitored by neighbours. The drier the area, the more important livestock becomes for the local economy. Traditionally, grazing areas were abundant; there was thus no need for fencing. And this was important for the particular physical imperative for the range: in these areas of erratic rain, very unevenly distributed even at minor scales, cattle could be moved to those areas where enough rain had fallen. This is an example of a social solution to a physical imperative.

Access to grazing was in principle open to all households, but in practice only those households with cattle could beneficially use it. The more cattle you had accumulated, the more you would benefit from the grazing (v.d. Zaag 2001).

The land tenure system in Communal Areas in Zimbabwe today is a result of an evolution of the traditional customary tenure system existing in the pre-colonial days. Under traditional tenure, land rights are defined for groups, households and individuals based on traditions and customs evolving over time. Generally, individual families enjoyed more clearly defined spatial and temporal rights over the use of several parcels of land and the natural resources on it.

Such family rights were transmitted to succeeding generations in accordance with customs. Such inheritance has always allowed subdivision. Under varying circumstances, families could also enjoy residual rights of certain land in fallow (Rukuni et al., 1994, p. 20).

Present system of land tenure

Nowadays local level institutions administering tenure are being characterised by conflicts particularly between the traditional authority and “elected” leadership. The intractable nature of
these land administration disputes have, however, been further complicated by the subsequent superimposition of local ruling party structures and later, of government village and ward development committees. This profusion of overlapping and incongruent local organizational structures, each with its own boundaries and drawing on different sources of legitimacy, has thus created weak and disparate local institutions (Rukuni et al., 1994, p. 26).

However, there will always be effort for formulating and formalizing laws into legislation. Formalizing means that also formal requirements may have to be passed e.g.:
- Prerogative of right of initiative (either with Cabinet or Parliament or both)
- Parliamentary approval
- Obligatory advise (of e.g. Advisory Boards)
- Official promulgation and publication in a Government Gazette
- A certain lapse of time
- Aim at and restricted to general application and repetitive use etc.

**Primary legislation?**
Legislation may be primary or secondary depending on the aspects to be arranged or the formalities to be followed. Primary legislation is the binding arrangement of human behaviour aiming at general application with repeatable use following formal requirements laid down in constitutional procedures.

**Secondary legislation?**
Secondary legislation aims at the legal implementation of formal legislation, can be constituted by law and is less formal. For instance, national statutory instruments or regulations issued by a single minister could be considered as secondary legislation. This does not mean that secondary legislation is beyond control of Cabinet or Parliament.

**Regulations?**
Regulations are rules with general external binding for repeatable use issued by an authorised agency in autonomy or by delegation. This may vary from the national government level e.g. Cabinet, Minister etc. to the lower levels of administration as province, district or municipality and may even extend to functional bodies as Water Boards or Water User Associations. Regulations should be considered as legislation and therefore need to be mandated by law.

**Legal binding**
The feature of legal binding refers to the way in which lawful principles (accepted or consented in the respective society or community), norms and standards can be applied.

**What are principles?**
Principles are common and widely approved and socially accepted guidelines on how to behave in future. When, they are generally applied and are repeatedly handling similar cases in a similar way, one can speak of norms. If norms are described, substantiated or quantified, one can speak of standards.

**Binding?**
Norms can have internal or external binding. Internally binding norms are instructions to government bodies, which only under special circumstances (and then in an indirect way) can be applicable for the public. External binding implies that norms are directly
applicable to the public. Hence, these norms are creating rights and duties to respect those rights. Externally binding norms can be enforced through the Judiciary and there are means to redress violations. Internally binding or instruction norms are normally enforced through normal administrative instruments. Cases in which government organizations are trying to force other government organizations to action or prohibition within their normal regime of competencies, duties and responsibilities are rare (but exist!).

**Legal pluralism and legal positivism**

In the analysis of contemporary legal sciences there are various schools with different interpretations on the issue of legal binding. The school of the **legal pluralism** (very popular under social anthropologists) starts from the conception that societal principles and norms are developing in line with the specific physical circumstances, social and economic conditions, cultural achievements, religion etc. and that for the different layers of society and the different arenas of use particular systems of principles and norms are valuable, valid and should be binding for the specific institutional environment. Thus, many different systems are in use concurrently in different segments of society or arenas and should be appraised on their functionality. The emphasis is on the informal arrangements that are ruling human relations without formal enforcement mechanisms of a state organization.

The school of the **legal positivists** (more popular under lawyers) starts from the paradigm that principles and norms become legally binding through the appreciation of the state institutions. The state is considered as the lawful organization to exert law enforcement. Only one all inclusive legal system is applied at the same time. Customary law, traditional norms, informal jurisdictions are considered to be part of the legal system as far as binding and are consequently also enforceable. The state law is considered as a reflection of societal consensus, is uniform, equally generally binding for governments and citizens, subject to repeatable application and should as such be enforced. This does not mean that mere social principles and norms could not be binding socially, but only as far as they do not violate state law.

It can be seen that these schools of thinking are not contradictory or exclusive but differ in paradigm or approach. Challenge is to harmonize both approaches and incorporate customary law principles as much as possible in the state law. In other words, the state law should become as inclusive as possible where customary principles and norms are concerned. It goes without saying that a problem arises where state law and custom are clearly conflicting. A positivist would say that in this case the independent Judiciary has to create jurisprudence (, which is the role of the Judiciary in the first place.)

### 1.5 Execution

The executive power is the function of dealing exclusively with implementation of laws and of leading and conducting management and control in order to carry out the application of governance. Following the theory of Montesquieu this function should be separated from both legislation and the Judiciary. In practice the separation of legislation and the executive is very difficult to realize. In most countries or agencies legislation and execution are closely linked and typically vested in a Cabinet of Ministers, which is to a certain extent taking care of both functions. Ideally, this takes place under strict parliamentary control and often the initiative to launch formal legislation is shared by
Cabinet and Parliament. The executive power can only be adequately applied through relevant government organizations, a balanced set of working rules (institutional arrangements) and legal instruments.

**Organizational arrangements**

In order to apply governance of public interests a public administration or government organization is needed. Government organizations are by definition public establishments founded for a specific purpose based on and including a set of working rules originating from an established custom, law or relationship in a society or community (Jaspers 2003).

This may vary from a sophisticated multi-layered organization equipped with all kinds of modern organizational and technological aids to the simple institute of a chief who receives his subjects once every month to settle land disputes. Depending on the tradition, the physical circumstances and the political system, governance as such may take place at the various (general) levels or tiers of government administration (state, province, district, municipality etc.). In that case one can speak of decentralized (territorial) governance.

![Diagram of a typical traditionally tiered government organization](image)

**Figure 4: Typical traditionally tiered government organization**

A Government can also be functionally decentralized, meaning that a specific organization is constituted for a specific function; e.g. a river basin organization can be constituted for water management at river basin scale (Mostert 1998).

![Diagram of a functionally decentralized river basin organization](image)

**Figure 5: Functionally decentralized river basin organization (platform)**
Functions

Government organizations have been allocated public functions either through a vested set of working rules in the Constitution, by (formal) law or by a vested and consented set of customs.

An (administrative) function can be considered as a comprehensive set of tasks and responsibilities combined with the competencies needed to cover a field of management, in our case the field of water (resources) management. The water management function could be divided into three major fields of management: the constitutional, organizational and operational function (World Bank 1995, van Hofwegen and Jaspers 1998). The boundaries between those functions are not sharply defined and the distinction is arbitrary. The only purpose is to identify, categorize and understand the tasks that should be covered to effectively manage water resources.

The following description and distribution is proposed:

CONSTITUTIONAL FUNCTION:
The total of tasks and competencies needed to set rules, to establish institutions and to formulate policies.

ORGANIZATIONAL FUNCTION:
The total of tasks and competencies needed to organize relevant and adequate decision making, to develop strategies as logical combination of individual measures and to organize their implementation.

OPERATIONAL FUNCTION:
The total of tasks and competencies needed to carry out strategies and to support and carry out decision making.
Questions and assignments chapter 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Can you explain in your own words the meaning of the term Water Governance?</td>
</tr>
<tr>
<td>2.</td>
<td>Is governance resulting from the law or is the law resulting from governance? Please, argue.</td>
</tr>
<tr>
<td>3.</td>
<td>What is meant by the theory of separating powers? How is that arranged nowadays in most contemporary forms of government?</td>
</tr>
<tr>
<td>4.</td>
<td>Can you give a description of management? And the formal definition of IWRM according to GWP?</td>
</tr>
<tr>
<td>5.</td>
<td>Can you describe in your own words what is meant by the term ‘integration’ in the definition of IWRM?</td>
</tr>
<tr>
<td>6.</td>
<td>What is the difference between institutions and organizations? Give examples</td>
</tr>
<tr>
<td>7.</td>
<td>What type of water can be subject to management? Give examples.</td>
</tr>
<tr>
<td>8.</td>
<td>What is the difference between law and legislation?</td>
</tr>
<tr>
<td>9.</td>
<td>What is the difference between direct and indirect binding?</td>
</tr>
<tr>
<td>10.</td>
<td>Can you give examples of regulations of decentralized agencies?</td>
</tr>
<tr>
<td>11.</td>
<td>Can you mention some of the formal requirements that characterize formal legislation?</td>
</tr>
<tr>
<td>12.</td>
<td>Explain where legal pluralists differ in approach from legal positivists.</td>
</tr>
<tr>
<td>13.</td>
<td>Describe why you would favour one of the schools (pluralists, positivists)? If you do not favour either of them, argue out why.</td>
</tr>
<tr>
<td>14.</td>
<td>What is functional decentralization? Can you give examples of functionally decentralized organizations dealing with water management?</td>
</tr>
<tr>
<td>15.</td>
<td>What would you understand by an administrative function? Can you identify at least 3 different activities relevant for water management of what could be covered under a constitutional, an organizational and an operational function respectively?</td>
</tr>
</tbody>
</table>
References


Teunissen J., (2010), Hand book environmental law, Berghauser Pont, Amsterdam (in Dutch)


2 Instruments of Governance

2.1 Governance instruments and effective decision making

It is evident that for an effective and efficient water management the process of decision making is of crucial importance. In daily life decisions are made without much use of or reference to additional instruments. However, when decision making gets more complex a more systematic approach may be useful. It is difficult to make good decisions in a comprehensive way without formulating a clear vision or without some planning arrangement linked up with some scenarios or long term perspectives. Where water management is concerned all kinds of tools are nowadays available ranging from generic strategic instruments up to very specialised instruments such as ICT based decision support systems, river basin models etc. Let us first look at the process of decision making per se and the legal instruments that are available or may be useful in the process of underpinning decision making.

Decision making

One of the most crucial functions of water governance and any other type of governance is a balanced, equitable and effective decision making. In fact, most of other related functions are carried out in preparation or in support of this function. Hereunder, a schematic overview of a typical (theoretical) process of decision making is depicted.

![Figure 6: Steps in decision making (theoretical)](image)

In this process a **vision** can be described as a projection of a new desirable situation for the future after a process of identification, description and analysis of relevant issues and/or problems. A mission is the operational translation of a vision for a specific organization or agency. **Policies** can be understood as the comprehensive formulation and formalization of principles, objectives, targets and aims to reach specific goals at some time in the future. **Strategies** are the subsequent sets of measures needed to
implement the policies often including various different scenarios for problem resolution (Van Hofwegen and Jaspers 1999).

**Principles** are general and widely approved and socially accepted guidelines on how to behave in future. The outcome of a principle can be a norm, a generally applied written or non-written rule for repeatedly handling the same cases in a similar way. Principles can give direction to planning, but of course also to decision making in general at all relevant administrative levels.

**Plans** are comprehensive, publicly accessible outputs of future decision making and of the subsequent intended actions and activities. They can have general internal (directed to the government) or external (directed to the public) binding aiming at repeatable use for the time horizon given.

The process schematically described above is a very complex one and it goes without saying that each and every step in the process is composed of various other subroutines and functions. It would go too far to describe all that, because it would be a study in itself and this is not crucial for our purpose.

**What are legal instruments?**

In this study we comprise under legal instruments all lawful regulations, ruling, decisions and actions that can be used to implement or enforce legally binding norms and standards. These instruments may be directed towards other government bodies like for instance policies, guidelines, most plans, designations and the like. They are often tools to instruct, co-ordinate or communicate. Legal instruments may also be directed towards the public: citizens, but also governments dealing with private interests. One can think about (formal) laws, regulations, designations, operational plans, systems of permits and charges with direct binding. These are general rulings with external binding aiming at repetitive application. One can also include individual decisions: granting of permits or subsidies, decisions to impose taxes and charges etc. They are directed to one person or party for one occasion.

2.2 **International discussion: policies and principles**

It has become a generally accepted approach that prior to any formalisation of legislation and creation of institutional frameworks extensive consultation takes place at a relevant platform, forum or apex body about the policy principles that will guide the legal and institutional reform process (in this case towards IWRM). At the international level this approach was strongly advocated on the International Conference on Water and the Environment in Rio de Janeiro in 1992. During this conference the Fresh Water Chapter (18) of Agenda 21 of the United Nations Conference on Environment and Development was adopted by the member countries. Before and during this conference and after a thorough process of consultation the influential **Dublin Principles** were formulated and adopted by the member countries. The objective of the formulation was to establish consensus and reference on an integrated approach towards water management. These Dublin Principles ultimately resulted among others in the influential World Bank Policy Paper on Water Resources Management, which was revised a number of times afterwards. From there the articulation and implementation of the principles was embraced by the Global Water Partnership (GWP, Solanes 2000). Till now the Dublin Principles still enjoy wide recognition and have played a crucial role in the production and harmonization of water legislation and in the water sector reform processes of many countries.
Box 2: Dublin Principles

- Water is a finite and vulnerable resource, essential to sustain life, development and the environment and should be managed in an integrated way.
- Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels.
- Women play a central part in the provision, management and safeguarding of water.
- Water has an economic value in all its competing uses and should be recognized as an economic good.

The Dublin Principles recognise that fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment. This principle calls for a holistic physical approach to water (respect for the hydrological boundaries), a recognition that resource yields have limits, a need to constrain human activities, to manage upstream-downstream user relations and a holistic institutional approach. The second principle calls for a participatory approach which includes a recognition that participation is more than merely consultation, that in order to promote participation, decisions have to be taken at the lowest appropriate level and that participatory mechanisms need to be created and that there is a need to achieve consensus with the participants. The third principle focuses on the role of women in decision-making and the need for greater gender awareness and active capacity building to incorporate and achieve a substantial role in decision making. The fourth principle focuses on water as an economic good, where economic value includes the value to water users, the net benefits from return flows, the net benefits from indirect uses and an adjustment for societal objectives (Rogers 1998).

Since the Dublin Principles, various events articulated these principles such as the World Water Forums (1997, 2000, 2003, 2006) the World Summit on Sustainable Development in Johannesburg (2002) where the influential Millennium Development Goals were formulated. We will not handle the MDGs here extensively because they are extensively addressed in other WM course modules. It goes without saying that IWRM nowadays hinges on the consensus of the international communities in the widest sense of the word to abide by the MDGs and with regard to water management especially by Goal no 7: To Ensure environmental sustainability. This goal is subdivided in to 3 more or less measurable targets:
- Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
- Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation
- Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers.

In an operational sense, however, the Dublin Principles are still giving active guidance to the processes of development of legislation and water sector reform in developing countries. In the following we will try to break them further down in strategic instruments.
2.3 From policy principles to strategic instruments

In summary, international consensus progressed and is still progressing towards full acceptation of water resources management in an integrated way. Linked up with the implementation of IWRM a number of related principles and strategic instruments developed or are in a process of development. A few are described here (it is summary, certainly not an exhaustive overview.) The principles are emphasising sustainable development, preservation of environmental integrity, integrated planning, stakeholder participation in decision making, demand management, cost recovery and economic pricing, subsidiarity and functional decentralization, public-private partnerships etc. Let us zoom in on each of these principles, so as to generate perception on the implementation, the main objective of this publication. After a brief introduction the principles will be more worked out in detail in the rest of the publication.

Sustainable development and intergenerational equities and responsibilities

This principle was first formulated by the Brundtland Commission as the obligation to meet the needs of the present generation without compromising the ability of future generations of meeting their own needs. The International Law Association specified this principle as sustainable use of natural resources, poverty alleviation, common but differentiated responsibilities of countries, public participation in decision making, good governance and the application of interrelationships and integration (ILA 2004).

Environmental integrity and water management on hydrological boundaries

Water resources management on hydrological boundaries is not a new phenomenon. It has been in existence since ancient times whenever serious water competition arose. Under other physical circumstances also the necessity for communal flood control always delivered a sound breeding ground for institutional “upstream-downstream” arrangements (c.f. the development of the Water Boards in the Netherlands; Mostert 1998). Nowadays, the inability to manage water quality or to preserve environmental integrity and to sustain environmental flows offered a new dimension. It is at present virtually impossible not to organize water resources management in an integrated manner and on hydrological boundaries. For an institution operating on administrative boundaries, not coinciding with the boundaries of the river basin or catchment, it is very cumbersome to conduct water allocation and priority setting or to carry out flood control. Any management action will always be constrained by what happens upstream or downstream. A system of water management on administrative boundaries will induce the respective authorities to either monopolise the water supply sources within its area and to transfer the problem of flooding to downstream. This is both valid for surface water and for subsurface water (as a normal pattern), which together form an inseparable entity of the hydrologic circle. Problems should not be shifted from one compartment of the environment to the other.

The setting of priorities for water allocation in an equitable and efficient way other than on hydrological boundaries is per definition physically impossible. It is, of course, very wise to harmonise as much as possible administrative and hydrological boundaries for the sake of administrative simplicity. The implementation of MDG 7 implies that everything should be done to avoid pollution and other degeneration of a river basin (pollution and erosion and flood control), and to stimulate conservation of its natural values (conservation of bio-diversity, ecological resilience etc.). More reason to consider the river basin as a logical unit for management.
Integrated planning

The complexity of the physical river system, the exchange of groundwater and surface water and vice versa and the continuous interaction between environmental elements is a physical imperative. To be effective, water resources planning should consider all these interactions. The fact that different elements of the water resources management function are implemented by different sectors and through different disciplines is a complicating factor, which can only be tackled by a holistic approach (cf. Savenije, 2001; ICWE, 1992: Dublin Principles, Loucks and van Beek 2005).

Besides, water resources planning should consider and prioritise all relevant societal water uses in their spatial distribution. A fine-tuning between consumptive uses (domestic, industrial, agricultural water supply) and non-consumptive uses (power supply, fishery, recreation, nature conservation) is indispensable in more complex systems. A system of integrated planning is needed in which water quality, water quantity and environmental integrity are managed in an integrated way.

Stakeholder participation

The term stakeholder participation is found in a lot of publications on water resources management. But, what do we comprise under stakeholders: only direct water users, or also indirect water users or potential water users? Can government institutions be qualified as stakeholders? Do they qualify as water users only, or also as water resources managers? How comes society at large in: experts, NGOs, scientific institutions etc. Another relevant question: in which processes should stakeholders participate? In the process of decision making, of course! But can they also play a role in other functions of management: planning, monitoring, enforcement?

In essence stakeholder participation is a condition to be fulfilled to make water resources management effective. Measures taken without the involvement of the beneficiaries or the affected have a reduced chance of fulfilment. Participation in decision making is a bare necessity. The decisions will be made after all interests have been looked at or at least after stakeholders were offered the opportunity to bring their interests forward. Depending on the level of decision making and the specific management function envisaged, stakeholder participation can also be instrumental in planning, monitoring and enforcement.

Monitoring water abstraction

In Zimbabwe the monitoring of water meters was taken care of by neighbouring water users in the same part of the river basin (Jaspers 2001). Because of the interdependency of the users it appeared to be a very effective instrument of monitoring. Through the mechanism of social control enforcement was self-arranging through the mechanism of social control.

Platform creation

One of the aims of IWRM is to discard from sector approaches and to create environmental, institutional, social, technical and financial sustainability through the creation of a platform for Government and stakeholders for planning of water resources
and implementation of water development and to deal with conflicting interests (van Hofwegen and Jaspers 1999).

The platform has the following characteristics:
- It is a platform for weighing all interests and for decision making on use of water and water systems in the river basin.
- The platform should represent all interests and be under governance of Government to protect the interests of society at large.
- The platform should enable decision making and have controlling and sanctioning powers (through itself or by delegation).
- The platform should represent relevant administrative levels dealing with the relevant function: constitutional, organizational and operational function (related task groups).

Where the platform is positioned in (or outside) the organization depends on the physical circumstances, tasks and responsibilities, culture of decision making, representatives etc. Logic is that in case of a river basin organization, there is a platform at least at river basin level (and preferably also at lower levels).

**Functional decentralization through subsidiarity**

This principle reflects that decision making and management should be done at the lowest appropriate level and that stakeholder participation should be maximized. It implies that river basins and sub-basins, as the logical units of management (Savenije 2001), should be governed and managed by effective and stakeholders based river basin organizations.

Within the context of integrated water resources management we are dealing with government functions of which the tasks and competencies (at least initially) are covered by what we can call the public administration. So, under the term decentralization we comprise the process of transferring tasks and competencies durably or for an indicated period of time (but not incidentally) from the centre of authority to other departments, agencies or administrative levels in order to organize or implement a government function. The purpose of the decentralization effort can be manifold. A driving force for decentralization is to guarantee the effectiveness of its measures and also aspects of efficiency are of interest. However, another driving force for decentralization is to create transparency and to stimulate public accountability through participation and appeal procedures. A modern and accepted idea behind decentralization of government functions is to put decision making in the hands of people who are well informed, accessible for interested people, capable of making fundamental decisions in a timely manner. Further, for reasons of accessibility decision making is supposed to take place at a level as close as possible to the end-users.

There are various ways to arrange decentralization within the public administration and from public administration to semi-public or private organizations (This will be further dealt with in chapter 4). In case of integrated river basin management the figure of functional decentralization is often applied. The decentralization is not general, but is aiming at specific functions of administration, in this case tasks and competencies that are comprised by the function of water resources management.
Demand management

One of the corner-stones of IWRM is the perception that water is a finite resource and this is especially the case when water resources are restricted to usable resources within reach of human communities. In the last century water management was characterized by the approach to increase the supply where possible and as much as possible. This policy has clearly reached its limits especially when we consider that only 0.4 % of the worlds' water resources can be used in theory. This figure is even much lower when we consider the economic constraints of reaching, pumping and conveying water and the very uneven spatial distribution. The figure reduces further when we deduct the water resources that are made unusable by human behaviour: pollution, degradation, cooling, radiation etc. In this regard we do not even consider possible effects of climate change.

The water cycle at local level

Global water resources:
- 97 % seawater
- 3% fresh water
- 0.4% accessible
- People short of water: 2 billion
- Waste deposit in water: 2 million tons/day
- People exposed to polluted water: 3 billion

Therefore, managing the demand, efficiency of supply and use, conserving and harvesting water, avoiding pollution and catchment degradation, prioritising social needs, water allocating as per best social and economic advantage are main instruments of IWRM or any other form of adaptive management for now and in the future.

Water pricing and cost recovery

An increasing need for any government, but especially for governments of developing countries, is to recover the costs of the service of water resources management. The various social and physical interdependencies, the need for transparency in the link of cost recovery and service level have provided new strong triggers for the establishment of integrated river basin management. Cost recovery is not a very popular measure, but
it is very conducive to reach acceptable service levels and very necessary for fostering economic sustainability. Effective river basin management based upon (financial) government allocations only is nowadays barely imaginable both for financial reasons and for reasons of effectiveness. Besides, the dependence on the national budget does not stimulate any development of functional responsibility at the level of the river basin. Moreover, counterproductive political interference from the centre remains a likely scenario in this case. Payment for the service of managing and providing raw water and the subsequent ploughing back in to the same service is a necessary tool. This link has to be made very transparent in order to establish the mechanism of combining interest, payment and having a say, in fact, the characteristic mechanism under integrated river basin management (cf. Mostert 1998). The water price is further an effective tool in reducing over-consumption and pollution of water.

**Public private partnerships**

Public private partnerships (or private sector participation) are widely perceived to offer effective solutions to complement or even replace public functions of water management and water supply. There are many different modalities in which public private partnerships can be shaped. The justification for public private partnerships can also be manifold.

In river basin management the process of gaining operational independency by stakeholders based river basin organizations is often based on considerations of participation as a better form of governance as well as on reasons of efficiency, improved monitoring through social control and user acceptance.

Private sector participation in (drinking water supply) utility management is widely perceived to be the solution to the failure of many publicly owned and managed water utilities to operate efficiently and make the investments required to meet community needs. However, there are no guarantees that privatisation per se will actually yield the desired performance improvements (Rees 1998).

Simply converting a public sector monopoly into a private one provides no guarantee for effective operation or for appropriate investments to respond to consumer demands without proper arrangements for regulation. An enabling institutional environment is needed, which is often lacking in developing countries. There are many different modalities to shape public private partnerships ranging from simple short term management contracts to fargoing complex concessionary relations in which the complete function of drinking water is delegated to the private sector in a very extensive way and for a along period (up to 30 years). For each situation a separate assessment has to be made on which modality is suitable for the specific circumstances. For each modality counts that a specific suitable regulatory framework has to be in place.

**2.4 Legal instruments**

The subject of this paragraph is to deal with the main challenge to make principles and strategic instruments operational in a legal perspective. We will not spend too much attention on constitutional arrangements since this is a matter of choice of specific communities and cultures. However, we should not forget that the base and justification for any legal government arrangement originates from the Constitution of a country.
Formal legislation

In a concept of state government, public management is based upon the law and should as much as possible be underpinned by legislation. As explained before (chapter 1) there is no such thing as a comprehensive scientific field of water law. Water law is a composing part of environmental law, which again can be considered as making part of administrative law. However, elements of water law are also derived from fields as private law, fiscal law, criminal law and even from economic and business law. It is good to observe that many countries in the past ten years managed to unify or harmonize their often scattered water legislation in to one comprehensive water law (South Africa, Brazil, Indonesia, The Netherlands, European Union etc.). In a number of cases instruments of water law are administered through institutions integrated under a wider umbrella of natural resources management with the Ministry of Environment as central custodian (France, Brazil, the Netherlands). In the Netherlands an application for an environmental licence for a certain enterprise or industry is arranged through one window (Environment) where all compartments and aspects of natural resources are combined: water, air, soil, radiation, sound, spatial planning, local hinder (Teunisse 2010). The obligation to integrate or co-ordinate is institutionalized.

Two slightly differential trends are visible nowadays, that may be of importance to water management in developing countries. The first is to create environmental laws as framework laws through which legal instruments of other legislation like e.g. of the water law are co-ordinated. For the implementation often administrations of other sector ministries are used (either through special or through normal competencies), but the Ministry of Environment delivers the window of co-ordination for e.g. issuing licences, planning arrangements etc. The second trend is to optimize and complete environmental legislation, connect legal instruments in the field of natural resources management as much as possible with the Environmental Law or legislation and to enforce the administration of the Ministry of Environment at all relevant levels. Which path should be chosen by developing countries who want to establish sustainable development through IWRM is difficult to indicate, probably both paths. It will always be a sort of mix. Because of the weakness of the environmental administration in some developing countries it may be advisable to start with the second and to gradually incorporate the first approach. In many countries this is underway, also in developing countries or countries of transition. Full support is needed for that.

It goes without saying that in order to implement formal legislation there is a choice for various other legal instruments, depending on the activity to be undertaken or the norm to be covered.

General regulations

General regulations are giving rules that may be directed to government agencies, but certainly and especially also to the public; they are normally directly binding and prone to repeatable application in the future. The regulations have to cover similar cases in an equal way. Those rules may be composed in secondary (not formal) laws, general orders or statutory instruments, regulations issued by ministers, regulations from decentralized or functional authorities or in constitutions or by-laws of users organizations (that are bestowed with some public authority). Regulations may contain interdictions, instructions to the public to refrain from or ‘not do’. Regulations may also
contain instructions to do and they generally contain sanctions or penalties that may be applied in case of violation.

Regulations have the clear advantage of flexibility. The advantage of setting standards by laws is that this provides clear rules and guarantees, that throughout the nation or state the same norms will be applicable. The disadvantage is that this kind of formal legislation takes a long time and cannot easily be changed. By the time that legislation is formalized the standards may be out-of-date. Therefore, standard setting is not often done in the law, more often by the law in delegation to minister or decentralized body or functional authority. The advantage of the regulations of these actors is that they are relatively easy to pose and can quickly be changed.

**Plans**

In contemporary water management a number of concepts and tools are hinging on the effective water resources planning. In fact, it is very difficult to reach the necessary rate of comprehensiveness and co-ordination without the application of a plan. Without plans it is hardly possible to apply integrated approaches in management of different compartments of natural resources (water, soil, air). These approaches may have a trans-boundary and interactive nature and are administered at various levels of government administration. Besides, plans are the very instruments to inform the public and to instruct or co-ordinate with other authorities. Plans can have either a strategic or an operational or a merely informative character, plans may be directed to the government, the individual or both. Plans are invaluable tools to describe future decision making in a comprehensive way. But, nevertheless, a plan is just a plan, basically an intention of the government or relevant public or private authority, how to behave in future. Norms and standards are supposed to be binding, but not many norms in plans can be actively called for or enforced by the public directly. Therefore, setting standards in plans is not always effective. Not so long ago renowned law (positivists) schools simply denied the ‘legal existence’ of plans. Plans were simply considered as a ‘comprehensive set of intended future decisions’ and therefore prone to change. They were not giving sufficient ‘legal security’.

Plans relevant to integrated (river basin) management can differ on many dimensions: policy sectors, geographical scope, etc. (Table 1). What types of plans are needed in a specific situation depends on a number of factors, such as the most important policy issues; whether the river basins are located in one, two, or more jurisdictions; the funds that can reasonably be spent on planning, etc. These factors differ from country to country and from basin to basin, but still some general guidelines can be given.
Table 1: Types of plans and policies relevant to river basin management (Mostert 1999)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Type of plan / policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic vs. operational</td>
<td>- Setting aims and goals (policy plans, policies)</td>
</tr>
<tr>
<td>character</td>
<td>- Setting short or medium-term targets, strategies and/or specific guidelines for operational management (operational plans, strategies)</td>
</tr>
<tr>
<td></td>
<td>- Setting, prioritising and/or specifying, scheduling and financing operational activities (programmes)</td>
</tr>
<tr>
<td>Target group</td>
<td>- Government</td>
</tr>
<tr>
<td></td>
<td>- Public, private sector, NGOs etc.</td>
</tr>
<tr>
<td></td>
<td>- Mixed, general</td>
</tr>
<tr>
<td>Policy scope</td>
<td>- Only surface or groundwater, quantity or quality</td>
</tr>
<tr>
<td></td>
<td>- Only some uses (e.g. hydropower)</td>
</tr>
<tr>
<td></td>
<td>- All water, all uses</td>
</tr>
<tr>
<td></td>
<td>- Water and land</td>
</tr>
<tr>
<td>Geographical Scope</td>
<td>- Whole basin</td>
</tr>
<tr>
<td></td>
<td>- Sub-basin(s)</td>
</tr>
<tr>
<td></td>
<td>- Part(s) of (sub) basin(s)</td>
</tr>
<tr>
<td></td>
<td>- Administrative area</td>
</tr>
<tr>
<td></td>
<td>- National/international</td>
</tr>
<tr>
<td>Character</td>
<td>- Purely informative, politically binding or legally binding</td>
</tr>
<tr>
<td>Validity</td>
<td>- Short, medium, long-term</td>
</tr>
<tr>
<td>Time horizon</td>
<td>- Short, medium, long-term</td>
</tr>
<tr>
<td>Detail</td>
<td>- Global plan, detailed plan</td>
</tr>
<tr>
<td>Planning process</td>
<td>- Top-down closed planning</td>
</tr>
<tr>
<td></td>
<td>- Top-down participatory planning</td>
</tr>
<tr>
<td></td>
<td>- Bottom-up planning</td>
</tr>
</tbody>
</table>

The good intentions of a plan do not simply materialize on their own; they have to be realized by other instruments as general regulations, environmental impact assessments, permit systems, designation or zoning, systems of charges and subsidies and in last resort by enforcement and sanctioning (van der Meijden 1997).

River basin management can be described as the management of water systems as part of the broader natural environment and in relation to their socio-economic environment. Consequently, river basin planning should ensure the consideration of the different interrelations within water systems (surface and groundwater quantity and quality), the interrelations between water systems and land, and the interrelations between complete river basins and their socio-economic environment. This does not mean that each individual plan should have such a broad scope. Rather, we should think in terms of planning systems: sets of interrelated types of planning, consisting of strategic and operational plans. The more strategic a plan is, the more important it is that it covers complete river basins and all relevant policy sectors. Operational plans have to go more into detail and usually cover only one policy sector or part of a sector. Moreover, they could cover areas different from the river basin, provided they are firmly set in a more integrated framework and provided all the necessary co-ordination with other operational plans takes place.
The types of plans needed depend on the need for the different functions that plans can perform. For instance, if in a specific basin there is one very urgent, very obvious issue, such as pollution of drinking water sources, there may be no need for integrated strategic planning that provides a complete integrated description of the basin and sets long-term goals. The resources could much better be used for making and implementing an operational plan that sets concrete targets, proposes operational measures, and creates the necessary support. These cases are obviously rare (e.g. river basins in Mongolia). But more often than not the scope of the problems will be wide and interdependent.

Generally speaking, the number of plans should be kept low, especially in countries and basins with a low management capacity. If too much planning is going on at the same time, too few resources may be available for each planning exercise, co-ordination between the plans can become problematic and transparency for the citizen is reduced. Moreover, resources that are spent on planning cannot be spent on operational management.

**Designation / zoning**

The instrument of designation or zoning is related to planning with this difference that it is an area specific measure with internal and external binding and aiming at conserving or establishing certain functions. In practice (and in human words) this means that buffers are created to safeguard vital or sensitive functions. After designation a certain legal regime may be applicable in order to enforce the function at aim. If, for instance, an area is designated to function as an area for groundwater winning, then a comprehensive set of legal instruments may be declared applicable: regulatory interdictions of activities, subsidies to change technologies, special permit systems, extra systems of charges, intensified enforcement, specific control services etc. So both government agencies and the public are bound by it. Designation can be manifold from a simple buffer zone around a well site till a declaration of a Ramsar site where international jurisdictions are applicable. Designation only is useless. It should always be accompanied by a system of licences, prohibitions, regulations etc.

**Permit systems**

The principle of a permit system is the general prohibition to use water or to discharge waste matter, pollutants or hazardous substances in whatever form into surface (or groundwater) without a permit (cf. Dutch Water Act, section 6.1). It implies that all (non-negligible) users or polluters, regardless whether they opt for existing or new activities, are subjected to a permit system. Not having the required permit means closure of the establishment or considerable administrative penalty (see further under enforcement). The beauty of a permit system is that it can be tailored to the individual case, made flexible in the time and can be equipped with a lawful and effective system of instructions and conditions. These instructions are suitable for the individual case but also geared towards the specific environmental context. But most of all, the application of instructions and conditions is a good instrument for a combined and integrated approach of emissions and water quality standards.

Instructions may be characterized in the following way:
- Purpose directed instructions: e.g. company X has to meet the following reduction of emission over the time giving the company the flexibility on how to reach it;
- Instructions specifying means: e.g. company Y has to apply the Best Technical Means to restrict pollution of substance X;
- Instructions to maintain or enforce: e.g. the competent authority specifies how information should be submitted;
- Instructions to inform, assessing, measure, monitor, calculate, store, processing of data etc.
- Instructions that compliance is needed with further future requirements to be issued by a designated and qualified (norm setting) organization or person.
- Etc.

Permit systems can be completed or partially replaced by general regulations, completed with further and later regulations and equipped with notification demands. Permit systems may generate temporary permits or may contain obligatory revisions. They may stipulate the sanctions of non-compliance. Permits may be connected with systems of charges or subsidies. Important is the link that permit systems can make with the public and hence the practical application of stakeholder involvement. Design permits are generally published and stakeholders can propose changes or launch objections and may have a right of appeal to a higher administrative authority than the permit delivering one (under certain conditions) (Warmer and van Dokkum 2002, van der Meyden 1997, Theunisse 2010).

**Environmental Impact Assessment**

Before the stage of granting permits or decision making or plan approval comes in, another instrument may be applied called the Environmental Impact Assessment. The EIA could legally be characterized as an application of the principle of ‘reversal of the burden of proof’. EIA’s might be obligatory before approval or decision making on any activity with potentially substantial or multiple harmful effects. So any activity may be comprised of either a private or a public nature: permit application, plan design and development, infrastructure development, designation of zones or functions for areas. The categories of activities subdued to EIA are mostly indicated by general order or ministerial regulation (van der Meijden 1997). EIA’s can also be carried out on a voluntary base to ease the process of decision making. The objective of an EIA is to render sufficient insight in environmental consequences of projected activities. Alternatives and possible scenarios are often described and the advantages and disadvantages thereof are compiled. In any case the zero-alternative (no implementation) and the alternative with the mildest environmental impact are to be described. The structure of an EIA-report is normally very tightly prescribed and regulated.

In case of planning of potentially hazardous activities in a plan or strategy the instrument of Strategic Environmental Assessment can be used. The complete plan is assessed on potential hazardous impact on the environment. So, in this case the government is obliged to proof that its plans are environmentally sustainable and it should indicate which measures will be taken to mitigate the loss of environmental quality and report on the progress of these measures.
Charges and subsidies

Very effective tools in the combat against water conservation and pollution are systems of charges and or subsidies. In fact, these systems are the main instruments to make the ‘user/polluter pays principle’ effective. Systems of charges may have a dual function:

- To raise revenue to recover the costs of water management and water treatment (‘water pays for water’)
- To discourage water use and pollution and thus conserving water quality and water availability.

In the table below some instruments of cost recovery are presented. It is important to differentiate between those instruments in their purpose and in their desired application. Water taxes for instance are widely applied, but cannot be considered as direct cost recovery mechanism, because in general they flow back to treasury. They are not used to cover the specific costs of the services (if they do, they should not be considered taxes). Taxes can be used to stimulate water saving, but the mechanism is weak. Paying taxes is an obligation anyhow; there is no real choice for avoiding taxes. There is also no real choice to avoid levies, but there is a choice to avoid charges and priced services. However, in an administrative sense, taxes and levies are much easier to apply than charges and priced services. The latter applications require continuous metering and monitoring. One has to strike a balance between administrative simplicity on the one side and relation to the service and to capacity to foster water conservation on the other side.

Instruments of cost recovery

<table>
<thead>
<tr>
<th>Character/Instrument</th>
<th>Service relation</th>
<th>Cost recovery mechanism</th>
<th>Ratio of willingness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service pricing</td>
<td>Strong</td>
<td>Direct</td>
<td>High</td>
</tr>
<tr>
<td>Tax</td>
<td>Weak</td>
<td>Indirect</td>
<td>Low</td>
</tr>
<tr>
<td>Charge</td>
<td>Strong</td>
<td>Direct</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Levy</td>
<td>Intermediate</td>
<td>Direct</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Figure 7: Instruments of cost recovery**
2.5 Enforcement and sanctioning

In line with what was presented in section 1.5 and based upon the application of the above mentioned instruments the water management process may after planning and decision making then advance to the stage of implementation, being the operational activities as control, monitoring, policing, sanctioning. Especially, at the operational level still a number of challenges will have to be handled so that IWRM can really be made operational.

One of the bigger challenges is certainly the capacity to actually enforce what is agreed or planned. Although in the field of legal reform for effective water management there is still a lot to be desired, it cannot be denied that many legislations of targeted countries were recently equipped with impressive legal instruments aiming at preserving water quality, quantity and the relevant environment. However, many developing countries and countries in transition show serious problems in enforcement and sanctioning. These countries often struggle with the contradiction of not being able to enforce potentially appropriate but also complex legislation. It is generally considered better to have a simple, maybe not completely adequate, legislation that can be enforced than a sophisticated one that cannot be enforced.

The objective of enforcement is to maintain norms and standards, in other words: to make sure that they are abided by. So, the objective is not just to sanction or penalize. Repression is understood as just a necessary function of prevention and nowadays, enforcement is considered in the widest sense of the term. It also comprises awareness creation and education, consultation, application of subsidies and appeal procedures (van der Meyden 1997). But, of course in the end rules have to be enforced and the threat of sanctions should be sufficient also for the careless, the adventurous and the criminals to stop the violation. Enforcement consists of a combination of surveillance and detection with the necessary means to sanction or redress violations. There should be a surveillance plan linking for instance permit application and the behaviour of the user or discharger to the necessary surveillance activities.

There are three tracks through which enforcement can be applied: the administrative law, the penal law and the civil law track.

In the application of the administrative law, the competent authority, this is often the permit supervisor, has the right and the obligation to use its competencies:

- in giving warnings
- in applying administrative force to redress the violation at the expense of the violator
- in imposing penal sums, penalties and damages
- in processing the withdrawal or amendment of the permit.

For most cases of the (especially minor) violations issuing warnings and communicating potential sanctions is already sufficient threat. The sheer message that an inspector will return within a given time to see whether the violation has been stopped, renders ample threat, especially when the following potential sanctions are clear and burdening.

The application of administrative force is not very popular with inspecting authorities. In this modality the violation is redressed by the administration by force and at the expenses of the violator. The application of force has to be reasonable (van der Meyden,
1997) and that is where the problem lies, because the notion of reasonable force is prone to many different interpretations (also afterwards by the Court!). Further, it is sometimes difficult to recover the costs. It is not easy to ‘pick feathers from a frog’ or even worse, from a bankrupt company.

Imposing coercive penal sums is very popular for the administration. It is an administrative instrument indicating that a considerable penalty will be cashed unless the violator redresses the situation. Penal sums are very frequently applied, but are not always possible. The application of the penal sum is normally restricted and conditions for use are generally spelled out by the law. Penalties or damages are of a different nature. They are not conditionally but actually cashed through judicial intervention. They also should be reasonable.

Also the withdrawal or amendment of the permit is frequently applied. It should be noted that a withdrawal of a permit not necessary stops a violation. When the violation is done without a permit anyhow not surprisingly this instrument will not be effective.

Besides and on top of that, through the criminal law serious environmental offences or crimes can be subjected to prosecution and subsequently to a considerable range of possible judicial sanctions e.g.:

- fines
- imprisonment
- removal of advantage
- closure.

Where a violation is identified, the process of administrative and criminal law should be pursued simultaneously (RIZA 2002). However, the initiative to start a punitive investigation lies solely with the Public Attorney’s Office. The administration cannot influence this anyhow.

Developing countries are often confronted with the deflation of the level of fines because of the inflation of the currency. Therefore, it is not always wise to formulate penalties and fines in the formal law.

Through the civil court competent authorities but also affected private parties may try to correct the violator by either demanding the court to stop the violation and/or to impose damages. Complicating factors are that the burden of proof is with the claimant and again that it is not easy to generate damages from persons or companies who are financially in dire straits.

2.6 Synthesis

It would be interesting to oversee the whole spectrum of functions and linking these up with organizational arrangements, options for managing water in an integrated way as well as with relevant applicable legal instruments.

This may result in the following subdivision of tasks and competencies for the field of water resources management:
Table 2: Functional tasks

<table>
<thead>
<tr>
<th>Constitutional function</th>
<th>Organizational function</th>
<th>Operational function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision establishment</td>
<td>Strategies</td>
<td>Implementation</td>
</tr>
<tr>
<td>Policy development</td>
<td>Criteria, guidelines, standards</td>
<td>Water use management</td>
</tr>
<tr>
<td>Formal legislation</td>
<td>Secondary legislation, regulation</td>
<td>Water utility management</td>
</tr>
<tr>
<td>Creation of institutions</td>
<td>Organization of implementation</td>
<td>Monitoring</td>
</tr>
<tr>
<td>Co-ordination of strategies</td>
<td>Organizational planning</td>
<td>Policing</td>
</tr>
<tr>
<td>Strategic planning</td>
<td>General management</td>
<td>Sanctioning</td>
</tr>
</tbody>
</table>

As a subroutine of management, planning is represented in all functions (and at all administrative levels). Planning can take place intrinsically within all actions that are undertaken, the planning process can also result in plans as formal outputs, being official and publicly accessible, comprehensive sets of guidelines for decision making in the future.

From country to country, the organizational set-up to cover the above mentioned functions may differ substantially. This depends on many factors. Just to mention a few: size of the country, characteristics and scale of watersheds, climatic and hydrological properties, legal tradition, economic capacities, culture, religion etc. The following picture may act as a guideline:

Table 3: Organizational actors

<table>
<thead>
<tr>
<th>Constitutional function</th>
<th>Organizational function</th>
<th>Operational function</th>
</tr>
</thead>
<tbody>
<tr>
<td>(General)</td>
<td>(General)</td>
<td>(General)</td>
</tr>
<tr>
<td>Federal Government</td>
<td>Minister</td>
<td>District</td>
</tr>
<tr>
<td>National (state) Government</td>
<td>Province</td>
<td>Municipality</td>
</tr>
<tr>
<td>(Specific)</td>
<td>(Specific)</td>
<td>(Specific)</td>
</tr>
<tr>
<td>River Basin Commission</td>
<td>River Basin Authority</td>
<td>Sub-basin organization</td>
</tr>
<tr>
<td>National Water Authority</td>
<td>Water Users Association</td>
<td>Service provider</td>
</tr>
</tbody>
</table>

It goes without saying that the organizations, authorized with specific functions of water resources management, will apply their competencies and obligations to establish relevant legal instruments. To give an idea of how this could look like:

Table 4: Legal instruments

<table>
<thead>
<tr>
<th>Constitutional function</th>
<th>Organizational function</th>
<th>Operational function</th>
</tr>
</thead>
<tbody>
<tr>
<td>International convention</td>
<td>Regulation, decrees</td>
<td>By-laws</td>
</tr>
<tr>
<td>Treaties</td>
<td>Development plan</td>
<td>Service contracts</td>
</tr>
<tr>
<td>Formal law</td>
<td>Management (control) plan</td>
<td>Sanctions</td>
</tr>
<tr>
<td>State law</td>
<td>Instructions</td>
<td>Participation, appeal</td>
</tr>
<tr>
<td>Formal regulation</td>
<td>Guidelines</td>
<td>Charges, levies</td>
</tr>
<tr>
<td>Policy plan</td>
<td>Impact assessments</td>
<td></td>
</tr>
<tr>
<td>Taxes</td>
<td>Permit systems</td>
<td></td>
</tr>
</tbody>
</table>
Questions and assignments chapter 2

1. Could you describe how in theory the process of (formal) decision making can be imagined?
2. What would be the difference between a policy and a strategy?
3. What is a plan for a lawyer (not being a pure positivist)?
4. Why are plans seldom containing norms and standards that can be called for by the public?
5. What would you understand (do not define) by the terms: internal legal binding; external legal binding; sources of law; principles, norms and standards; primary and secondary legislation; soft law; regulations?
6. What are the advantages and disadvantages of the use of following legal instruments: plans, regulations, permit systems, charges?
7. Why can it be problematic to incorporate standards into the formal law? Could it also be problematic to incorporate fines into the formal law? Why or why not?
8. What is the difference between a strategic and an operational plan?
9. Would you be able to identify the two main differences between systems of charges and systems of taxes?
10. What is meant by the term functional decentralization? Can you mention a few functionally decentralized organizations for water resources management?
11. Explain why you need a strong Ministry of Environment for the application of Environmental Framework Law.
12. Why does a withdrawal of a permit not necessarily stop a violation?
13. What kind of activities should be subdued to EIA application according to you?
14. What system is more suitable to contribute to water conservation: a system of charges or a system of taxes? What system is easier to administer? Please, explain your answers.
15. Through the criminal law serious environmental offences or crimes can be subjected to prosecution and subsequently to a considerable range of possible judicial sanctions. Which sanctions do we mean? Give four examples.
16. In the application of the administrative law, the competent authority, this is often the permit supervisor, has the right and the obligation to use its competencies for enforcement. Which competencies do we mean? Give four examples.
17. Why is the application of administrative force not very popular with inspecting authorities?
18. Imposing coercive penal sums is very popular for the administration. Do you have an idea why?
19. Imagine a company is violating a regulation of environmental law. How would you step up the intensity of the sanctions? (Please, put the range of sanctions according to administrative law in a logical sequence.)
20. Can you explain in your own words which actors (organizations or organizational arrangements) are dealing with the constitutional, organizational and operational function for water resources management? Could you give examples of the subsequent legal instruments that are typical for these organizational actors?
References


3 Water Rights and Water Allocation

3.1 Introduction

A quick glance at history demonstrates the intimate connection between the stability of a group of people, its economic and social development, and the availability and the reliability of water supply. This has rightly led many authors to define the first developed social groupings as hydraulic civilisations. All major human migrations and the birth of towns and communities have been closely correlated with the search for and the settlement around flood plains, naturally irrigated areas and valleys adequately supplied with water. As soon as human groups settled around a water point or in a river valley, the need arose for minimum water control in order to satisfy water demands and to ensure an equitable water distribution between different uses and users. It is from this need that the earliest water right systems developed. Their growth, persistence and character varied and were dependent upon many factors, such as local geo-physical and climatic conditions, socio-economic and managerial situations, and the religious-philosophical beliefs of the population concerned (Caponera 1992).

In regions where water was abundant, water control was largely directed towards defence against harmful effects of water, such as flood warning and control and fight against water invasion, embankment and dyke construction and maintenance (e.g. like in the Netherlands, Mostert 1998). In areas where water was scarce, this control developed towards the conservation of water supplies and adequate distribution of the little water available. Here, water law systems were more detailed and restrictive (Kornfeld, in Dellapenna and Gupta, 2008). It goes without saying that in regions where periods of water shortage were alternated with periods of flooding, water law systems showed elements of both patterns.

At present times with the increasing complexity of societies, dense occupation of land and growing economic development, extra dimensions were added to the original functions of water allocation and flood control. There is an increasing interest in both looking upon water as an economic good (ICWE 1992) and in considering the water cycle as inseparable and hence managing water on hydrological boundaries with the watershed as logical unit. Nowadays, the aim is to reach sustainability in social, economic and environmental perspectives (GWP 2008).

Water allocation principles and the subsequent systems of water rights continue to be a crucial driver in the development of communities. In the past, hydraulic civilizations developed in a more or less autonomous way in line with geophysical, hydrological, demographic and socio-cultural characteristics. Over time, politics and economics also became important drivers. One may say that resource management for communities is a logical reaction on evolving circumstances and conditions. As a result there are many different national and regional water right systems. Nowadays, in the era of globalization, mass communication media and internet providers all over the world there are also many connecting and unifying forces (maybe more than separating factors). Water right systems do not develop in relative isolation anymore. Factors that contribute to unification and interaction are (Dellapenna and Gupta e.a., 2008):

(i) the spread of civilizations and religions;
(ii) conquest, colonization, decolonization, conflict and war;
(iii) codification of legal principles;
(iv) the rise of epistemic communities;
(v) the influence of environmentalism;
(vi) the second wave of globalization (Gupta 2003).

Does this imply that studying water right systems in historic perspective becomes less important? Certainly not! To go back in history and to put water allocation principles in perspective is certainly not a cosmetic approach only carried out for completeness’ sake. Traditional principles ruling water allocation still exist in both developing and developed countries among certain layers of society or under certain circumstances or for a certain type of users. Many principles may be applied simultaneously. Recently developed water legislation is often based on multiple water allocation principles. Also in this context the issue of legal plurality is very applicable. There may be many different layers of society with their own specific norms, with perfect validity for the specific arena of use and subsequently with their own norms for resource allocation. Moreover, principles that were considered redundant earlier may become of present interest again, when circumstances change. For example, the modern approaches in water resources management to apply stakeholder participation in decision making, water allocation by negotiated planning and integrated methodologies can be seen as a return to the old days when water was considered as belonging to the community as a whole (res communis omnium).

This chapter concentrates on the description of principles that continue to rule water rights in the sense of water allocation to individuals or groups of individuals for certain uses. The aim is to identify the value of these principles for contemporary civilisations in developing countries and to determine the institutional arrangements under which their performance may be optimal. The resulting water right systems are studied in a comparative analysis of a number of present and past societies and their way of addressing water allocation. Examples from literature are matched with the author’s own experiences in establishing and managing water right systems in various (mainly developing) countries around the world.

3.2 Water rights and water use rights

On the one hand water law creates legally enforceable expectations (‘water rights’), duties to respect those, and means to redress violations of these rights (Goldfarb 1988). On the other hand, water law creates (among many other items) also control mechanisms against flooding and for the protection of the quality of water and the watershed as a whole. In this publication we concentrate on the category of water rights in the strict sense of the word, rights that give title to the ownership or use of water.

A right can be described as a legally enforceable expectation or entitlement derived from an established law, custom or relationship in a community or society (cf. Gupta 2003, Jaspers 2004). A water right is consequently a right to the ownership or legitimate use of a certain volume or amount of water or of a water body in general. Not necessarily the ownership and user right have to be in one hand. They can be exercised separately. Further, it is important to realize that water can appear in many forms and on many places and that it can be covered by different rights depending on appearance.

A drop of water can for instance fall in an upper catchment of the river, infiltrate, appear again in a little stream, be used by a person as drinking water, appear as urine, drain...
into the river again, end up in a reservoir, used for fishing, navigation, recreation and hydropower, be used downstream for irrigation, appear again as drainage water, be used for cooling machines of a factory, appear again in the river, be diverted as irrigation water again, passing through various canal systems, be used as drinking water, be converted as waste water and go through many more transformations before ending up in the sea, where it can evaporate and transform into rain again.

Figure 8: Example of hydrological cycle (simplified)

It is clear that in the hydrological cycle the transfer from one to another physical domain can result in another type of use and thus in a change of user right.

Important to know is that systems of water rights are developing in line with the local conditions and the change in circumstances. Water right systems are often comprehensive reactions on absolute or relative water scarcity. When there is no scarcity, the emphasis will not be on water allocation and there will be no detailed arrangement for water rights in the water legislation. In the new Water Law of The Netherlands of 2010, there is very little emphasis on the allocation of surface water (Teunissen 2010), but water quality and environmental management is extensively addressed. So, the law follows the development in (reasonable) water use practices, rather than the other way around. Customary rights, social norms and the reasonable practices are applied by the Judiciary in the Courts to refine the sometimes generic and superficial norms in the codified legislation. Especially, under common law systems (USA, UK) with a strong emphasis on the so-called precedent, or an earlier Court order covering a similar case, the influence of customary law is high (Dellapenna 2008).

There are many different answers possible on the questions: Who owns the water? And who has the right to use it? And even multiple interpretations of the specific answers are possible. In order to gain some understanding we will first simplify to a few basic concepts.

A first traditional concept (also in time) is that water is free or given by God to the ones who can find it and can make use of it (res nullius in Roman law systems). Islamic law is
still embracing this principle to a certain extent, meaning as far as water in its natural appearance is concerned (Naff 2008).

A second step or refinement is that water is considered a public good and that the right to use the water is attached to ownership of riparian land (surface water) or land contiguous to the water (groundwater). So, the available water in a stream or in an aquifer is considered common property of the potential users. The right is usufructuary: one can reap the benefits (beneficiary use), but it is prohibited to bring damage to other users (Dellapenna 2008). So, the (riparian) right is only restricted to beneficial and effective use and obviously it is attached to riparian land. If you do not use the water, the right to use can go to another user. This is in line with the physical characteristics of water. If further regulation is occurring, one can speak of regulated riparianism.

With the development of property rights and the increase of water scarcity a further development is that the right to use the water is appropriated and is considered as a private good. The entitlement to establish property on the water use can be based on time ("first come, first served") or on specific use (drinking water versus other uses) etc. Sometimes registration is condition to the appropriation. In other systems the Judiciary may come in to establish or authorize the appropriation (cf. Zimbabwe and South Africa before 1998, Jaspers 2001).

These systems of owning user rights have to be distinguished from systems to actually own the water itself. Absolute rights to own water are relatively rare. They will be restricted to water which is appropriated or to which a value has been added. Examples are water that originates on a certain property and does not leave that property, water from a dug well, pumped water, harvested rain, water in a bottle and the like.

With the increase of complexity or increased scarcity or conflict about scarcity Government has to come in as a regulator. The concept is that water is a public good; the ownership is vested in the state or in the government as a custodian of the interests of the citizens; and the government is coming in as an allocator of water or a regulator of water rights. So user rights are established by administrative allocation and often conditions to the right to use are posed. Sometimes the only title to a water right is the sheer fact that it is allocated by the administration. We can speak of water permits, when rights are allocated by the administration with a set of conditions or restrictions (time, use, payment etc.)

The following types of rights can be identified in an effort to describe the legal consequences of different allocation principles. The categorization is not absolute and only meant to gain insight in the extent of the right:

- Absolute ownership of the water. Water belongs to the property on which it is found. It is part of a real estate or is otherwise privately owned. The owner of the property also owns the water. He may use it for any purpose or whatsoever (ius utendi et abutendi).
- Absolute right of use. The water is owned by somebody else or another institution often by the state as tutor of the public domain. The right to use, however, in its purest sense is appropriated. It is not attached to land or depending on a specific abstraction point, it can be leased, sold, inherited, mortgaged and is not restricted to any type of effective and beneficial use. The owner can sit on it as a speculation object (in the purest and most conservative sense). Only very few
legal systems i.e. in the Western United States and in Chile have a water right concept close to these absolute user rights.

- A relative right of use may have some of the restrictions mentioned above. Under this category we consider riparian rights or regulated riparian rights. Often, the right is attached to land and specific abstraction points; it cannot be sold or transferred, mortgaged or inherited. It can be restricted to a certain type of beneficial and effective use: agriculture, cattle watering, drinking water supply and when 'you do not use it, you loose it' either temporary or indefinite. This is a very common type of right and found all over the world.

- A water permit (concession, licence) is acquired through administrative allocation or authorisation. It may have the restrictions of above, time limitations and it may be subjected to charges or fees either for the use of it or as a contribution to the water management services. At present water permits are becoming the standard type of allocating water.

The legal status of a right may have far going consequences in terms of capability to trade, transfer or inherit the right or to use it for collateral or as a security investment. It is more difficult to attach conditions (of time, charges or suspension) to ownership and absolute user rights than to relative user rights and permits and concessions. More often than not the Constitution of a nation protects ownership rights and absolute rights to the extent that compensation is required in case of expropriation. A summary of important characteristics of the respective types of water rights is displayed in the following table.

**Table 5: Comparison of types of water rights**

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>OWNERSHIP</th>
<th>ABSOLUTE USE</th>
<th>RELATIVE USE</th>
<th>PERMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade</td>
<td>XX</td>
<td>X</td>
<td>-</td>
<td>--</td>
</tr>
<tr>
<td>Transfer</td>
<td>XX</td>
<td>X</td>
<td>-</td>
<td>--</td>
</tr>
<tr>
<td>Investment security</td>
<td>XX</td>
<td>X</td>
<td>-</td>
<td>--</td>
</tr>
<tr>
<td>Option for collateral</td>
<td>XX</td>
<td>X</td>
<td>-</td>
<td>--</td>
</tr>
<tr>
<td>Conditions</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>XX</td>
</tr>
<tr>
<td>Time restrictions</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Inheritance</td>
<td>XX</td>
<td>X</td>
<td>-</td>
<td>--</td>
</tr>
<tr>
<td>Compensation object</td>
<td>XX</td>
<td>X</td>
<td>-</td>
<td>--</td>
</tr>
<tr>
<td>Charges</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>XX</td>
</tr>
</tbody>
</table>

In practice nearly always a mix of characteristics will be found. No system remains unchanged over time.

Another important question is how a water right may be acquired. In line with the diversity in allocation and allocation systems one may also expect a similar diversity. A person or a property may acquire through the law, through custom or practice, by a court resolution, through continuous effective and beneficial use, and in case of a permit or licence through administrative allocation or from a river basin plan.

Other questions relevant for analysis are:

*Which type of water can be subject to a system of rights?* Seawater, surface water in stocks, surface water in streams, soil water (both percolating water and capillary rising water), groundwater, fossil water, water in organisms, waste water, rain, vapour etc.? *In which appearance in the hydrological cycle can it be subject to righting?*
What kind of use may be authorised by the water right? The use of water for consumption, water disposal, power generation, fishing, recreation, transport, nature and wildlife conservation etc.?

In this document we narrow our research down to investigating rights for consumptive uses for drinking water, industrial water, water for agriculture and livestock and further for the non-consumptive uses of power generation and preservation of environmental flows. In physical terms this implies that we concentrate on water rights for the use of surface and subsurface water. Further, we focus mainly on Roman Dutch and Common Law water right systems.

Further, in a technical sense a water right may be expressed in volumetric terms (m$^3$/s or l/s), as a share of the stream or canal flow or as a share of the water available in a reservoir, a lake or an aquifer. A water right may also be expressed in terms of shifts or hours of water availability at a certain intake (Holden and Thobani, 1995). It is also possible to express a water right as a percentage of capacity of storage works. A water right may be applied by simple diversion or by abstracting through mobile or fixed pumping installations.

In the next paragraph we will describe the principles that rule processes of water allocation in more detail as well as the character and implementation arrangements of water rights.

### 3.3 Water allocation principles in historic perspective: an imaginary case

Water allocation principles can be categorised in many different ways. We will use the following distinction (based upon increasing complexity of water uses):

- Traditional systems
- Priority systems
- Public allocation
- Water markets
- Stakeholder negotiation

To oversee the whole spectrum of potential water allocation principles, it is illustrative to imagine a huge continent with all possible physical circumstances and a variety of human occupation patterns and cultures alongside one another. The continent is ‘discovered’ by an external power as was usually the case in the present developing countries, our target group of countries. The continent has to be imaginary to be capable of incorporating a mosaic of existing patterns of water allocation.

**Case description**

In the North the continent is humid and has a relative abundance of water and in the South it is arid and has a relative water shortage. Initially, the North is ‘developed’ first and the South remains inhabited by the traditional societies in their own cultural and physical context. As times go by, the North becomes densely occupied, and the need arises to develop the South, which is extended in space, but rather short in water resources. Migration takes place and the pressure on the water resources in the South as well as in the North intensifies. In the South this is mainly due, because of population pressure and overexploitation of the predominantly self-subsistent farmers. In the North
this is due to far-going industrialisation and failing water quality control. The following is a summary and a description of water allocation principles that (may) emanate over time and under different circumstances during the process of transition of a traditional civilisation towards a highly industrialised continent with dense human occupation patterns. Our imaginary continent is gradually emanating as a nation of federal states that have sovereignty in developing their own water laws. The management of river basins, however, is an issue that goes beyond the state boundaries. The watersheds of the larger river basins cover areas in multiple states. Any similarity with existing nations is fully coincidental, although it may help to take the United States in mind as an example. However, water allocation systems from other countries and cultures are incorporated.

Traditional principles (i)

Res nullius

Initially, before the continent was discovered, the traditional inhabitants were nomads who travelled around with their (relatively) small herds of cattle and sheep. 'Water belonged to nobody' and was taken by everybody as, when, and where the need was arising. When water shortages emanated people simply moved with their herds. Mainly surface water was abstracted and some water from shallow wells. Water was not abstracted outside its natural domain. The water balance of the watershed as a whole remained basically unchanged.

The principle remained valid until present. Although the nomads reduced drastically in numbers, the principle of water allocation has remained unchanged, but only for the nomadic territory (which becomes smaller and smaller). The principle is also used outside the nomadic pastures for any limited raw water abstraction not being done through any artificial fixed abstraction means (incidental water use). Mobile abstraction devices are allowed, but the abstraction must be incidental and limited in extent and not leading to large scale commercial activities. The condition is that the abstraction must not be in conflict with any other regulation like e.g. trespassing on other people’s property without their consent. To establish a right for the incidental water use is not only inspired by the need to give living creatures access to the limited amount of water they need for direct use (primary rights), but also by the wish to avoid heavy administrative procedures for relatively small water abstractions.

Res communis omnium

After the continent was ‘discovered’ and ‘invaded’ by immigrants, the land use pattern drastically changed at first in the North, but later also in the South. The original nomadic character was exchanged for a sedentary pattern with either only agriculture or a mix of agriculture and livestock. After a while most of the land was occupied by farmers on farms. With the emergence of fences around land and when the concept became rooted that ‘land could actually be owned by individuals’, the concept of water allocation also changed.

The conception that water belonged to nobody gradually changed in to one that water was ‘owned by the whole community’ (res communis omnium). An example of this principle of water allocation is the well-known riparian doctrine, the corner-stone of the
water allocation under the earlier common law systems (U.K. until 1963, some of the eastern states in the U.S. still have this, albeit in a more or less regulated format and South Africa until 1998) (Beck 2001, Dellapenna 2008, Jaspers 2001). The key character of the riparian doctrine is that only persons owning land on natural watercourses possess riparian rights (Goldfarb 1988). A riparian owner or occupier may abstract water for his own domestic purposes, i.e., for drinking and cooking, cleansing and washing and to satisfy the ordinary needs of livestock. If abstraction for domestic purposes exhausts the water, downstream riparian owners cannot complain. Nevertheless, the right of a riparian owner to take water is not limited to domestic purposes. He may exercise his right for extraordinary purposes, provided that he does not interfere with the rights of other riparian owners. The use should be reasonable and connected with the riparian land, and the water should be returned to the river undiminished in quality and quantity (!) (Caponera 1992). This situation could only continue as long as there was no real competition for water. Of course, this was also before the major take-off of irrigation practices.

During the big boom of water diversion for irrigation, the riparian doctrine was combined with the natural flow doctrine. Diversion rights were restricted by the obligation of preserving a ‘natural’ flow in the river. Any other riparian owner was entitled to have a stream flow through his land in its natural condition not materially retarded, diminished, or polluted by others (Ausness 1977). In principle in areas were groundwater abstraction is dominant the riparian diversion from a stream should be understood as the contiguous abstraction from an aquifer.

So, in summary, a water right according to the riparian doctrine is a user right allocated by law (ministerio legis) without any administrative intervention to the owner or the occupier of land adjacent to a stream or contiguous to an aquifer (Caponera 1992). Restrictions to this right are the attachment to land and the beneficial and effective use and the obligation of preserving the natural flow as far as non-domestic uses are concerned. The system has the advantage of administrative simplicity and transparency. The system does not provide any solution for non-riparian owners or occupiers, or landless people or even for nature in the sense of being the custodian of environmental values. (Only landowners and land occupiers can claim legal action for the interruption of flow).

The system also denies the existence of water needs of nomadic people or for the incidental needs of any people, as passers-by. A combination of the first and the second principle could cover the needs of both sedentary and nomadic people and people depending on incidental needs.

With the development of irrigation practices, however, conflicts unavoidably had to arise at times of low stream flow and/or depletion of aquifers. The natural flow principle could not tackle drought prone water distribution. The definition of natural flow already appeared to be difficult, if not impossible (Jaspers 2001).

Priority principles (ii)

Prior appropriation

As time went by, another principle of water allocation emanated in the dry South: the so called ‘prior appropriation doctrine’. To stimulate frontier development and investments,
water rights of the prior users in time were protected. These user rights developed in the US as rights for miners, but where later also used for farms especially in dry areas where water became short. These rights were initially attached to land and could not be transferred from one property to another. There was no obligation to use these rights. Not utilised water flowed naturally downstream. At first, these user rights were simply applied through direct abstraction from flow as and when flow was available. Later, private storage works were built to overcome the dry season or periods of drought.

This ‘first come, first served’ or date priority principle helped out especially in drought prone areas and elsewhere during periods of low water availability. Initially, this principle appeared to be very useful, until such time that rivers and aquifers were fully righted or even over righted in terms of availability of normal or natural flow. In some situations the mean annual runoff was nearly completely absorbed by existing water rights. In such cases no other development than the initially enhanced agriculture could take place (at least not at a reasonably secured manner). The water supplies of towns and cities were jeopardised and nature and wildlife were often deprived of the water resources necessary to sustain aquatic and other life. Consequently, in the South of our imaginary continent laws were enacted in which drinking water supply and water for preserving natural flows was prioritised above the water use of other sectors (sector or use priority). Water was reserved for these prioritised uses and it was used whenever it was needed. When in the wetter periods, water was not needed, water was added to the pool of other uses and distributed under the system of date priority. This implied that agricultural water uses that came late could not be covered at times of drought.

But government was in need of a lot of water for city water supply as well as industrial development and energy supply. Huge storage works were built for satisfying those public interests. The surplus water (as and when available) or water not used for energy supply was sold by the government to private farmers on private contract or through long-term concession. Although water was not tradable for private citizens, nevertheless, practices of selling or leasing water from private storage works also developed because of the shear need of transferring water to where it was needed and using it as per best economic advantage. This practice could only take place by releasing the water along the river and hence private storage works were indispensable. Only the rich estate farmers could afford those kinds of investments. They were also the first who organized themselves in Water Users Organizations to take care of their private interests in water (Jaspers 2001).

**Allocation by Government (permits) (iii)**

**Correlation**

With the appearance of fences the original inhabitants of our imaginary continent soon had to give up their nomadic lifestyle. There was simply not enough land to sustain this way of life. A process of settlement was enhanced and stimulated by the government. Large scale irrigation schemes were constructed by the government to support this process of settlement. Together with the landless and poorer immigrants, the ‘originals’ could acquire irrigated land and housing in one of the irrigation schemes, initially as tenants only. These schemes were fed with irrigation water by huge river intakes combined with diversion weirs or in the dryer areas from dams. Through extensive systems of primary, secondary and tertiary canals the water was conveyed to the farm outlets of the smallholder farmers. The irrigation schemes were managed by the
government and water permits could be acquired through administrative allocation. These water permits were issued and administered by government officials. Relevant standards for water allocation were developed by the government. Water was allocated in correlation to these standards. As a yardstick, standards were based on farm and family size, cultivated area, cropping pattern and, if applicable, number of cattle. These ‘correlative water permits’ were strictly personal, non-transferable rights, restricted in time and were attached to the piece of land for which they were allocated. The only security a tenant of a piece of land or his successor could get, was that the permit was renewable. Informally, however, complex systems of exchange, lease, lease options and sales of water developed.

Later on, when the system of land tenancy appeared to be highly inefficient, ownership of parcels of land was introduced in those originally public schemes. With the ownership of land the transferability and mobility of water rights became more pressing.

Proportionality

In the beginning there were no water shortages in the public irrigation schemes. Farmers could simply take the water they needed, either as a continuous flow through their outlets or by rotational shifts. But when the schemes grew bigger or when canals were fully occupied, water shortages did occur. The only way for the Government of dealing with water shortage in a socially acceptable way was to distribute water scarcity proportionally. Thus, the birth of the principle of ‘proportional distribution’ took place. In case of water shortage, farmers could only acquire water in proportion to their original allocation.

This principle was also used in the river basins for the private estate farmers when emergency legislation was applied. In times of extreme water shortage government from time to time had to apply its right to suspend all water rights and to allocate the available water proportionally over the users. This took place after the uses for drinking water supply and environment had been taken care of. When farmers in the irrigation schemes started to grow higher value crops on sizeable farms consolidated from former various smallholder farms, this practice became inefficient and the need for tradable water rights or at least for regulated water transfers increased.

3.4  Economic allocation: mobility of water allocations (iv)

Let us continue with our metaphor. Throughout the history of our case study continent water rights had not officially been priced. In fact, to charge for (raw) water per se was not allowed. (Water management fees to governmental institutions were common though). Only the water sold on private contract from huge government storage works was officially priced. Nevertheless, this type of water was still heavily subsidised and the price was certainly not reflecting the full costs of water. But it can be understood that soon practice overtakes outdated regulations. The following informal practices were developing especially among users with private storage works (c.f. Zimbabwe; Jaspers 2001):

- Lease of otherwise not utilised water. Farmers who do not need or cannot use the water that they are authorised to use through their user right (from prior appropriation) are leasing the use of the right to another user. The title of the right remained with the lessor.
Incidental water sales or water exchange (spot markets). Water is simply sold to other users on an incidental basis. A variation to this is that farmers are making agreements to exchange water resources for instance by rotation. The available water under two water rights is shared and used as per best mutual advantage.

- Lease options to overcome a very dry period or event. Farmers or users with high value crops (orchards) or products secure themselves against future droughts by leasing water from other farmers with lower value crops for as and when droughts will take place. In that case the water right holder sacrifices the use of his water right (at high price). But the loss of a citrus orchard does not match the slight inconvenience of not being able to just not cultivate one crop of beans (cf. Lee and Jouravlev 1998). Initially this takes place between neighbours or farmers in close proximity, later on also over bigger distances.

Private enterprises nowadays go even much further than that. In order to overcome prolonged drought periods, estate farmers associate themselves in organizations or private syndicates for the construction of huge storage or diversion works. These very successful enterprises are managed privately either by a committee or even by privately appointed managers. Farmers contribute to the construction and maintenance and management costs of the works and are allocated storage space in proportion to their financial input. The first stage of the storage with a higher hydrological probability of filling is more expensive. Those first stage storages are bought by farmers who need a higher security of supply and who are willing to pay a higher price (farmers with orchards, tobacco farmers etc.). The water (user) right for these private dams was initially on the name of the owner of the farm where the dam or diversion weir was located. Other users could legally take a share out of the water right of the owner of the land under a joint ownership clause. Later on, the law in the respective states was changed to the effect that syndicates can now own water rights for so called combined irrigation schemes (Jaspers 2001). The syndicate actually owns the water right after public authorisation by the water minister. Joint ownership between government and syndicates as public private partnerships are on the increase. Hereunder an example of this ‘capacity sharing’ is displayed.
Those private initiatives are forebodes of massive changes in the thinking about water allocation in various (drought) prone states of our continent. Somehow, the restriction of user rights and even of water permits to attachment of land and not being transferable does not do justice to the economic practice. Many properties had water rights attached under prior appropriation systems without being able to make optimal beneficial use of it. This counts for both estate farmers and for smallholders in the irrigation schemes. The call that water has to be considered as *economic good in all its competing uses* is gaining momentum (ICWE 1992).

From a legal point of view, the governments of our typical case are challenged to formalise already existing practices. There is a lot of pressure to authorise and enable water sales, water lease contracts and option contracts. Strong lobbies are undertaken by the commercial world and developing banks to enable water markets and maybe even water auctions in order to create optimal mobility of water rights. Of course, governments are not opposed to the idea of allocating water as per best economic advantage. However, a few constraints of *tradable water rights* are to be considered:
The physical characteristics of water sometimes simply do not allow transfer of water rights. Since water flows from upstream to downstream and it is extremely expensive to transport water over large distances, it is not always possible to transfer water to another user. Moreover, in semi-arid to arid regions and at the higher positions in the river basin water is simply not available at all times and especially not during droughts, when the water is needed most. Often, there is also substantial interaction of groundwater and surface water resources. Water abstracted as groundwater will not come to run-off.

On the other hand markets can only develop under circumstances of substantial water shortage. In the absence of a strong economic trigger to transfer water, it can be understood that markets will remain thin (Holden and Thobani 1995).

The market system per se does not foster any social equity. In fact, it is more likely that monopolies or other market imperfections will develop (Solanes 1999). Especially, in the public irrigation schemes this could create substantial civil unrest.

Water has no substitute. The demand for water is relatively inelastic. Speculation with water would be a sensitive issue even in our commercially oriented continent.

There is no real market solution for tackling externalities. Government will have to come in anyhow to regulate (economic) externalities or third party effects.

A free exchange of water rights may not only create environmental externalities, but it can also hamper environmental resources planning. Especially, moving water rights from downstream to upstream or inter-basin transfers can have serious environmental complications.

In general there is the issue of transaction cost, especially when formal trade of water rights involves the construction of new conveyance structures or other infrastructure. These costs are generally high in relation to the value of the water.

Inter-basin transfers are hard to manage and difficult to monitor.

Government will have to develop adequate regulatory capacity to enable the functioning of the water markets. Monitoring, policing and sanctioning functions are still or even more needed. Appeal procedures and legal arrangements for compensation of "victims" are needed. Accurate registration of the water transfers is needed as well as sophisticated decision support systems for water resources planning and operation. At the end, under certain circumstances, these ‘transaction’ costs might exceed the economic gains reached by the water transfer.

Nowadays the number of antagonists towards the development of water markets is clearly exceeding the number of supporters (Dellapenna 2008).

Nevertheless, water allocation as per best economic advantage through mobility and transfer of water entitlements is a major challenge that governments geared towards economic sustainability will have to address.

3.5 Water allocation by plan (v)

In recent times many governments have embarked on initiatives to create institutional arrangements to enable river basin planning (see chapter 4). River basin organizations and sub-basin organizations are established to carry out river basin planning and to authorise water distribution and water conservation. The river basin organizations are responsible for formulating river basin outline plans. The river basin plan can be based on the plans adopted by the sub-basin organizations, when available (Jaspers 2004).
River basin organizations could play a pivotal role in monitoring, policing and enforcement of the use of water. In the boards or committees of the organizations all relevant governmental administrations, all ‘stakeholders’ organizations and all interest groups should be represented. In principle water can forthwith be issued on permit by the river basin organization. The Government is authorizing the legality of the plan (and thus the enforcement) and puts in a check on concurrence with national water policies.

These modern approaches in water resources management to apply stakeholder participation in decision making, water allocation by negotiated planning and integrated methodologies are in fact (as stated before) a partial return to the old days when water was considered as belonging to the community as a whole (res communis omnium).

### 3.6 International comparison

Our imaginary continent of the case study has not been chosen haphazard and in a way its situation reflects a broad spectrum of potential water allocation and water right systems available in the world from the past, for now and with an outlook on the future.

The ‘res nullius’ principle or the use of water where it is found is still a very important principle not only for nomadic communities (e.g. North Africa, Mongolia) but also for the direct abstractions for primary uses (Zimbabwe) or for water reserved for domestic purposes (South Africa: permissible uses, Jaspers 2001). In Mongolia in fact, all minor water use is authorized without a water right when not used for commercial purposes. Minor water users are simply characterized as water consumers which are exempted from licensing (Mongolian Water Law 2004, art. 20-21). In the Netherlands surface water can simply be abstracted, as long as abstractions are notified to the Water Board (Teunissen 2010, Netherlands Water Law 2010).

The principle is not only relevant for the water users, but also serves to avoid unnecessary administration for small uses, or uses where water is not scarce. The principle further fosters a moral dimension or guideline which is applied by some customary Islamic law schools (Naff 2008), in which raw water is considered to come from God and cannot be denied to any human being.

The riparian doctrine still per-exists in slightly adapted forms in the U.K., in many states in the Eastern U.S. and de facto in South Africa. The original common property doctrine for riparian users is nowadays diluted and regulated, but the concept is still valid and binding. Most East American states have a sort of regulated riparianism (Dellapenna 2008). In South Africa many smaller (previously riparian) water use rights are generally authorised (South African Water Law 1998, section 39) or otherwise excluded from licensing. This implies that previous riparian rights are still lawfully exerted.

Systems of prior appropriation are still very common again in some states of the U.S. and de facto in Zimbabwe and South Africa. In Zimbabwe the Water Act of 1999, basically abolished all commercial water rights, but grace periods were given to existing rights and the implementation of new systems of establishing water permits for a period of 20 years is up to now seriously lagging behind. Besides, water is by law reserved for environmental and domestic purposes (‘the Reserve’) which is an example of priority of use. The South Africans are still having implementation problems in defining quantities of water to be allocated to ‘the Reserve’ for the different classes of water bodies (varying from pristine to heavily modified).
There is no ‘Utopia like’ nation where systems of tradable water rights are combined with systems of decentralized and integrated planning for river basin management. Systems of tradable water rights are found on the American continent in the West of the United States, in Chile, Peru and Bolivia and in Spain. In Mexico rights can be traded after approval of the relevant water management authority. Only in the last case of the regulated trade (water for agriculture only) one can speak of sizeable markets. In other cases markets are thin and show characteristics of government interference (Dellapenna 2008). Spot markets of localised water transfers are present throughout.

In (Northern) Europe the issue of water rights does not have much emphasis because of the favourable climatic conditions, perennial rivers etc. In Africa and Asia governments tend to play a dominant role in the allocation of water, especially in the irrigation schemes. Pricing is exceptional, although fees for at least the cost recovery of management services, are becoming of a more general application.

Systems of (decentralised) integrated planning according to French (river basins) or Dutch (tributaries) example on hydrological boundaries are gaining interest in new legislation of African and Asian countries (Caponera 1992, Jaspers 2004).

A special (and admirable) case is the new legislation of South Africa. The Minister of Water Affairs is legally tasked to make sure that specific river basin management strategies are produced by the relevant authorities in line with the national strategy. A river basin management strategy necessarily covers a water allocation schedule (among other requirements). A massive change is the introduction of a classification system of water quality and the obligatory (!) determination of the Reserve, as a volume of water in each river not to be used for any other purpose than domestic water supply or environmental flow. This system results in the determination of environmental flows for basically all rivers and streams in all periods of the (hydrological) year depending on the selected classification. Any other water is meant to be priced and economic allocation of water rights is foreseen for competing uses (Jaspers 2001). Unfortunately, the implementation of the South African Water Act lags seriously behind. A missed opportunity!

3.7 Recommendations: challenges of sustainability

In fact, this is how the situation to a certain extent in many developing countries of the world is now (2011). There are a lot of different often simultaneously applied systems with their own rationale and with a variable level of binding for the arena in which the right is exerted (legal plurality).

But also developing countries are rapidly changing. On the one hand, there is great need to stimulate economic development and allocate water as per best economic advantage. Developing countries are crying for private investment and water security plays an important role. For that purpose water transfers need to be facilitated in case of water scarcity. The necessary institutional arrangements should enable mobility of water rights. There is a need for mechanisms of registration, policing, enforcement, appeal procedures to handle externalities etc. On the other hand, arrangements should be made to guarantee environmental flows and the reservation of water for (limited)
domestic purposes. Integrated river basin planning to safeguard environmental values is a must.

Further, there is the issue of subsidiarity: to take decisions at the lowest appropriate administrative level as close as possible to the end users, so as to create guarantees that all interests are considered. Further, it appears very difficult not to manage water on hydrological boundaries. Therefore, the river basin is the logical management unit as far as planning is concerned. For reasons of efficiency and subsidiarity the sub-basin or watershed appears to be very instrumental for the more operational management functions (Jaspers 2004) and can thus play a major role in water allocation.

For water allocation this means that all water can be vested in the government and that the permit system is utilised, albeit with providing guarantees to secure private investments. Without government intervention it will be very difficult to preserve water for vital domestic purposes at its full social value and to guarantee environmental sustainability. It is recommendable that all water resources should be subject to valuation and priced in case of competing uses. The river basin organization should produce a river basin plan to give general directions for water allocation as well as for other purposes. Within the guidelines of the river basin plan, the sub-basin organization can produce operational plans. The river basin organization is authorised to allocate water on permit through administrative allocation. First, water will be allocated on priority of use for environmental and for (limited) domestic purposes (cf. the 'Reserve' in South Africa).

All new competing uses including for (treated) drinking water requirements will have to compete for water. The river basin organization will issue water permits for a fixed duration of say 20 years. Conditions can be attached to the water permit, but only in accordance with clearly formulated written guidelines in the river basin plan. In case of drought, water permits can be suspended.

3.8 Conclusions

In conclusion, we can say that water allocation principles from early civilisations on till now have played a substantial role in sustaining communities of people and other forms of life. Over time principles have developed to arrange water allocation from nomadic and early sedentary civilisations to complex industrialised contemporary societies. Water allocation can range from traditional systems where water is considered to belong to nobody and can be taken randomly to systems of tradable water rights and integrated river basin planning.

Traditional principles ruling water allocation still exist in both developing and developed countries among certain layers of society or under certain circumstances or for a certain type of users. Many principles may be applied simultaneously. Some principles that were considered redundant may become of very actual interest again, when circumstances change.

The development of water allocation principles depends heavily on the physical characteristics of the river basins in question, the absolute and relative scarcities of resources, on the rate of (agricultural and industrial) development, on the customs, norms, values, culture and religion of the respective communities and on the legal and institutional history and traditions etc.
Contemporary water allocation systems are hinging on several principles that will have to be applied in balance with one another. Firstly, there is great need to stimulate economic development and allocate water as per best economic advantage. For that purpose water transfers should be facilitated as much as possible. Secondly, systems of integrated (river basin) plan development with full participation of stakeholders in decision making and at the lowest appropriate level are becoming indispensable. Finally, the need for looking at the river basin as a whole and at the sustainability of all its natural resources will continue to put pressure on the government as caretaker of general interests to guarantee that sufficient water is reserved for environmental purposes for now and for coming generations. (The circle is round: We nearly reformulated a definition for IWRM!)
Questions on water rights and water allocation

1. What are the most important determining factors to characterize (differences in) water allocation and water right systems?
2. Which factors have contributed to the unification of water rights systems (according to Gupta)?
3. Can you assess and explain why water rights systems in Arizona are very different from water right systems in Egypt?
4. What is a water right? What is the difference between a water right and a water permit?
5. How can in general terms a water right be acquired?
6. Can you mention 5 important and different legal consequences depending upon the legal status of a water right?
7. Can you mention some 5 conditions that may be attached to a water permit?
8. Can you give 3 dominant differences between absolute water user rights systems and systems of water permits?
9. Can you describe in your own words the meaning of the term “legal plurality” in the context of water right and water allocation development?
10. Can you describe a practical example in which the same situation of water shortage results in 4 different outcomes when water is respectively distributed under the principles of date priority (1), prior appropriation of use (2), proportionality (3) and correlation (4)?
11. Imagine that you are a young investor. You borrowed money to buy a citrus farm. Under which water allocation principle would you prefer being considered? Use in your answer (at least) criteria as security of investment, potential for inheritance, potential for use as collateral, security of supply, legal protection.
12. Name 2 major advantages and 4 major disadvantages for the application of a system of tradable water rights.
13. What is the difference between a lease contract, an option contract and a contract for the sale of water?
14. Can you define the term ‘externality’? What kind of externalities may emanate during the application of water markets? Give a practical example of an environmental externality originating because of the trade of a water right from a downstream use to an upstream use.
15. Explain respectively why a water allocation system based on the principle of water marketing cannot be combined with systems based on principles of correlation and proportionality.
References


GWP Toolbox (2008), Integrated Water Resources Management, reviewed by M. Muller, Stockholm.


International Law Association (2004), Berlin rules on the uses on water resources, London.


Jaspers F.G.W. (2003), Principles for water allocation, transition of traditional customary


Teunissen J., (2010), Hand book environmental law, Berghauser Pont, Amsterdam (in Dutch)


Primary Government Sources

Department of Water Affairs and Forestry (1997), *Whitepaper on a National Water Policy for South Africa*, Directorate Communication Services, Pretoria


4 River Basin Organizations: Guidelines for Design

4.1 Introduction

From early civilizations on till now river basins have played an important role in sustaining communities of people and other forms of life. River basins are the natural entities in which freshwater appears, the ultimate source of nearly all water used and nowadays also the receptors of most wastewater. River basins play a pivotal role not only in the water cycle, but also in nearly all other life cycles as a crucial source of biodiversity. Multiple sector interests are predominantly served and covered by the resource base of river basins: drinking water supply, agriculture, hydropower generation, recreation, transport etc. River basins are used ever more intensively and many of them are under pressure. In some cases human pressure is reaching the maximum sustainable level or has already surpassed this level. Severe water competition is resulting between users, sectors and countries. Conflicts between upstream and downstream are on the increase. The slightly exaggerated term “water wars” is appearing now and then in newspapers (Jaspers 2000). The incidence of floods in quantity and in severity is also considered to be increasing. Causal links with unbalanced human occupation and watershed destruction are appearing clearly.

Throughout the world there is a broad consideration of water as finite and vulnerable resource (Agenda 21: UNCED 1992). Water policies and new legal frameworks are prepared in order to incorporate new principles and strategies for integrated water resources management (Global Water Partnership 2000). Whenever implementation of water policies and strategies is at stake, it is unavoidable to consider river basins as logical units for water and environmental resources management (Savenije 2001, Jaspers 2003). Integrated approaches are needed to prevent or remedy problems and conflicts and to meet social and natural demands. Basic elements of these integrated approaches are a basin wide planning scope aiming at sustainability, stakeholder participation in decision making, attention to management of surface and subsurface water and to water quantity, water quality and environmental integrity as inseparable entity. Further, there should be emphasis on the relations between land use and water resources and to the integration of natural limitations, social and economic demands and legal, political and administrative processes (cf. Teclaff 1985; Mostert 1999; Savenije 2001).

Fundamental question, of course, is: “how should all of this be implemented?” Which arrangements can be made to bring theory in to practice? This chapter will emphasize the institutional arrangements that are being developed and that are needed to enable developing countries to improve water management. Key-elements are described that should be handled to manage river basins as a whole and in an integrated way.

4.2 Terms and definitions

In this chapter a number of terms will be used that are frequently coming up in a variety of meanings in discussions, proceedings, publications and other communications. The most important and frequently used terms will be described for the sake of harmonizing the discussion.

A river basin is to be defined as the geographical area determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a
common terminus (cf. Helsinki rules, art II). If the common terminus is a lake, a coastal zone, a delta, an estuary etc. this may be comprised as an integrated part of the river basin.

Management can (for our purpose) be described as the attainment of organizational goals and objectives in an effective and efficient manner through decision making, planning, organizing and controlling the organizational resources (cf. Malano and van Hofwegen, 1999).

Integrated water resources management can be understood as the management of surface and subsurface water in a qualitative, quantitative and environmental sense from a multi-disciplinary and participatory perspective. There is a focus on the needs and requirements of the society at large with regard to water for now and in the future, thus aiming at maximum sustainability in all senses (cf. van Hofwegen and Jaspers, 1998). Consequently, integrated river basin management is the management of all surface and subsurface water resources of the river basin in its entirety with due attention to water quality, water quantity and environmental integrity. A participatory approach is followed focussing on the integration of natural limitations with all social, economic and environmental interests.

Water resources planning is a continuous process which involves making decisions or choices about alternative ways of using available water resources with the aim of achieving particular goals at some time in the future (van Hofwegen and Jaspers, 1998). Often this process will be expressed in the form of a plan as the publicly accessible output with general internal or external binding and aiming at repeatable use for the time horizon given.

Institutions are laws, regulations, organizations, standards, procedures or other establishments founded for a specific (public) purpose based on a set of working rules originating from an established custom, law or relationship in a society or community. Institutional arrangements are sets of working rules that are used to determine who is eligible to make decisions in some arena, what actions are allowed or constrained. Further, the rules describe what procedures must be followed, what information must or must not be provided and what payoffs will be assigned to affected individuals (Ostrom 1990).

(Administrative) Decentralization is the process of transferring executive tasks and or competencies from the centre of authority to organize or implement a (government) function (cf. Ostrom 1990).

4.3 Justification for integrated river basin management

Why river basin management?

Why is there a need for a relatively complex institutional mechanism as integrated river basin management? Should river basin management be initiated by the government or by the relevant stakeholders themselves? Can it be introduced or imposed or is it originating by itself or in other words: can the establishment of river basin organizations be conducted from the top or should the process of establishment be an agglomeration of existing water arrangements from the bottom? Why not accepting the regular management by sector ministries and their decentralized institutions operating on politically accepted administrative boundaries (regions, provinces, districts)? Why opting for water management on hydrological boundaries and specific organizations? These are relevant questions to assess the justification of integrated river basin management.

Water resources management on hydrological boundaries is not a new phenomenon. It has been in existence since ancient times whenever serious water competition arose.
Under other physical circumstances also the necessity for communal flood control always delivered a sound breeding ground for institutional “upstream-downstream” arrangements. In recent times the inability to manage water quality or to preserve environmental integrity and to sustain environmental flows offered a new dimension. It is at present nearly impossible not to organize water resources management in an integrated manner and on hydrological boundaries. A crucial issue is the process of stakeholder participation. It has become very clear that water resources planning without participation of stakeholders in decision making is highly ineffective. Application of serious measures without the involvement of stakeholders nearly always seems to be lacking “fine tuning”. Subsequently, an even bigger problem of enforcement arises. The issue of stakeholder participation is strongly related to the need for decentralization or water management at the lowest appropriate level. Of late, especially the call for (partial?) cost recovery of governments of developing countries provides a new trigger. Institutions for integrated river basin management provide substantial comparative advantages to practically implement these systems of cost recovery. But how feasible are they?

Why do we need river basin organizations?
This question is, of course, connected with the previous one. If Integrated River Basin Management is ‘the most appropriate tool’ to deliver IWRM at a basin scale, then River Basin Organizations (RBOs) are increasingly being promoted as the vehicle by which this tool should be implemented. In the past decades, river basin organizations have become “a central component of the most recent evolution of the framework that defines how water is managed at the river basin or strategic level” (Makin et al., 2004; see also Radosevich and Olson 1999).

The need for establishment or restructuring of river basin organizations makes part of nearly every contemporary water sector reform and is incorporated in nearly all new water legislation that has been produced over the past 10 years (South Africa, Brasil, European Union, Nigeria, Indonesia, The Netherlands etc). One may say that river basin organizations are an accepted reality, a globally applied concept with its advantages and disadvantages.

4.4 Types of River Basin Organizations

Although the term ‘river basin organization’ may give the impression that an RBO is a clearly defined entity, the reality is that the term is a blanket, or better a ‘patchwork quilt’ which covers many different types of organizations, with very different tasks and responsibilities. Distinguishing between the various types of organizations can be done using various criteria.

Millington et al. (2005) distinguished the task of the RBOs rather than the basis on which they were operating. As a result they came up with three categories of RBOs: the river basin coordinating committee/council, the river basin commission and the river basin authority. Hooper (2006) follows a similar path of distinguishing the tasks of the RBOs, but expands on the number of categories identified. Hooper arrives at nine different types of RBOs, presented in the following table.
Table 6: Types of RBOs according to Hooper (2006)

<table>
<thead>
<tr>
<th>No</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Advisory Committee</td>
<td>Formalized or quasi-formal organization, in which individuals take responsibility for undertaking action planning and provide advice, usually does not have legal jurisdiction.</td>
</tr>
<tr>
<td>2</td>
<td>Authority</td>
<td>Makes planning decisions at a central or regional government level. It may set and enact regulations, or have development consent authority.</td>
</tr>
<tr>
<td>3</td>
<td>Association</td>
<td>A private organization of like-minded individuals and groups with a common interest. In a river basin they have varying roles: providing advice, stimulating basin awareness, education and ownership of basin natural resources management issues; educational functions and information exchange</td>
</tr>
<tr>
<td>4</td>
<td>Commission</td>
<td>It is delegated to consider natural resources management matters and/or take action on those matters. A basin commission’s powers vary, and include advisory/education roles, monitoring roles, undertaking works, fulfilling goals of a specific government’s charter or an international agreement. Commissions normally are instituted by a formal statement of a command or injunction by government to manage land and water resources. Sometimes, commissions may have regulatory powers.</td>
</tr>
<tr>
<td>5</td>
<td>Council</td>
<td>Formal group of experts, government ministers, politicians, non-governmental organizations and citizens brought together on a regular basis to debate matters within their sphere of basin management expertise, and with advisory powers to government, it does not have regulatory powers in addition to a role as advisor to the government.</td>
</tr>
<tr>
<td>6</td>
<td>Corporation</td>
<td>A legal entity, created by legislation, which permits a group of people, as shareholders (for profit companies) or members (non-profit companies), to create an organization, which can then focus on pursuing set objectives.</td>
</tr>
<tr>
<td>7</td>
<td>Tribunal</td>
<td>A basin entity, which has formalized procedures and quasi-judicial powers; a heavy emphasis on bureaucratic decision making. Stakeholders may formally participate through hearings. Major decisions are taken by independent bodies, like a water pricing tribunal. A Tribunal acts as a special court outside the civil and criminal judicial system that examines special problems and makes judgments.</td>
</tr>
<tr>
<td>8</td>
<td>Trust</td>
<td>A legal device used to set aside money or property of one person for the benefit of one or more persons or organizations. It is an organization, which undertakes river basin works, develops and implements a strategic plan. Its mandate is to be the river basin ‘advocate’. Through some sort of agreements local programs are coordinated.</td>
</tr>
<tr>
<td>9</td>
<td>Federation</td>
<td>A collaboration of organizations or departments within one government or between state and national governments to establish and undertake actions for river basin management.</td>
</tr>
</tbody>
</table>

Source: Hooper 2006

River basin organizations can also be characterized in legal terms. In this way Hooper’s comprehensive subdivision can be refined. Associations and Trusts work under private law. Advisory Committees, Councils, Federations and Commissions are voluntary organizations with either no formal mandate or more often with a mandate indirectly derived from the Government or with the mandate they bring from the organization to which they are (professionally) attached (Mongolia). A Corporation is a legal entity under special law. A Tribunal is a regulated organization with quasi-judicial powers. Depending on the specific circumstances one may choose for one or the other organization. It is certainly no exception that various river basin organizations exist alongside (e.g. Indonesia).

It should be noted that no characterization will cover the full spectrum of RBOs encountered. The character of an RBO will depend on aspects as:
- physical characteristics of the basin or hydro-graphic entity
- social and cultural circumstances
- history, level of maturity
- character and extent of the main problems to be tackled: floods, droughts, water quality, navigation etc.
- economic circumstances
legal and political tradition and administrative realities (see also chapter 4.7)

4.5 Aspects of implementing IRBM

In order to bring integrated river basin management into effect institutional arrangements are needed to enable (Jaspers 2003):

- water resources management on hydrological boundaries;
- integrated management of water quality, quantity and environmental integrity of surface- and groundwater;
- an organizational set-up in river basin and, if needed, sub-basin authorities with their respective by-laws to incorporate decision making at the lowest appropriate level;
- the functioning of a platform for stakeholders involved in decision making;
- subsidiary decision making
- a planning system oriented at the production of integrated river basin plans;
- the introduction of a relevant system of water pricing and cost recovery.

We will first delineate the concepts and then zoom in on some institutional development arrangements.

Water management on hydrological boundaries

The need for water management on hydrological boundaries is mainly triggered by the growing competition for water or by the need to co-operate in an upstream-downstream relation for flood control or both. Water necessarily has to be managed on hydrological boundaries, because water simply tends to flow down and it does not stop at the boundary of the district or region. This is both valid for surface water and for subsurface water. For an organization operating on administrative boundaries, not coinciding with the boundaries of the river basin or catchment, it is very cumbersome to conduct water allocation and priority setting or to carry out flood control. Any management action will always be constrained by what happens upstream or downstream. A system of water management on administrative boundaries will induce the respective authorities to either monopolise the water supply sources within its area and to transfer the problem of flooding to downstream. The setting of priorities for water allocation in an equitable and efficient way other than on hydrological boundaries is per definition physically constrained. (It is, of course, very wise, to harmonise administrative and hydrological boundaries for the sake of administrative simplicity. Challenge is to find a balance between management quality and administrative simplicity.)

The need for integration

The complexity of the physical river system, the exchange of groundwater and surface water and vice versa and the continuous interaction between environmental elements is another physical imperative. To be effective, water resources planning should consider all these interactions. The fact that different elements of the water resources management function are implemented by different sectors and through different disciplines is a complicating factor, which can best be tackled by a holistic approach (cf. Savenije 2000; Dublin Principles: ACS/ISGWR, 1992; Agenda 21: UNCED, 1992). Besides, water resources planning should consider and prioritise all relevant societal water uses in their spatial distribution. A fine-tuning between consumptive uses
(domestic, industrial, agricultural water supply) and non-consumptive uses (power supply, fishery, recreation, nature conservation) is indispensable in more complex river systems. A system of integrated planning is needed in which water quality, water quantity and environmental integrity are managed in a co-ordinated way.

**The need for decentralization and subsidiarity or decision making at the lowest appropriate level**

Aspects of subsidiarity or decision making at the lowest appropriate level are modern interpretations of the more traditional administrative decentralization mechanism (Jaspers 2003). Decentralization is aiming at effective management through a fine-tuning of information: more relevant details can be observed at a lower level, closer to the end-user. Further, direct stakeholder participation can be facilitated better in a system of decentralized decision making. Decentralization is also meant to bring decision making closer to where the decision is applied. It is considered a more democratic process and it normally fosters a considerable increase in transparency. This stimulates the understanding and acception of conflicting interests.

**Stakeholder participation**

One of the corner-stones of integrated river basin management is the concept of involving stakeholders in decision making notably in the process of water resources planning. As such this concept is linked with aspects of subsidiarity. In essence: stakeholder participation is considered to be a condition to be fulfilled to make water resources management effective. First of all, it is logic that people want to exert their right to self-determination and decide on what is good for them. Activities designed without prior consultation or participation of the ones interested also tend to lack the relevant information for tailor-tailor made planning and implementation geared to the specific circumstances. Measures taken without the involvement of the beneficiaries or the affected have a reduced chance of fulfilment and may evoke unnecessary or even necessary resistance. This aspect will be further explored in the next chapter.

**Cost recovery / water pricing**

An increasing need for any government, but especially for governments of developing countries, is to recover a fair share of the costs of the service of water resources management. The various social and physical interdependencies, the need for transparency in the link of cost recovery and improved service level have provided new strong triggers for the establishment of integrated river basin management.

On the one hand cost recovery is not a very popular measure, but it can be conducive to reach acceptable service levels and very necessary for fostering economic sustainability of organizations. Effective river basin management based upon government allocations only is nowadays barely imaginable both for financial reasons and for reasons of effectiveness. The dependence on the national budget does not stimulate any development of functional responsibility at the level of the river basin. Moreover, counterproductive political interference remains a likely scenario in this case. Payment for the service of managing and providing raw water and the subsequent ploughing back in to the same service is a necessary tool. This link has to be made very transparent in order to establish proven successful mechanisms of combining interest, payment and say, in fact, the mechanism which are strongly underpinning integrated river basin
management (cf. Mostert 1998). The water price is further an effective tool in reducing over-consumption and pollution of water. This is a very important function and sometimes the major driver for applying systems of cost recovery.

But, on the other hand investigation learns that given the precarious situation in developing countries and inabilities or the unwillingness to pay for water managing services, advanced levels of cost recovery are hardly realistic (Mchibwa 2008). Somehow, an effective river basin organization will have to solve this dilemma or at least bring balance.

4.6 Stakeholders and representation in platforms

Key-concept of integrated river basin management is the participation of stakeholders in decision making or in other functions of management notably in water resources planning.

But, what is a stakeholder?

The term stakeholder participation is found in a lot of publications on water resources management. But, what do we comprise under stakeholders: only direct water users, or also indirect water users or potential water users? Can government institutions be qualified as stakeholders? Do they qualify as water users only, or also as water resources managers? Where is society at large coming in: experts, NGOs, scientific institutions etc.

Does it matter to differentiate between direct stakeholders like water users or people with no access to safe water, between indirect stakeholders like government officials in a WRM function and between other interested parties without a direct stake like scientists or politicians?

It is virtually impossible to identify all possible and potential stakeholders, but a subdivision in the following categories might be instrumental:

<table>
<thead>
<tr>
<th>Water users</th>
<th>Stakeholders</th>
<th>Interested parties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals</td>
<td>Water users</td>
<td>Stakeholders</td>
</tr>
<tr>
<td>Groups of individuals</td>
<td>Potential water users</td>
<td>Experts</td>
</tr>
<tr>
<td>Water Users Associations</td>
<td>Government in WRM functions</td>
<td>Universities</td>
</tr>
<tr>
<td>Government as water user</td>
<td>Public private partnerships</td>
<td>Scientists</td>
</tr>
<tr>
<td>Companies</td>
<td>Etc.</td>
<td>Politicians</td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td>NGOs</td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td>Etc.</td>
</tr>
</tbody>
</table>

It goes without saying that in a successful process of water sector reform the relevant stakeholders for the various functions of WRM (constitutional, organizational and operational) should be represented.

Crucial is to set up a platform in which all the relevant stakeholders are represented. This platform is meant to discard from sector approaches and the ambition is to create environmental, institutional, social, technical and financial sustainability. The function of the platform is to serve as a tool for integrated planning and for dealing with conflicting interests in the process of water resources planning and implementation of water
development. It can also play a pivotal role in awareness creation, communication and effective conflict prevention and resolution.

The platform ideally has the following characteristics:

- It is a platform for weighing all interests and for decision making on the use of water and water systems in the river basin.
- The platform should represent relevant interests and be under governance of the government to protect the interests of society at large.
- The platform should enable decision making and have controlling and enforcement powers (through itself or by delegation).
- The platform should represent the administrative levels dealing with the applicable tasks and competencies (van Hofwegen and Jaspers, 1999)

Depending on the type of decision making or planning the platform can be composed of direct, indirect and potential water users or their representatives, government officials, NGOs, experts, representatives of society at large. At operational level the requirement for water users to be represented is clear. In strategic planning apart from water users also government officials in relevant water related fields of work, interest groups and experts are normally represented.

A modern institutional development approach will stress that decision-making should be done at the lowest appropriate level. This does not mean that all decision-making should be done by water users. Certain decisions or decision-making processes are beyond the scope of the water user. It generally means that whichever decision-making can be left to a lower relevant level, should be left to that level.

Important is to characterize the extent of the stakeholder participation. Stakeholder participation in decision making may take different forms and appearances. Levels of influence may differ substantially in the different appearances.

**Process of stakeholder participation**

![Diagram of stakeholder participation process](image)

- **Ignored**
- **Information gathering**
- **Information dissemination**
- **Consultation**
- **Participatory (or joint decision-making)**
- **Self-management**

- **High**
- **Medium**
- **Low**

**Framework on level of stakeholder involvement**

*Figure 10: Ladder of characterization of stakeholder participation (Adeoti, 2004)*
However, a direct or indirect representation of stakeholders at all relevant levels of planning or decision-making is indispensable.

**In what should stakeholders participate?**

The optimum is participation in decision making. The decisions will be made after all interests have been looked at or at least after stakeholders were offered the opportunity to bring their interests forward. Depending on the level of decision making and the specific management function envisaged, stakeholder participation can also be instrumental in planning, monitoring and even in enforcement. In Zimbabwe, as an example, the monitoring of water meters was taken care of by neighbouring water users in the same part of the river basin (Jaspers 2001). Because of the interdependency of the users it appeared to be a very effective instrument of monitoring. Through the mechanism of social control, enforcement was self-arranging.

In the next paragraph an attempt will be done to discuss the advantages and disadvantages of selected systems of decentralization for water resources management.

**4.7 Decentralization and subsidiarity**

Within the context of integrated water resources management we are dealing with government functions, tasks and competencies covered by what we could mention the public administration. So, under the term decentralization we comprise the process of transferring tasks and competencies durably or for an indicated period of time (but not incidentally) from the centre of authority to other departments, agencies or administrative levels in order to organize or implement a government function. The purpose of the decentralization effort can be manifold. A driving force for decentralization is to guarantee the effectiveness of its measures and also aspects of efficiency are of interest. However, another driving force for decentralization is to create transparency and to stimulate public accountability through participation and appeal procedures. A modern idea behind decentralization of government functions is to put decision making in the hands of people who are well informed, accessible for interested people, capable of making fundamental decisions in a timely manner. Further, for reasons of accessibility decision making is supposed to take place at a level as close as possible to the end-users.

There are various ways to arrange decentralization within the public administration and from public administration to semi-public or private organizations. In case of integrated river basin management the figure of functional decentralization is often applied. The decentralization is not general, but is aiming at specific functions of administration, in this case tasks and competencies that are comprised by the function of water resources management.

If we concentrate on the public sector first, we can identify three main methods of implementing decentralization efforts: de-concentration, delegation or devolution (cf. Ostrom 1990).

In case of de-concentration executive tasks and competencies are assigned to other (regional) offices of the central authority or to lower levels within the same administrative structure. Authority and responsibility remains within the central institution. This agency can retake the task and competency at any time. It can impose rules or regulations at any time or randomly.
In **delegation** executive tasks and competencies are assigned to another public or private body with transfer of responsibility but without irreversible transfer of authority. Responsibility is shifted to the surrogate unit or private organization and the central authority will create a regulatory framework in advance. The central agency is not allowed to take up the task or competency itself at least not within the indicated period of delegation or only unless this reservation has been made.

In **devolution** executive tasks and competencies are assigned to other administrative levels on a continuous basis with a complete shift of authority and responsibility. The lower administrative level is responsible for decision making and resource mobilisation. ‘Devoluted’ tasks and competencies are further managed in autonomy by the lower level of administration. As such devoluted competencies can hardly be distinguished from competencies that are originally attributed to a body or organization in autonomy.

It goes beyond the scope of this document to fully characterize and describe autonomy accurately. However, an organization can be considered to have a higher level of autonomy, when some requirements are met e.g.:

- Independent decision making process
- Financial independence
- Freedom of budget application
- Ownership of assets
- Election of key-personnel

Cases of devolution are rare. To shift authority completely is identical to giving away a caretaker function. No government likes to do that, especially not in case of a sensitive public function as managing a basic need like water (however necessary this may be). De-concentration is a frequent feature. However, since there is no shift in responsibilities for decision making, this figure is not offering extra opportunities to empower stakeholders. Delegation is also very common. It is probably the most practised institutional instrument to transfer tasks and competencies. Delegation can be prompt and definitive (Zimbabwe) or gradual and progressive (South Africa). Progressive delegation is applied over time as the need for delegation arises and on request by the stakeholders. Actual delegation takes place when stakeholders are to a basic extent capacitated and when effective institutional arrangements have been established. In South Africa and Tanzania the delegation of responsibilities to river basin organizations is progressive. In Zimbabwe delegation has been necessarily prompt (Jaspers 2001).

In The Netherlands the Water Boards developed autonomously and prompt. Their power was gradually restricted. Contrarily, in France the ‘Agences de l’Eau’ gained in importance after 1964 through the absolute need in France to detain central government control (Alaerts 1995). In Turkey, Mongolia and some African countries the process of delegation is still restricted or experimental.

Decentralized competencies should be clearly distinguished from tasks and responsibilities that are carried out in **co-administration**. In this modality lower or other levels of government administration are co-operating in the implementation of activities or arrangements of higher or other competent bodies. They are given the necessary instructions and means to carry out these duties (cf. Indonesia: “tugas perbantuan”). Basically, these activities are not carried out under the authority of the decentralized agencies.
4.8 Development of River Basin Organizations in historic perspective

*Development of River Basin Organizations in historic perspective: Revolution? Evolution?*

How river basin organizations develop depends to a large extent on the circumstances under which development takes place. It matters whether water is scarce or abundant; whether the main problems are water competition or flooding or water pollution; whether the basin is big or small; densely or sparsely populated etc. Also social and economical factors, culture, legal tradition etc. play a considerable role. When the need for effective river basin organizations is historically high, organizations will already exist and may have a mature structure. When the need is less high or emanated recently, local water arrangements will exist simultaneously with some ad-hoc arrangements for co-ordination but without a clear organizational structure. As stimuli for the development of the river basin organization can be mentioned:

- triggers and problems: water competition, floods, environmental disasters
- complexity of the physical and social environment
- social and political developments
- donor policies!
- economic development level
- the need to share benefits from the water resources
- the need to widen the playing field beyond the limits of water management (van der Zaag 2004) etc.

On the one hand a river basin organization may have a very mature character and a long history of autonomous development (the Netherlands), on the other hand river basin organizations may just originate as a result of some political negotiation process, sometimes with the donor community as main drivers (e.g. Namibia, Mongolia) with the resulting constraints for practical implementation (c.f. Shah and van Koppen, 2006). There are many modalities in between. In this document we will try to look from both ends and analyze prompt politically induced top-down decentralization processes versus autonomous development of local water arrangements in to mature river basin organizations. We will try to substantiate analysis with case studies.

**Box 3: Consolidation of river basin organizations in The Netherlands (Mostert 1998) or balancing bottom-up with top-down**

**Origin**

When reflecting about the origin and the transition of the Dutch Water Boards, one should realise that they originated in the west of what we call at present the Netherlands, an area predominantly near or under mean sea level.

From the ninth century onwards, large peat areas had been drained for agriculture. As drainage in peat areas causes land subsidence, flooding and the discharge of excess water became important issues. The local governments, the so called ambachten, singly or together, had to build dykes and construct drainage canals. Sometimes they dammed rivers, which minimised the total length of dykes to be constructed and freed the downstream area from water from upstream, thus facilitating drainage of their areas. In the upstream areas, however, this construction of dams caused very serious flooding problems (Mostert 1998).
Scale
Gradually, the scale of the water management problems became so large that the local communities could no longer solve their management problems on their own or with some neighbouring communities. Thus, from around the twelfth century regional water boards were established, being regional government bodies with specific water management tasks. These tasks were related to relatively minor infrastructure works with regional benefits.

In addition to regional water boards and the ambachten, also local water boards were established, in the west of the Netherlands called ‘polders’. Their task was to improve local drainage, first by constructing local drainage canals discharging as far downstream as possible, and as from the early 15th century onwards by building and operating windmills. Their size could differ greatly, and many transgressed the borders of the ambachten. As their activities could influence the regional drainage systems, the regional water boards gradually began to supervise the local water boards.

General versus functional (specific) Government
In the Middle Ages the relation between the functional water boards and general government was close. Local water management was the responsibility of the local landowners, supervised by the local government. The construction and maintenance of the regional infrastructure was the joint responsibility of the benefiting local communities, supervised by the regional water board.

In the 16th century changes took place. The regional water boards started to do more work themselves, the costs of which they recovered from the beneficiaries.

After 1798 the functional water management and the general government separated more. Due to old charters the independence of the water boards remained secure. Provincial supervision over the water boards functioning, however, became more intense with the increase of the influence of the provinces as general government institutions for land and water issues.

Concentration of water boards
In 1953 in the Netherlands 2544 water boards existed (Mostert 1998). Then, on 1 February of that year, a combination of spring tide and a strong storm raised the water level in the south-west of the Netherlands to a level 0.57 meter higher than the highest level previously recorded. An area of 200,000 hectares was flooded and 1835 people drowned. The maintenance of the dykes in the affected area had been the responsibility of mostly very small water boards without much technical expertise and financial possibilities. Consequently, the dykes had been in a bad state of repair. To solve the problem, many water boards in the south-west of the Netherlands merged after 1953.

Concentration was also necessary because the scale and complexity of water management increased. Water quality became a new object for water management. Water quality management required expertise that could not be efficiently developed by small water boards. The solution chosen was to give the responsibility for water quality management to the provinces, which could delegate the task to existing (bigger) water boards or to newly formed water quality water boards (Mostert 1998).

The last stimulus for concentration came from 1985 onwards from the introduction of the concept of ‘Integrated Water Resources Management (IWRM)’. In this approach water systems (surface and groundwater quality and quantity, banks, river bed and technical infrastructure) have to be managed as a whole, and nature gets more attention. This increased the demands on the water boards in terms of required expertise even further. Moreover, the idea became popular that water quantity management and water quality management should be in one hand (Ministry of Transport and Water Management, 1985, 1989, 1990). This promoted further mergers between small water quantity water boards and between water quantity and water quality water boards, resulting in about 27 water boards in 2003.

Within the framework of the implementation of the new EU Water Framework Directive it appears to be necessary that even more water boards will merge as a reaction on the need for water management on tangible hydrological boundaries (EU Framework Directive, article 3: river basin districts). The number of water boards anno 2008 is now about 20 and the process of scaling up is still ongoing.
Consolidation

You may say that the water boards in the Netherlands are unique phenomena that survived the ages. Which factors prompted the evolution of these organizations so crucial for the integrated management of water resources in the Netherlands?

They originated where needed and transformed to changing conditions and concepts. The boards were spearheaded by influential people with authority based on the general approval of the public. No consensus meant/means flooding and starvation. The boards have always been financed by the stakeholders and the level of contribution was in relation with the level of interest. The right of say was also in line with the level of contribution. The ‘existential slogan’ of the Dutch water boards was ‘interest, payment, right of say’. Recently, representation in the formerly rather technocratic Dutch boards is changed into a system of direct election of board members with the apparent objective of extending stakeholder participation in decision making and increasing political transparency. The number of boards was reduced from 2544 in 1953 to 26 in 2009.

The general pattern of development has been that water boards developed from localized and small to larger and that tasks have been increased and diversified. Their functions have developed in line with changes in society and changes in physical circumstances and requirements for efficiency and effectiveness. The pattern could be characterised as consolidation.

4.9 Platform establishment and development

As stated before the establishment of a platform for decision making to enable stakeholder participation is crucial in the development of a river basin organization. To make life easy one can distinguish 3 positions:

(i) Platforms or similar bodies, are already in place and only need reinforcement, revitalisation, extension, capacity building (bottom up) etc. Examples can be found in: The Netherlands, France, Australia.

(ii) In other situations the ambition is to create and set up these platforms from scratch often as an integrated part of the new establishment of a river basin management organization. The organization is designed in line with state of the art experiences, best practices adapted to local circumstances: South Africa, Zimbabwe, Mongolia (see respective water laws).

(iii) An existing river basin organization is extended with a stakeholder platform. The need to involve stakeholders was growing and became instrumental and the professional organization is enlarged with a platform: Indonesia or Brasil (see respective water laws).

It is important to know the envisaged role of the platform and its position in the organizational set-up of the river basin organization and the level at which this platform should be functioning. This process is intimately connected with the process of institutional development of complete river basin organizations as functional bodies and shows a heterogeneous pattern.

However, some common aspects can be distinguished. The process of establishing platforms with relevant tasks, competencies, responsibilities and strengthening them in their roles is connected with processes of decentralization.
One will always observe tension when autonomy has to be surrendered from the top of an organization to the local levels. This is also the case when autonomy is retrieved, as we saw in the case of the Dutch Water Boards. Transferring autonomy happens in a delicate balance between transferring authority and preparing and strengthening the stakeholder platform to exert this authority. The central agency will sometimes argue that stakeholders are not capable of public management, it may even create conditions so that the platform cannot take up serious responsibilities. Often stakeholders are offered the choice between little autonomy or strong interference in serious matters and large autonomy in issues with little impact or with a high chance of failure. Many examples are known in the field of water supply and sanitation when communities are offered community based management for village drinking water facilities without creating local organizational arrangements and management capacities at community level, without resources (or simply as and when the stock of spare parts for pumps in the national store is depleted!).

A crucial element of decentralized autonomy is the competency and ability to recover costs and the freedom of spending the available budget in an autonomous way. A big bone of contention is to attribute the right of charging fees from the centre of authority to the local agency and to transfer the responsibility of financial management to the stakeholders. Often, this competency is laid down in the Constitution of a country and changes are only possible by formal law (in line with the Constitution). As a typical case of platform development in a new river basin organization we describe the case of Mongolia.

Box 4: Development of Councils in Mongolia

The issues in Mongolia
In the past few years (2007-2010) the Ministry of Nature, Environment and Tourism of Mongolia has embarked through the National Water Authority on a process of establishment of River Basin Councils (Mongolian Water Law, Article 9). The initiative is supported by two capacity building projects, the IWRM project supported by the Dutch Government and one supported by WWF. Both projects experiment with the establishment of River Basin Councils (RBCs). In total, a number of about 20 River Basin Councils are envisaged. Mongolia has a polar climate with average temperatures below zero degrees (C). There are only 4 months of growing season and the subsoil is permanently frozen. Hydrology is strongly influenced by ice melt from glaciers and permafrost conditions. Through global warming this pattern is subject to steep changes and becomes more erratic. Mongolia is a huge country with a lot of natural resources and diversity, and with semi-nomadic human occupation by Mongolians depending on livestock mainly interspersed with sedentary often irrigated agriculture cultivated by a strong minority of former immigrants of Kazakhstan. The country is rich in all kinds of minerals exploited by big international Chinese, Canadian and Australian mining companies. The big water issues are environmental protection, water quality management, water allocation and distribution, and adaptation to climate change. The administration is organized such that mobility of people and resources can be facilitated.

Functions
A crucial arrangement is the establishment of River Basin Councils or Water Basin Councils as they are mentioned in the Water Law of Mongolia. According to the Law (Article 19) the River Basin Council shall exercise certain powers. Some important responsibilities are:

(i) To monitor the fulfillment of conditions attached to water rights (contracts on water use) and to suspend water use rights and to propose them for withdrawal when conditions are not met;
To formulate water use and water conservation plans, foster approval of the plans, and to monitor the implementation of the plans;

To monitor implementation of obligations and conditions of water users emanating from environmental impact assessments;

To advise on adverse effects through various construction activities and on withholding approval of these projects;

Awareness creation on water conservation and water use;

Assist in catchment restoration together with authorized administrations and advise on the operation of special and ordinary protection and sanitary zones.

It can be observed that the character of the functions of the councils is advisory and that implementation, control and enforcement is generated through the authority of regular member organizations or individual members.

Establishment and demarcation

It is not clearly spelled out in the Law which organization is responsible for the establishment of River Basin Organizations. A certain freedom was created to learn by doing and establish the resulting procedure afterwards. The members of River Basin Councils are to be appointed by the national Government (Minister of Environment, Nature and Tourism) when the respective river crosses the boundary of the Province (Aimag). When the river flows within the Aimag the members are appointed by the Aimag and within the Soum or District by the Soum or District. Most of the rivers are crossing administrative boundaries so the Minister is entitled to nominate councillors. In practice, so far the minister asks advice from the Aimag and nominates from a list provided by the Aimags (signed by the Aimag Heads or “Governors”). (So far (2010) two River Basin Councils have been established).

The National Water Authority, a functionally corporatized organization in charge of water issues under the responsibility of the Minister of Environment, Nature and Tourism, is responsible to supply the River Basin Councils with professional management (Mongolian Water Law Article 12.2.6). Thus one may assume that the Water Authority is fully authorized to prepare and guide the development of the River Basin Organizations.

The Orkhon-Tuul (around Ulaan Batar) and Khovd-Buyant (in the west of Mongolia) river basins were chosen initially as pilot areas among others to articulate the process of establishment of River Basin Councils.

The approach followed by the National Water Authority so far is:
- A working group was formed to demarcate the river basins. The working group consists of members of the Water Authority, IWRM donor project and various other departments. Decision was taken to subdivide both river basins in to two identifiable and separately manageable parts;
- The IWRM project concentrates on the Tuul river only and the WWF initiative aims at establishing two councils for both Khovd and Buyant with the idea of merging them later;
- A long list was received from all the Aimagas located in the pilot river basins with stakeholders that could act as representatives in the Council;
- The list was completed with representatives of direct users and industries (by the National Water Authority);
- In a workshop membership of the Council was articulated and a short list was produced;
- The shortlist was approved by the Minister;
- The Councils became operational and draft regulations were being proposed by the councillors and produced with professional legal support and were approved by the Minister.
- The Councils Chairperson and Secretary were appointed by the Minister
- The Council completed its working rules (by-laws), which are to be approved by the Minister
- The Council starts its operations: monitoring, planning etc.

It is planned to start with tangible activities immediately after the establishment of the Tuul Council for instance with the preparation of the water use and conservation plan. Initially a project or a concept is in need of success stories.
<table>
<thead>
<tr>
<th>Ministerial regulation of on rules for River Basin Councils</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ministerial Regulation No 187 of the Mongolian Ministry of Environment, Nature and Tourism orders approval of the rules on River Basin Councils. The idea of a ministerial regulation is to clarify and arrange the operational functioning of an agency.</td>
</tr>
<tr>
<td>In many developing countries the production of regulations is a bottleneck. Often regulations are not present, not reaching out or not clear. It is crucial to underpin the process of establishment of river basin organizations with clear and relevant regulations, giving sufficient support and authority to the councils to meet the ambitions.</td>
</tr>
<tr>
<td><strong>Legal status</strong></td>
</tr>
<tr>
<td>In line with Art 19.1 of the Law of Mongolia on Water, the objective of the RBC is to engage citizens in the local management of water resources, for the protection of water resources, its effective use and restoration etc. A River Basin Council should be considered as a Public Private Partnership in which government officials, citizen’s representatives, citizens, NGOs and other private organizations and enterprises etc. are represented in their normal daily professional authority for the purpose of co-ordinating water management issues. The PPP derives its mandate from the Law on Water and from its establishing authority (so by delegation from the Minister, Aimag or Soum). So the RBC should be considered as an implementing arm of Minister, Aimag or Soum, composed on a voluntary basis. For the time being it is not a body corporate in itself, not a private foundation or association, cannot sue or be sued. No new authority is created. If on the longer term this situation is not acceptable anymore, the Water Law should be adapted or a new law should be created and an RBC should be created with autonomous authorities.</td>
</tr>
<tr>
<td><strong>Representation</strong></td>
</tr>
<tr>
<td>Representation is described by the Water Law (19.4 and possible members are mentioned in a non-exhaustive way (others could emerge)): the authorized Government, citizens’ representation and administration, environmental and professional inspection agencies, agriculture, industry, citizens, researchers, rangers, NGOs delegates. In general, in developing countries, there is a tendency to underestimate the involvement of the direct users (cf. Indonesia, Tanzania). Members of the council have an active role in facilitating and strengthening the active participation of direct users. One should not forget that in the case of Mongolia the purpose of establishing RBCs is to engage citizens in water management and conservation. From the first experiments with the establishment of RBCs (WWF and through the IWRM project) it can already be concluded that representation will be different in nearly every river basin. Social and administrative diversity is huge in Mongolia.</td>
</tr>
<tr>
<td><strong>Financing</strong></td>
</tr>
<tr>
<td>A very important issue is the financial sustainability of the RBC. The Regulations indicate the options that are foreseen to finance operations and investments:</td>
</tr>
<tr>
<td>(i) A percentage of the income collected from water use fees could be used for covering operational costs. The complication is that the fees are collected by regular decentralized taxation offices in the Aimag and Soum and there is no direct link to disbursement to the RBC. Further, it is not clear whether this revenue could be used for the operational costs of the RBC. The fee structure is given by the Law on Fees for the Use of Water and Mineral Water.</td>
</tr>
<tr>
<td>(ii) According to the approved RBC Regulation it is possible to establish a Fund to operate the RBC. The objectives and regulations for the Fund would have to be described. The Fund could collect money from donors, enterprises, other funds etc. It could function as a sort of Trust, but the legal applications will have to be assessed.</td>
</tr>
</tbody>
</table>
(iii) The operation of service delivery could also be an option, notably of O&M services for irrigation activities, but also monitoring and issuing discharge permits; it goes without saying that any charge should be based on an accepted service delivery.

(iv) Of course, there is always the option of direct funding through donors, private sponsors or direct income from delivering services, campaigns etc., but this does not have a formal status, unless deposited formally in the new Trust.

**Sub-basins**

It is to be expected that sub-basin councils are needed. In fact, the Tuul Basin Council in the pilot area in the IWRM project can already be considered as a sub-basin. According to Regulation 87 the basin authorities, the chairperson of the council would be authorized to approve the members of the Sub-basin Council. The establishment of a sub-basin could follow a similar track as the establishment of a Basin Council. How the mandate for exercising certain tasks and responsibilities is going to be distributed over Councils and Sub-Councils is to be decided by the establishing authority. For the time being the Tuul Council is considered as a Basin Council. Later a consolidation with the rest of the basin could follow. Maybe, the Orkhon part can be incorporated in the basin structure later on.

WWF has started a process to establish River Basin Councils in Khovd and Buyant rivers. The process is similar to the process organized by the IWRM project for the Tuul River. There are two Councils under one chairperson and one secretary. As with Tuul and Orkhon River the idea is to maybe merge the councils later.

Important consideration from the WWF programme is that representation of stakeholders is a very variable process from place to place with a differential pattern.

It should be mentioned that the establishment of RBCs and SubRBCs is normally “a learning by doing process”. There are no distinct best practices except building in sufficient flexibility and engaging relevant stakeholders. The same approach was followed in Zimbabwe and South Africa (Jaspers, 2001)

**Monitoring and water use plan**

The idea is that the RBC will develop a plan on water use and conservation for its area. It is desirable that this plan is approved by the authorising agency (Ministry, Aimag or Soum). Important is to decide on the status of the plan. Obviously, the plan will have functions of coordination, informing the public, comprehensive and effective management etc. The level of binding will have to be decided upon. The binding character of a plan can extend up to determining on water allocation or comprising decision on investment (cf. the French model, Cheret). The preparation of a plan is generally a good exercise to generate confidence in a new organization, to clarify roles and responsibilities and to exercise on team building. Councillors should be taken seriously and more importantly councillors should also have the feeling that they are taken seriously.

**Enforcement**

Not surprisingly agencies are struggling with enforcement in Mongolia. Distances are huge, certain areas are difficult to reach, people lead sometimes nomadic or semi-nomadic lives, and conditions are hard. To equip RBCs with enforcement powers will not be easy and may not be necessary. If the relevant agencies are represented in the council, authority to enforce can be derived from their normal authorities and capacities (cf. France where the Ministry of Environment carries out the Master Plan and Management Plans of the Water Board).

**Capacities**

In order to create sufficient human and organizational resources a comprehensive approach on capacity building is needed. Councillors need capacities. The organization needs good by-laws and other legal and institutional arrangements to lean on.
4.10 The mechanics of designing new river basin organizations

It is advisable to identify river basins in their total sphere of influence and to consider all types of water resources that are feeding into the basin: surface water, underground water, waste water, intruding seawater, seepage, ice melt etc. Some management functions can only be carried out with the total river basin as object. Ideally, a comprehensive hydrological measuring network for the monitoring of all types of water resources is needed. Ranges of data should be made available. The network should facilitate water resources planning as well as operational management.

More often than not a river basin is too large a unit to manage. Scale aspects are very important. Institutional arrangements for a river basin as the Nile or the Amazon are substantially more complex than of small local river basins, although in essence not different. Various levels of subdivisions are sometimes needed to either subdivide or support the management functions of the entire river basin or to enable operational management per se. The scale of the subdivision will highly depend on the physical characteristics, on the density of occupation, the type of land use etc. At this stage it is wise to consider administrative boundaries as well. With a few minor adaptations hydrologic subdivisions may effectively coincide with administrative boundaries or vice versa. This may add considerably to the co-ordination potential.

In Zimbabwe during the process of revising the water legislation the whole water sector was decentralized and commercialised (Jaspers 2001). The country was subdivided in to 7 river basins (in fact river sub-basins) of approximately 80,000 km². Each of these basins was subdivided in to 5 to 6 logical sub-basins, in essence till now the lowest management unit.

A similar process is going on in Tanzania. Twelve river basins have been identified that will be subdivided in to various sub-basins. (The scale is essentially the same). There is a likelihood that these Catchment Water Organisations will be composed of (lower level), multi-sectoral Water User Associations. In South Africa 12 river basins have been identified. In France the country is hydrologically subdivided in to 5 River Basin Authorities (‘Agences de l’eau’: Alaerts 1995). Water management in the Netherlands is comprised under about 25 Water Boards (2009), administrating small sub-basins. There is an intention to consolidate those small and independent organizations into approximately 15 units. In Turkey the idea is to subdivide the country in to 7 large river basins, to which smaller sub-basins will be added. For the time being the Water Department DSI operates in 26 River Basin Districts, based on rational considerations and hydrological boundaries.

The institutional set-up in the assessed examples varies from country to country, especially because the package of required tasks and competencies is highly variable. In Zimbabwe the Catchment (River Basin) Authority is composed of the Catchment Council consisting of direct water users and an Executive appointed and employed by the National Water Authority (the water sector in Zimbabwe is decentralized and commercialised). Variation could be that the Executive is appointed and employed by the Catchment Council. The Catchment Council is composed of two representatives of each Sub-catchment (Sub-basin) Council. Further, depending on the working rules expressed in the by-laws of the specific council, some positions may be reserved to specific sector representatives (Town Water Supply Authority, Governor etc.) with a
crucial stake. The members of a Sub-catchment Council are elected by the stakeholders organized in the sub-catchment.

Box 5: Catchment and Sub-catchment Councils in Zimbabwe (to Jaspers 2001)

**Background**

During the severe droughts that struck Zimbabwe in the early nineties, the insufficient administrative capacity to supply and allocate water for even covering bare necessities became apparent. The following factors played a major role:

(i) The water rights system on date priority appeared to be very difficult to administer under circumstances of severe drought. Especially, the insistence of downstream users to have their flow (abstraction without storage) rights satisfied resulted in the loss of desperately needed water.

(ii) Too many water rights had been issued in already oversubscribed catchments (river basins). The legal tools of the government to tackle droughts and structural shortages of water, proved to be too bureaucratic and impractical.

(iii) The Government was organised on administrative boundaries, which resulted in all kinds of co-ordination problems between the national level and provinces and districts, especially in the planning of the use of water resources.

(iv) The river boards, till then consisting of private users only, and bestowed with some public authority since the (minor) changes of the Water Act in 1986, were in practice managing the catchments. Their (privately financed) monitoring ability, social control and management flexibility proved to be very valuable. There was just one major problem with river boards: only commercial farmers were represented and they were predominantly white.

**Catchment Councils**

The Rhodesian Water Act (1956) gave the opportunity for the Permanent Secretary as head of the Water Department to constitute Advisory Councils and to produce outline plans. However, this opportunity was never utilised. The planning and decision making on water allocation was carried out in a haphazard way by the Department of Water Development and the Administrative Court, who jointly took a “sky is the limit” approach. There was no organized participation of stakeholders other than powerful individuals applying for an unrestricted amount of water rights, thus accumulating unrestricted volumes. Obviously, large groups of people and many interests remained outside the “deal” and this triggered large social unrest, especially when the public became aware of the fact that huge private dams were constructed without a valid water right and that the law was not enforced in practice.

In the Water Act of 1999 (GOZ, 1999) the principle of managing water on hydrological boundaries was introduced. According to the Water Act the Minister (of Rural Resources and Water Development) has the authority (and obligation!) to establish catchment councils in consultation with a newly established National Water Authority (*clause 20*). Authority was bestowed on seven catchment councils to set up the management of the use of water in the catchment areas under their jurisdiction. This includes the power to issue water use permits for a given duration. In principle the council has full autonomy in the allocation of water. This implies that the original function of granting water rights is changed to one to issue water permits and this function is removed from the Administrative Court and instead decentralised to catchment councils. The Administrative Court will further operate as a Court of Appeal.

**Tasks**

The tasks of catchment councils are roughly: assisting in the preparation of outline plans; determining applications and granting permits for use of water; regulating and supervising the use of water by permit holders; and ensuring compliance with the Act. The Water Act stipulates that in the composition of the catchment councils equal representation of all water users in the area concerned has to be reached. A specific intention of the new legislation is that people in the Communal and resettlement areas are involved in water management.
Subcatchment Councils

Before the promulgation of the new legislation there was an extensive trial period to experiment with various systems of representation (in pilot projects). The system that was selected encompasses a subdivision of the catchment in workable sub-catchments (in principle selected on hydrological boundaries but with an open eye for administrative realities). The councils have an equitable distribution of all water uses and potential (!) uses. Existing water users organisations, private and public, have been merged into the sub-catchment council. The catchment council consists of the chairpersons of the various sub-catchment councils in its area. In addition, some representatives of major urban areas have a fixed seat in the catchment councils.

Subcatchment councils are corporate bodies with the power to levy rates upon permit holders in the areas for which they are responsible for the purpose of meeting their expenses. The subcatchment councils are in charge of the monitoring and the day to day management of the water use. In some instances the boundaries of the subcatchment councils coincide to a certain extent with the former boundaries of the river boards, thus giving a sort of administrative continuity.

River Basin Organization

![River Basin Organization Diagram](image)

Figure 11: River basin organization in Zimbabwe

In Tanzania the situation is comparable. The Basin Water Organization is subdivided in an Executive and a Basin Water Board, composed of stakeholders (mainly government officials in this case). The Catchment (Sub-basin) Water Organization is still in an experimental stage. A representation per sector is likely until such time that Water Users Associations have been established and capacitated. In South Africa the system of Catchment Authorities hinges on the development of Water Users Associations. At present this an ongoing process. In The Netherlands members of the Water Boards are nowadays directly elected.

4.11 Tasks and competencies of platforms: progressive delegation

One way of establishing platforms is by progressive delegation. In this case we want to create and set up these platforms from scratch as an integrated part of the new establishment of a river basin management organization. The organization is designed in line with state of the art experiences, best practices but adapted to local circumstances. The best case is South Africa where in the post-apartheid regime the need for
stakeholder participation especially under formerly marginalized black communities is high, but implementation capacities are insufficient. Arrangements have to be developed for informed decision making, administration, monitoring and control by councillors sometimes people with a lot of wisdom, but little schooling.

Progressive delegation is applied over time as the need for delegation arises and on request by the stakeholders. Actual delegation takes place when stakeholders are to a basic extent capacitated and when effective institutional arrangements have been established. In South Africa and Tanzania the delegation of responsibilities to river basin organizations is progressive.

Box 6: Progressive delegation in South Africa (Jaspers 2001)

**Background**

The choice of the former apartheid regimes to concentrate black and coloured people in areas with a precarious water situation, but also the inability to create institutional capacity in those rural areas, were two factors triggering the production of a special Water Services Act (DWAF 1996), followed by a National Water Act (1998). This act deals with the provision of safe drinking water to all levels of society and is enhancing extensive processes of decentralisation of the water supply function to the local governments of the Republic of South Africa.

Further, the Department of Water Affairs and Forestry was organised on administrative boundaries, causing a main bottleneck in effective watershed management. Similar to the establishment of river boards in Zimbabwe, useful (non-governmental) experiments were undertaken in the field of watershed management. The positive outcome of these experiments supported the concept that water management unavoidably has to be carried out on hydrological boundaries. It goes without saying that full stakeholder participation was gravely undervalued under the apartheid regime. A comprehensive description of this problem goes beyond the reach of this article.

Water management in South Africa will be carried out on hydrological boundaries. For all 12 catchments in the country catchment agencies will be progressively established in an attempt to decentralise decision making to the lowest appropriate level. This progressive delegation will take place at the request of groups of stakeholders as and when sufficient management capacity has been established and can be demonstrated. Where catchment management agencies are not yet viable the Director-General will take care of their function, whether or not assisted by an Advisory Committee, as a first step towards establishing an agency.

Catchment management agencies may be established for specific geographical areas, after public consultation, on the initiative of the community and stakeholders concerned. In the absence of such a proposal the Minister may establish a catchment management agency on his own initiative.

**South African Water Act**

Part 3 of chapter 8 of the South African Water Act (DWAF 1998) deals with the functions and operation of catchment management agencies. Original functions are concerned with the investigation of and advice on water resources, as well as the co-ordination of the related activities of other water management institutions within their water management area and the development of a catchment management strategy. Additional powers and duties as described in Schedule 3 may be assigned or delegated to agencies such as: to establish water use rules and management systems; to direct users to terminate illegal uses of water; and to temporarily limit the use of water during periods of shortage. A catchment management agency may be financed by the state from water charges made in its water management area or from any other source.
Part 2 of chapter 8 describes the appointment of members of the governing board of a catchment management agency. The board of a catchment management agency will be constituted in such a way that interests of the various stakeholders are represented or reflected in a balanced manner, and that the necessary expertise to operate effectively is provided. Members of the governing board can be elected or nominated by the different water user groups for appointment by the Minister, and the Minister may of his or her own accord appoint further members. (The Minister may also remove board members for good reason.)

**Water Users Associations**

The Act goes even further in its endeavours to guarantee stakeholder participation by the introduction of the principle of water users associations. Although water users associations are water management institutions, their primary purpose, unlike catchment management agencies, is not water management. They operate at a restricted localised level, and are in effect co-operative associations of individual water users who wish to undertake water related activities for their mutual benefit. A water users association may carry out management powers and duties only if, and to the extent that, these have been assigned or delegated to it. The Minister establishes and disestablishes water user associations according to a standardised procedure based upon an approved model Constitution.

Existing irrigation boards, subterranean water control boards, and water boards established for stock watering purposes will continue in operation until they are restructured as water users associations.

Part 4 enables the Minister to disestablish a catchment management agency or make changes to its water management area, for reasons which include the need to reorganise water management institutions for more effective water resource management. An agency may also be disestablished if it does not operate effectively.

Tasks and competencies of the river basin organizations may differ substantially from country to country. Especially in the African environment an intensive process of experimenting is still going on. A “common denominating” task distribution is difficult to give because it highly depends on scale, physical, social and other characteristics. One could say that the river basin authority concentrates on collective choice functions and the sub-basin authorities/water users associations more on operational functions (cf. Ostrom 1990). Let us imagine a sample country with a two-layer river basin organisation (Zimbabwe, Tanzania, South Africa) and specify a common (non-exhaustive) denominating task distribution:

**Box 7: Sample functions for river basin level**

- Development of strategic river basin plan
- Development of operational river basin plan
- Contributing to river basin protection plan/measures
- Water right or water permit allocation
- Effluent discharge permit allocation
- Allocation of drainage permits or drainage responsibilities
- Co-ordination between sub-basins
- Collection of water charges
- Fund administration and development
- Appeal function (first layer)
- Awareness creation and capacity building
Box 8: Sample functions for sub-basin level

- Co-development strategic sub-basin plan
- Co-development operational sub-basin plan
- Contributing to sub-basin protection plan/measures
- Advising on water/discharge permits
- Monitoring and enforcement of drainage responsibilities
- Monitoring of water abstractions, water pollution
- Monitoring of drainage processes
- Enforcement of water rights, discharge permits
- Enforcement of drainage responsibilities
- Legal action against defaulters
- First layer of conflict resolution
- Collection of charges and levies

It is crucial to arrange aspects of representation and task distribution in a clear set of regulations or standard by-laws that can be modified by the users where local circumstances demand. Apart from rules for representation and functioning, by-laws should also cover aspects of water resources planning; allocation and registration of water rights; tariff structures and fee collection; fund development and application; monitoring arrangements; penalties and sanctioning; conflict resolution and appeal procedures.

4.11 Integrated planning system

An integrated planning process can support a system of integrated river basin management in various ways:

- Planning helps to assess the present and the desired situation in the basin and to develop a comprehensive set of measures to reach the desired situation (van Hofwegen and Jaspers, 1999).
- Planning delivers an opportunity to streamline the participation process and it should increase the transparency of the decision making.
- The production of plans forces the makers of decisions into a process of horizontal and vertical co-ordination (cf. Mostert 1999).

One of the targeted key-outputs of a system of integrated river basin management is the production of river basin plans in which the aspects of water quantity, water quality and environmental integrity are maximally integrated (horizontal co-ordination). Besides, this planning should contain a full consideration of the interests involved. It should be established according to procedures that enable full stakeholder participation in terms of decision making. The river basin plan is to be composed of lower level sub-basin, catchment or watershed plans, if the scale of the river basin makes them necessary (vertical co-ordination).

This is easier to be said than done! First of all, planning is not a uniform single level process. Plans can have a strategic or operational character. Sometimes the only objective is communication, sometimes far-going decision making is involved. Plans may address government institutions or citizens or both. Plans may focus on very different time horizons. And then, of course they may differ substantially in subject.

Crucial is that the management of water quantity, water quality and environmental integrity is linked up as far as strategic (policy) planning is concerned. For the sake of uniformity and administrative simplicity it is advisable to reduce the number of plans. Not necessarily, however all these aspects should/could be covered by one plan.
system of (national) environmental planning in The Netherlands is linked up with the system of water resources planning. The separate plans allocate guidelines or tasks to one another and every plan indicates on how the issues earmarked by the other plan are dealt with. Every four years one plan is revised in alternating sequence (“leapfrog planning”).

It will not always be possible to link up operational plans in time and in subject, but a legal instruction to the planners to harmonize the implementation could be very viable. In the so called ‘open planning approach’ (The Netherlands) the responsible authority is at all crucial stages of the plan development in contact with partner governmental institutions and interest groups and NGOs (Mostert, 1999). The open planning approach is extensively studied at present (even by unexpected actors e.g. by the American business world). For more information about planning processes, be referred to chapter 2.4.

4.12 Water pricing and cost recovery

One of the Dublin principles is that water should be considered as an economic good in all its competing uses. Consequently water should be priced (ICWE 1992). The latter addition “in all its competing uses” is a very important one, because it implies that when there is no competition water per se should not necessarily be priced. Especially in developing countries and emerging economies there might be various reasons why water should not be priced up to its real value, reflecting the opportunity costs of the water commodity (Rogers 1998). There might be social or even political reasons for not being too eager to price water, aspects of willingness or capacity to pay. The absence of water might have a paralysing effect on the kick-off of certain economic activities. Water availability is often a precondition for social and economic reform, for poverty alleviation in the widest sense. Water pricing sometimes also encounters cultural or religious constraints. In Islamic culture water pricing has a different sound than in a commercialised segment of the US civilisation.

Notwithstanding the various different concepts of water pricing, the recovery of costs for providing water services is widely accepted. The justification for cost recovery can be manifold and is not necessarily restricted to economic aspects. The following reasons prevail:

- Coverage of costs per se to be able to provide water services and or to increase coverage
- Stimulating water saving behaviour and water conservation
- Allocation of water as per best economic advantage.

More often than not a water pricing approach hinges on a combination of each of the above factors.

The issues of water pricing and cost recovery have not remained without debate in various countries and between various cultures. Traditional example is that paying for water per se in Islamic cultures is not really accepted. The acceptance of cost recovery, however, is widely spread. This acceptance is related to willingness and capacity to pay.

It is not always easy to recover the total costs directly from water users under all circumstances, especially when large investments in infrastructure are needed (cf. for flood control). The principle, however, is that the price for the service of having access to raw water or being protected against flooding or the price of treating the discharged pollution is paid by the user/beneficiary/polluter. One step further is to recover the full
economic costs of the water per se (including externalities and opportunity costs: Rogers, 1998). The final stage is that water rights are traded or even that water is auctioned (Holden and Thobani 1995; Lee and Jouravlev, 1998; Jaspers 2002). Water is used as an instrument to maximise the economic output per unit of volume. For the latter modalities a high level of organization and specific institutional arrangements are needed.

There are many supporters, but in the mean time also some adversaries of the statement that “water is an economic good”. For sure water is also a social good with an ethical dimension. The new EU Water Framework Directive states the following: ‘Water is not an ordinary economic good, but a (social) inheritance that has to be protected, defended and handled as such (EU 2000)’.

However, there is consensus about the need for cost recovery and hence water pricing. On top of that water pricing and charging for pollution is also a very important instrument of demand management.

In order to apply effective water pricing and to charge for pollution a comprehensive system of rights and licences is necessary. Clear water allocation criteria and pollution discharge standards as well as quality standards for the recipient water are prerequisite. (for a description of effective water rights, pollution discharge licensing and water quality management systems, please, be referred to the previous chapters). The registration, administration, monitoring, enforcement and policing of water rights and pollution discharge permits as well as the monitoring and enforcement of water quality protection measures can only be carried out effectively with the river basin as logical unit for management (Jaspers 2003) and with an effective administration, preferably kept by a river basin organization.
Questions

1. Can you give a definition of Integrated River Basin Management? Can you mention 4 key-characteristics for the application of integrated river basin management?
2. What are the basic administrative instruments to enable IRBM?
3. What would be the difference between institutions and organizations? Would you consider private organizations to be institutions e.g. the Italian Mafia?
4. What are the advantages and disadvantages of organizing local watershed management through River Basin Organizations?
5. Can you characterize the appearance of River Basin Organizations in legal terms?
6. Which factors determinate the over-all characteristics of River Basin Organizations?
7. Why would a national Government be willing to decentralize decision making?
8. 'The Dutch Water Boards are combining the traditional management principles of “interest, payment, say” with modern requirements of integration of sectors and multi-disciplinarity.' Could you explain this complicated sentence?
9. Can you mention three different categories of stakeholders? Could you give 3 specific examples of each of the three groups?
10. What modalities of participation can you distinguish in stakeholder participation in decision making in water management?
11. What is functional decentralization? What is the difference between delegation and de-concentration? And between devolution and delegation?
12. And what are the differences between autonomy and co-administration? And between devolution and autonomy?
13. What are the advantages and disadvantages of establishing implementation and enforcement authority for new River Basin Organizations?
14. Discuss why a system of performance measurement for mature RBOs will not be the same as for newly established RBOs.
15. Explain the following statement: 'The Zimbabwean water sector is both commercialized and decentralized.'
16. What is progressive delegation? Discuss a good example of progressive delegation with regard to the establishment of Catchment Management Agencies.
17. 'The representation in a River Basin Committee can be sectoral or through Water Users Associations!’. What is the difference?
18. How can horizontal and vertical co-ordination be arranged in a system of IRBM?
19. Can you give at least four good reasons to decide to subdivide River Basin Organizations into Sub-basin Organizations?
20. How can an integrated planning process support a system of integrated river basin management?
21. What is the difference between cost recovery of water services based on a system of charges and on a system of taxes. Which system do you consider more appropriate or the implementation of Integrated River Basin Management?
22. Indicate and analyse 5 different instruments for RBOs to increase financial sustainability.
References


Farai A. Mchibwa, Frank G.W. Jaspers, Pieter van der Zaag, From reforms to implementation: the paradox of financial sustainability in river basin organizations in developing countries, Science and Chemistry of the Earth, Delft, 2008


Shah Tushaar and van Koppen Barbara (2006), *Is India Ripe for Integrated Water Resources Management?*, Economic and Political Weekly, Special Articles p. 3413-3421,


