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رودخانه زاینده رود

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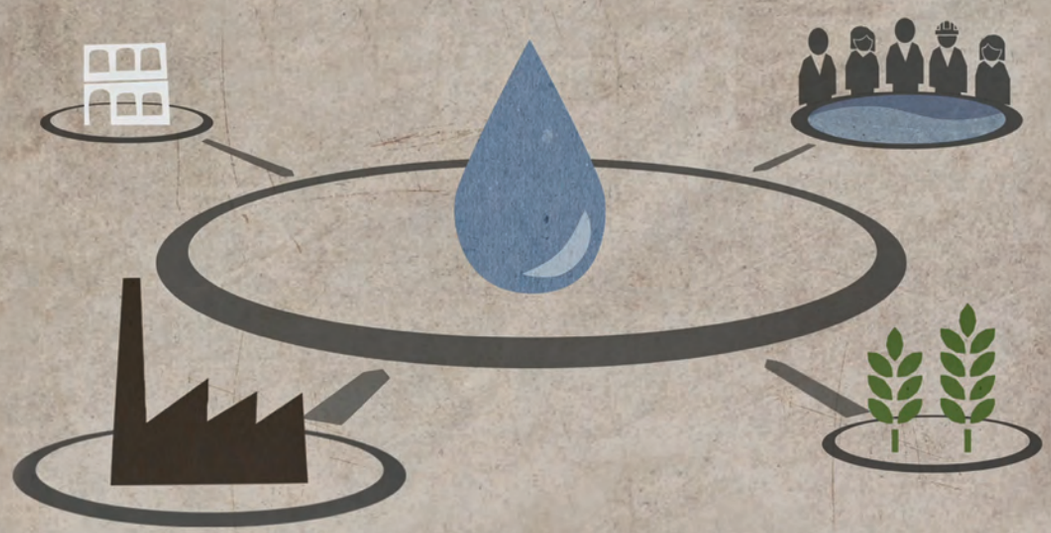
Zayandeh Rud

October 2018

River Basin Organizations in Iran

Assessment and Best Practices



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1. Introduction

Iran, and the Zayandeh Rud catchment in particular, faces water scarcity with different sectors and provinces having to compete, resulting in environmental and economic problems and also social conflicts. Reasons for this are climate change, but also related to water management. There is the need for a paradigm shift, overcoming outdated management approaches and introducing Integrated Water Resources Management and respective institutional designs.

The lack of integrated policy approaches at catchment level has encouraged the Iranian government to establish river basin organizations (RBOs), starting with the RBO Zayandeh Rud as a pilot. RBOs are usually considered the appropriate institution for implementing integrated water resources management (IWRM), as they can act as coordinating bodies between the sectors and governance levels. This report gives an overview over the current status, chances and challenges of RBOs (especially the RBO Zayandeh Rud) in Iran and provides best practice examples from all over the world.

Participants of the RBO workshop in Tehran.

2. Key Water Management Concepts

2.1. Water Governance

"The current water crisis is mainly a crisis of water governance" (Global Water Partnership 2002). This sentence is the most representative of the water governance paradigm which has emerged as a leading discourse (Sehring 2009). Experience from past decades and lessons learned from the failure of previous paradigms ("hydraulic", "economic", "environmental") (Allan 2006), showed that water related issues, whether in agriculture, industrial or drinking water, cannot be solved through sectorial policies, but should be tackled through a comprehensive approach, treating water management as a cross-cutting issue. Conventionally, different agencies are in charge of coordinating different water usages (industrial, agriculture, drinking, environmental conservation), however there seems to be little coordination among these agencies, which leads to inefficiency, fragmented policy making, duplication and ambiguity of competences and inconsistent strategies (Gleick 2000 , Molle et al. 2007). As such, water scarcity is not only a product of an imbalance between water supply and water demands, but is rooted in ineffective governance practices. Hence, solving water problems requires not only technical means and economic incentives, but also changes at the governance level, where supportive legal and civil institutions should be created (Ohlsson and Turton 1999, Mehta 2005).

Governance is a broad concept which embraces the full complexity of the different regulatory processes, as well as the interrelation between the polity, politics, and policy. The concept of "resource governance" accounts for different actors participating in decision-making (UNDP 2000 in Pahl-Wostl 2009). Governance signifies a new way of policy making: a shift from "government to governance" implies that the government loses its role as sole decision-makers and allows civil society, technical experts, the private sector and other stakeholders to contribute to policy development and implementation in different institutional settings (Pahl-Wostl 2009). It aims at achieving a balance among conflicting objectives – financial, economic, social, or environmental – by reducing fragmentation in responsibilities and among sectors (Pahl-Wostl 2009). Good water governance should encompass the following principles: openness and transparency, inclusiveness and communication, coherence and integration, equity and ethics, accountability, efficiency, responsiveness and sustainability (Rogers and Hall 2003)

2.2. Integrated Water Resource Management through River Basin Organizations

The challenge of good water governance lies not only in creating rules for water distribution. It also involves creating institutions that, by reflecting the principles of good governance, would allow different sectors and actors to articulate their interests and take part in the decision-making process (Sehring 2009).

Integrated Water Resources Management (IWRM) or Integrated River Basin Management (IRBM) is doubtlessly the most popular approach for implementing good water governance. The integrated approach points out the necessity of managing a river accounting for its hydrological boundaries rather than according to its administrative boundaries and prescribes a more balanced representation of social, economic, and environmental interests. Integration encompasses multiple dimensions:

- Integration on the natural system front: including land and water management, surface and ground water management, quantity and quality, upstream and downstream;

- Integration on the human system front: insuring that policy makers take into account the state of water resources and the possible impacts of their decisions for the resource.

- Integration of stakeholders and community views through development of participatory processes;

- Integration among different sectors and subsectors, (e.g. hydropower, domestic users, industry etc.) (Millington 2006; Global Water Partnership 2004).

To achieve the integration prescribed by IWRM, especially with regard to the management of water resources at catchment level, usually institutional rearrangements or even reforms are needed. In this regard the foundation of River Basin Organizations (RBOs) is a way to pursue a shift in governance (Huitema and Meijerink 2014). In the past decades RBOs have become a widely supported and promoted tool to achieve IWRM (Makin et al.2004, Radosevich and Olson 1999, UNEP 2014).

River Basin Organizations are organizations serving the purpose of IWRM by:

- ensuring basin wide planning, balancing the needs of all users;

- solving conflicts and water related challenges following a holistic and sometimes nexus approach (Jaspers and Gupta 2014) ;

- allowing public and stakeholder participation in decision-making and local empowerment;

- improving efficiency and transparency through decentralization and subsidiarity (UNEP 2014, Global Water Partnership 2013).

RBOs worldwide widely vary; there is no blueprint formula or clear-cut institutional model for achieving the right degree of integration through RBOs. Their overall effectiveness is influenced both by the institutional design of the RBO as well as the situation structure or collective action problem it develops in. As a general rule RBOs tend to be less successful when presented with more malign collective action problems, like water quantity and allocation problems ranking as one of the most difficult followed by water quality and pollution problems.

River Basin Organizations and their secretariats vary widely, especially depending whether they are oriented towards advice, coordination or implementation. Coordinated oriented RBOs are usually small with limited numbers of subsidiary bodies and with lean secretariat, while those implementation oriented present more subsidiary bodies such as working or experts group, and larger secretariats with specialized technical departments: Those technical subsidiary bodies and departments can cover a wide range of activities like river basin management, project planning, implementation and management, data and information collection and management, and a wide range of topics like flood protection, water quality and pollution, hydrology, groundwater, ecology, biodiversity, fisheries, climate change adaptation, sustainable hydropower, public participation or socio-economic issues. A lot also depends on whether the watershed lies within

country borders or crosses borders and thus requires international cooperation.

A Basin Management Strategy or a long-term plan as the basis for the implementation of IWRM sets out the strategic goals and aspirations of basin managers – the 'shared vision' – for water resources management, and how these goals are to be realised.

The strategy accounts for

- national water management policies;
- general and water-related development goals;
- context, type, scale and severity of water and land resources management problems;
- the level of economic development in the basin;
- the capacity of water managers and institutions to manage natural resource problems;
- financial resources available during the strategic period.

Strategies are best developed with the involvement of the full range of stakeholders.

There are five main elements in developing a Basin Management Strategy: (1) Identifying the issues; (2) Setting priorities; (3) Identifying management options; (4) Analysing costs and benefits; and (5) Assessing risks.

Strategies are the basis to develop shorter and more accurate basin management or action plans. Those will set out goals, objectives and programmes for managing water for a specific period (usually 3 to 6 years). River Basin management plans are living documents which can be adapted and updated and should follow a learning-by-doing management cycle of planning and implementation (see Fehler! Verweisquelle konnte nicht gefunden werden).

The plan agreed and developed in consultation with decision-makers and stakeholders in the basin specifies responsibilities for actions, how costs will be shared, lines of accountability and channels for exchanging and distributing information. Not all actions described in the plan have to be carried out by the RBO which can of course serve the role of a coordinating body.

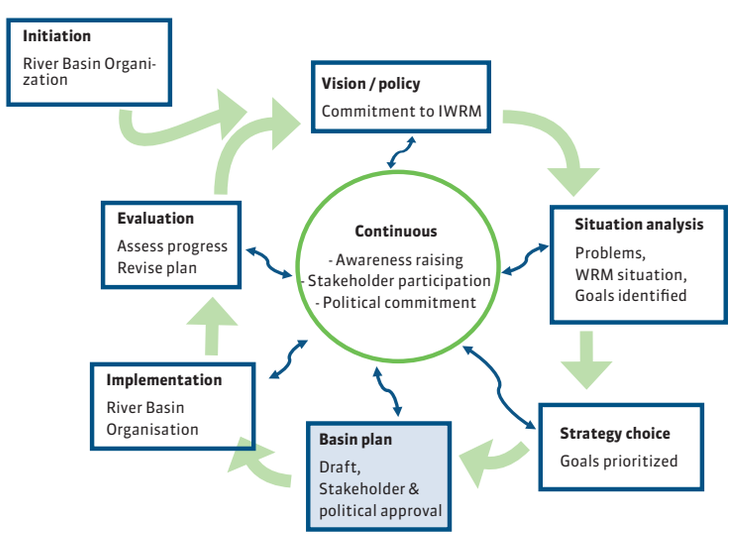

Figure 1: The learning-by-doing management cycle of planning and implementation

3. Status quo of the River Basin Council Zayandeh Rud

3.1. Methodology Governance

3.1.1. Theoretic Foundations

To evaluate the current institutional design of the RBO Zayandeh Rud, this paper uses a set of indicators reflecting best practices from (national and international) RBOs worldwide. The analytical framework combines principles and best practices from Schmeier (2012, 2015), who defined key institutional design characteristics influencing RBO, and Hooper (2005, 2006) who developed a set of RBO's performance indicators inscribed in good governance practices.

Schmeier and Hooper are among the leading experts in the field and among the few who have used an extensive comparative approach to evaluate the effectiveness of RBOs. The Institutional Design Principles identified by Schmeier are based on a study of 116 RBOs in 119 river basins worldwide. To ensure a high level of theoretical generalizability, Schmeier based her theory of international river basin governance on different disciplines such as institutionalism theory, hydro-politics, and studies of Integrated Water Resource Management. The resulting institutional design factors have been tested in a wide number of case studies. Hooper selected a broad range of performance indicators, using an action-research approach; this encompassed an extensive literature review, a review of experiences of practitioners, experiences gathered from existing evaluative frameworks, lessons from large-scale restoration projects and basin management programs, and discussion with UNESCO Help (Hooper 2006). His research resulted in 115 indicators synthesizing best practices in river basin management. These indicators were regrouped into ten categories according to good governance factors.

Combining the two authors' research, a comprehensive framework of 22 principles and factors has been identified. Many of them

Table 1: Schmeier's Design Principles and Hoopers Good Governance Factors

Institutional Design Principles (Schmeier)	Good Governance Factors (Hooper)
Membership structure	---
Functional scope	Goals, goal shift and goal completion
International water law principles	
Level of institutionalization and legalization	Rule of law
RBO's organizational set up	Organizational design
Secretariat	---
Financing of the RBO	Financial sustainability
Decision-making mechanisms	Coordinated decision-making Responsive decision-making
Data and information sharing mechanism	Information and research
Monitoring mechanism	Accountability and monitoring
Dispute resolution mechanisms	---
Mechanism for stakeholder involvement	Private and public sector roles
---	Training and capacity Building

overlap, leading to the compilation of the following Fehler! Verweisquelle konnte nicht gefunden werden.

3.1.2. Participatory Approaches and Stakeholder Input

At first, semi-structured interviews were carried out at management level, with Mr. Ehsani (Manager of the RBO Zayandeh Rud, Director General on Integrated Water Resources Management for Iran Central Plateau, Iran Water Resources Management Company) and at political level with Mr. Ebrahimnia (General Director, Water and Wastewater Macro Planning Bureau) and Mr. Harassouliha (Managing Director of the Iranian Water Resource Management Company). The questions that structured those interviews were conceived to gather information on each of the Institutional Design Principles and Good Governance Factors presented in the analytical framework.

To validate information gathered at the management and political levels on the RBOs' status quo this study used semi-structured interviews carried out with top managers of all existing Iranian RBOs, a questionnaire distributed to Iranian water experts and water practitioners during the first two-day RBO workshop in Tehran (in March 2016), and those from a participatory exercise organized by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and inter 3 during this workshop. Participants included Iranian representatives from different sectors (water, environment, agriculture, and home affairs).

During the semi-structured interviews with RBOs' managers, themes for discussion were suggested as water expert Susanne Schmeier introduced the most relevant questions for an RBO (role, legal basis, mandate, planning, decision-making and finance) and asked all participants to comment on those problems identifying their relevance and to add to the list of relevant problems.

The participatory exercise, carried out during the first and the second day of the workshop, consisted of various discussion rounds focusing on four key questions. Participants were asked to split into equally sized groups between 10 and 20 people, discuss the questions and present the outcome. This resulted in six groups on the first day and five on the second. The question focused on people's expectation towards the RBOs and the RBOs' functions on the first day, while on the second day they were asked to express their expectation on RBOs' membership (e.g. who should be a represented and what are your expectations of the members).

The questionnaire distributed at the end of the first workshop day had been developed by inter 3; it contained both open and closed questions. The aim of the questionnaire was to gain insights on Iranian water experts' views on RBOs.

Last not least, the table of indicators developed in the analytical framework (Annex II) was filled in by Mr. Ehsani (Manager of the RBO Zayandeh Rud) after discussion with other colleagues from the MoE. To test the comprehensibility of the indicators the table was trialed and reviewed with the support of inter 3 scientists. For each indicator explanatory notes were added. To avoid misunderstandings a resource person from inter 3 presented the table of indicators in detail during a visit to Tehran.

3.1.3. Merging of Results

All gathered information was grouped and organized following the structure of the analytical framework. The content of all interviews

and official documents were analysed using the MAX Q tool for discourse analysis of qualitative data. This tool allows the organization of information according to different codes. All information was structured according to codes based on each of the 13 Institutional Design Principles and Good Governance Factors. This information, together with the results of the questionnaire and the participatory exercise, was used to provide a qualitative evaluation of the status quo of the RBO Zayandeh Rud.

The score cards/ indicators method allows a visualization of where the RBO Zayandeh Rud stands compared with benchmarks of ideal Institutional Design and Good Governance. This allows the RBO Zayandeh Rud to clearly identify the areas that should be further developed to foster its development towards the "adult" RBO evolutionary stages.

3.2. Analysis

3.2.1. Membership Structure

Membership structures concerns the inclusion (or exclusion) of parties in an RBO's decision-making processes, specifically addressing:

- Who is a member and who is not. Membership criteria should be clearly defined (Hooper 2006).
- Forms of memberships could be multiple; as such competences of each members should be clearly defined (ex. full-fledged members, observers, members which are called for special consultations etc.).

The aim of an RBO is to integrate all interests and represent them in the decision-making process (Dombrowsky et al. 2014) thus an RBO membership structure should be as inclusive as possible. When considering RBOs' membership structure few considerations should be accounted for:

- Trade-offs between efficiency and inclusiveness exist (Schmeier 2012): cooperation efficiency and joint decision-making could in fact be undermined by a too large number of stakeholders representing very different points of view. However excluding some stakeholders to ease decision-making could also be counterproductive as it might hinder the recognition of decisions and hence their implementation.
- Political and organizational affiliation of members should be suitable to the function of the RBO.
- Overall the membership structure of an RBO and its secretariat should be tailored to the RBOs organizational structure, its type and its functions.

Table 2: Membership Structure

Hooper	Rules of participation specify membership representation and existing decision settings.
Schmeier	All stakeholders are represented in the decision-making process.

Assessment RBO Zayandeh Rud

In the RBO Zayandeh Rud Membership is currently restricted to: the Minister of Energy, who is also the head of the Council; the governors of the riverine provinces (Isfahan, Yazd, Chaharmahal-va-Bakhtiari); the Deputy Minister of Jehad Agriculture, the Deputy Minister of Industry, Mines and Trade; the Vice Minister of Interior Affairs; representatives

from the Environmental Protection Organization; representatives of the Planning and Budgeting Organization; the Deputy Minister for Water and Wastewater Affairs; the Director of the Iranian Water Resource Management Company; two representatives of farmers associations from Isfahan and Chaharmahal (relevant provinces for agriculture).

The membership rules are specified in the RBO guideline developed by the Ministry of Energy / Iran Water Resources Management Co., which also provides the possibility of inviting other relevant authorities, experts, associations and entities to attend the Council sessions (Iran Ministry of Energy 2016).

The two indicators (a and b) selected from Schmeier's and Hooper's approaches appear to have been fully implemented and their implementation has been judged by Mr. Ehsani as 'good'.

Similarly, the results of the workshop carried out on the second day of the RBO conference show support for the current membership structure. When asked "what representatives of which organizations should be members of the RBO" the participants included all the current members among their responses, showing a high preference for the MoE, the Iran Water Resource Management Company, the Agricultural Ministry, the Environmental Protection Organization as well as for representatives of farmers' associations.

However, participants' responses point out that some other organizations should be included. They indicated that representatives from the national political level should include: the Cultural Heritage and Tourism Organization, members of the parliament, as well as representatives from the judiciary. Furthermore, members from the provincial level should be considered, such as provincial water companies, water user organizations and representatives of City Councils. Concerning other possible stakeholders, many of the respondents have stressed the need for participation of the private sector. This should include: representatives from agricultural industry, from industry or the Chamber of Commerce. To a lesser extent the need for participation of NGOs and academia was voiced.

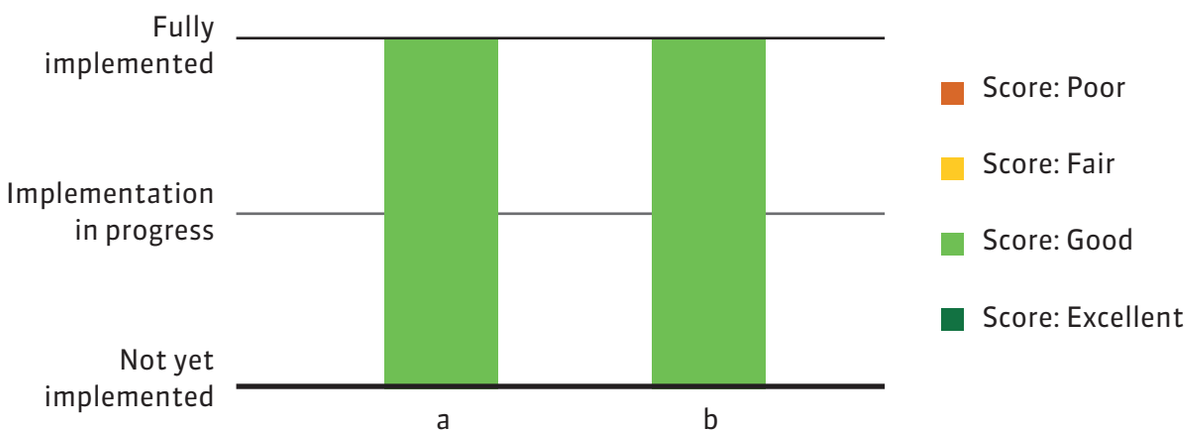

Figure 2: Score Card Membership Structure[1]

1. Source: own compilation based on the results of the analytical framework. Applies to all following score cards.

Main challenges identified

Results from the Institutional Design Principles/ Good Governance Factors focussed on "Membership Structure" show that

- there is general support of the current membership structure;
- the dominance of government officials is seen problematic;
- there is a demand for the inclusion of additional stakeholders from the provincial and local levels (provincial water authorities, representatives of local farmers, representatives of city councils etc.) as well as the private sector, technical experts, academia, or NGOs;
- there is the danger of domination of governmental stakeholders, undermining one of the RBO's key functions of representing all interests in decision-making.

Best Practice Examples 'Membership Structure'

River Basin Committees in France

RBCs in France comprise a variety of water and river management actors in a given ratio: Representatives of local governments (40%), user organizations and specialists (40%) and State government (20%). Members of the committees are either elected or appointed for six years.

Table 3: Best Practice Examples 'Membership Structure'

Composition of River Basin Commitees	Local authorities				Users & specialists	Governmental administrations	Total of members
	Regions	Departments	Municipalities	Total			
Adour-Garonne	6	20	28	54	54	27	135
Artois-Picardy	3	12	17	32	32	16	80
Loire- Brittany	8	29	39	76	76	38	190
Rhine- Meuse	3	16	21	40	40	20	100
Rhone-Mediterranean	5	27	34	66	66	33	165
Seine- Normandy	7	29	38	74	74	37	185

An example from the basin Seine-Normandy shows that members can be divided into:

1) Local Authorities (74)

- Regional representatives (7), Departments representatives (25), Departments which are engaged in interdepartmental work (4), Municipalities' representatives (38)

2) Users representatives (74)

- Agricultural users (7), Fisheries and resources protectionist (7), Inland shipping and navigation (2), Aquaculture and conch-culture (2), Tourism (1), Industries (24), Hydro-power developers (2), Water distributers (2), Water users defence associations (6), Organisations for nature conservation (9), Experts (4), Socio professionals (7)

3) State representatives (37)

- Regional and other prefects (9), General directors for environment (7), Others (11), Public agencies (10) (ex. Research institutes and agencies: marine protection, health, navigation, geology and mines, water and aquatic environment)

More information available under:

http://www.lesagencesdeleau.fr/les-agences-de-leau/la-democratie-de-leau/

http://www.eau-seine-normandie.fr/index.php?id=7541

Brazil (Alto Tietê)

The Upper Tietê Watershed Committee is the result of a pioneer initiative of the State of São Paulo in implementing an innovative institutional model focusing on integrated and decentralized water resources management under a participatory framework. Similar to the French system, the membership of the main committees is tri-partitioned: 1/3 State representatives, 1/3 municipal representatives, 1/3 civil society, with one vote per seat. In the Alto Tietê basin, sub-committees were created to implement IWRM at the lowest appropriate level. These can be defined as "social catchment" areas, combining socio-economic and environmental interests and identities with the region's political and natural hydrological divisions (Kemper 1998).

They have the same tripartite structure as the main committees. Local issues are thus decided in the sub-committees, although their deliberations must be submitted for approval to the Alto-Tietê Committee assembly. That body, in turn, is mainly responsible

for promoting the integration of the sub-basin policies and to discuss basin-wide issues. (Source: Formiga Johnsson, Kemper 2005).

For more information see also Kellas (2010):

http://www.oregon.gov/OWEB/pages/board_members.aspx

Oregon Watershed Enhancement Board

The agency is led by a 17 member citizen board drawn from the public at large, tribes, and federal and state natural resource agency boards and commissions. Of the Board's seventeen members, eleven are voting members.

Voting members include:

- At least 1 tribal representative
- 5 citizen representatives
- 1 member from each the following Oregon boards and commissions: Board of Forestry, Board of Agriculture, Environmental Quality Commission, Fish and Wildlife Commission, Water Resources Commission

Six are non-voting Board members. Five represent federal natural resource agencies with expertise in forest and agricultural land management, water quality, salmon recovery, and one represents the Oregon State University Extension Service.

The Director's Office in charge of overseeing the implementation of all agency activities and overall coordination includes the Executive Director and the Executive Assistant to the Director.

Identification: Members are identified by the governor and need to be approved by the Senate for a 4-year plan.

More information available under:

http://www.oregon.gov/OWEB/pages/board_members.aspx

3.2.2. Functional scope of an RBO

Hooper's "Goals and Goal Completion" factor stresses the necessity of achieving goals by using an integrated approach. To this end objectives as well as roles, responsibility and function of the RBO should be clearly identified and translated into an action plan (Hooper 2006).

The functional scope of an RBO refers to its purpose and should be determined in response to collective action problems and issues to be dealt with in the catchment. An RBO can be single-issue (tackling one specific aspect of water governance, like water distribution) or multi-issue (covering a broader range of aspects) (Schmeier 2012). There is no rule indicating which and how many functions a river basin organization should be responsible for, mandates can be narrow or broad. According to relevant literature, though, RBOs which feature a mandate too broad might fail to address the more fundamental core problems (Warner and Thomas 2014, de Loe and Morris 2014). The Oregon Watershed Enhancement Board has for instance a very narrow mandate, providing grants to help Oregonians take care of local streams, rivers, wetlands and natural areas. The French Water Agencies or the Australian Murray Darling Commission have a broader mandate.

Table 4: Functional Scope/ Goals and Goal Completion

Hooper	A long-term integrated basin management plan exists, encompassing well-defined objectives, mutually beneficial and desirable goals and resource development priorities.
	Resources availability constraints and options for development are accounted for in the river basin management's plan.
	The Integrated River Basin Management plan is implemented.
Schmeier	The RBO's functional scope matches the main water management problems (i.e. water scarcity, water quality etc.) in the river basin.
	RBO targets and function are clearly specified.
Hooper & Schmeier	RBO roles and functions are clearly distinguished from those of other entities

Assessment RBO Zayandeh Rud

The issues that the RBO Zayandeh Rud is entitled to act upon are described in the RBO guideline under "Objectives of the Council" and "Functions of the Councils". The first section, objectives, broadly describes the ambition of the Council emphasizing the need to increase cooperation and participation among relevant stakeholders, achieve a fair distribution of water by establishing priorities and monitoring distribution, solve water related conflicts and decrease environmental concern (Iran Ministry of Energy 2016). The functions of the Council are described in 23 points that can be grouped into:

- Planning: approving operational plans of the reservoir dams, reviewing and approving correction on storage dams' operational planning, determining users' water share, planning the budget for research and informational educational programs, planning to improve water quality and prevent pollution, insuring the compatibility of all development plans, on water extraction.
- Solving conflicts: local and interprovincial, establishing procedures for conflict resolution.
- Monitoring: following up on project execution, supervising water extraction, following up on financial credit allocation.
- Develop participation: between stakeholders and authorities.
- Data management.

Respondents of the survey carried out during the workshop have expressed the following priorities in terms of what the RBO could contribute to:

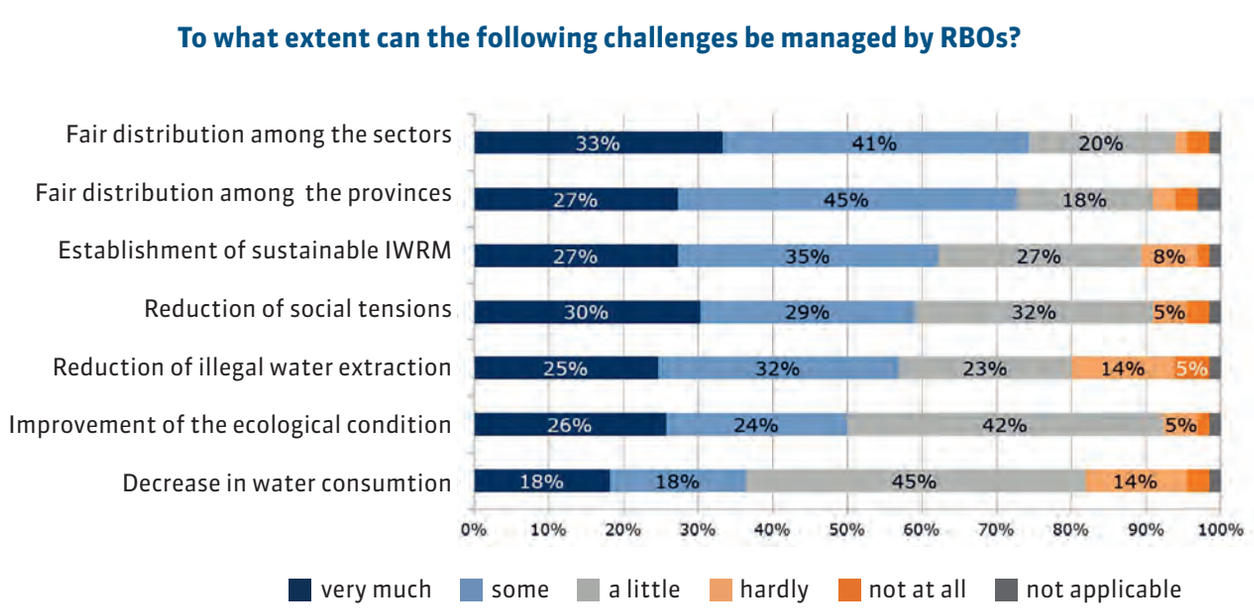

Figure 3 Challenges manageable by RBOs (results of the RBO survey)

By looking at the sum of the preference "very much" and "some" expressed, the main priorities (those that have scored more than 50%) for an RBO could be classified as:

1) a fair distribution of water resources both among sectors and provinces,

2) the establishment of an IWRM approach

3) the reduction of social tension.

Those goals are already represented in the functional scope of the existing guidelines. The first three appear as overarching objectives whereas the reduction of social tension is listed among the functions.

The results from the workshop carried out on the first day, where participants were asked the question "what function should the RBO fulfil?" show that preferences in terms of an RBO's function are present in the guideline. The main tasks identified during the workshop were (in order of expressed preference):

1) Control of water distribution, including water withdrawals, insurance of equitable distribution and allocation;

2) Decision implementation, encompassing monitoring capacity;

3) Sustainable water resource planning. In regard to this last point the need for an integrated approach for water management, which includes all relevant sectors, the necessity of establishing a management plan and of having implementation power have been emphasized;

4) Stakeholder involvement and enhancement of transparency in water related decisions;

5) The ability to coordinate policy makers from different sectors at the provincial level.

The lack of long term vision and the need for a river basin management plan were confirmed by Mr. Ebrahimnia (personal communication July 2015) and Mr. Ehsani (personal communication January 2016) as well as by the multiple questions raised by the country RBOs managers concerning the making of a river basin management plan (personal communication January 2016).

Evaluating whether a clear differentiation of roles between the RBO and other authorities exists was hampered by the lack of extensive literature on Iranian water management institutions but it appears that most of the RBO's functions were previously carried out by different organizations within the MoE, (i.e. water allocation for domestic and agricultural use) (Food and Agricultural Organization 2009).

Finally, the results from the score card indicators method show that none of the indicators relating to the existence, development and implementation of a River Basin Management Plan have been implemented (Figure 4 below, indicators a, b and c). However, according to Mr. Ehsani's evaluation the RBO Zayandeh Rud's mandate is on track to act upon the main water management challenges, and the RBO's target and responsibilities are clearly defined (Figure 4 indicators d, e and f). This assessment was also reflected by the wider discussions at the workshop.

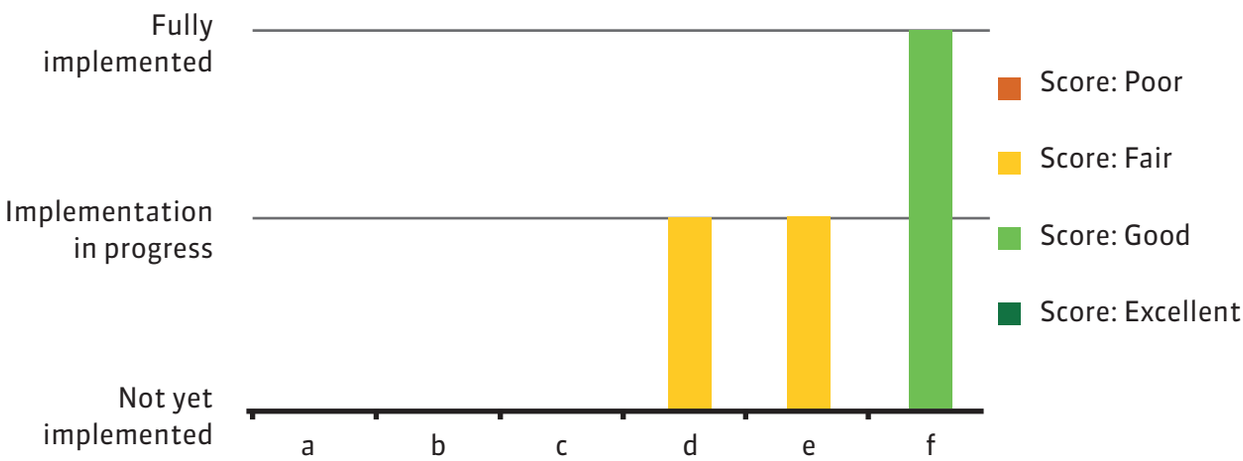

Figure 4 Score Card Functional Scope/Goals and Goal Completion. a) A long term integrated basin management plan exists, b) Resources availability constraints and options for development are accounted for in the river basin managements plan, c) Integrated river basin management plan is implemented, d) RBO functional scope matches the main water management in problems, e) RBO target and functions are clearly specified, f) RBO roles and its functions are clearly distignuished from those of other entities

Main challenges identified

The main findings on functional scope show that

- the RBO Zayandeh Rud's mandate is broad and very comprehensive (encompassing policy making, planning, conflict resolution and stakeholder engagement);
- this mandate, however, appears overambitious when compared to the RBO's capacity in terms of staff and budget;
- the absence of a river basin management plan defining long term and short terms goals may undermine the efficiency of the RBO Zayandeh Rud

Best Practice Examples Functional Scope

Murray Darling Commission (Australia)

The Murray Darling Commission is responsible for directing the sharing of the River Murray's water on behalf of the basin states, operating the River Murray system and overseeing asset management (Dartmouth and Hume Dam, Lake Victoria, Lower Lake barrages, weirs and locks) in cooperation with state partners.

The Commission's primary roles encompass

- preparing, implementing and reviewing an integrated plan for the sustainable use of the Basin's water resources
- operating the River Murray system and efficiently delivering water to users on behalf of partner governments
- measuring, monitoring and recording the quality and quantity of the basin's water resources
- supporting, encouraging and conducting research and investigations about the basin's water resources and dependent ecosystems
- advising the Australian Government Minister for Water Resources on the accreditation of state water resource plans
- providing water rights information to facilitate water trading across the basin
- engaging and educating Australian public about the basin's water resources.

French Water Agencies

Key objectives of the French water agencies include:

- fight against diffused pollution issued from agriculture
- restauration of aquatic milieu and establishment of humid zones continuity
- water resources management and distribution accounting for climate change
- coastal action

Those objectives are to be achieved thanks to the following competence repartitions:

- River Basin Committees: in charge of strategic decisions on water and aquatic environment protection policies, producing river basin management plans. Their competences are:
  - prepares and adopts the master plan for Water Development and Management (SDAGE) which fixes for each basin the fundamental trends for a balanced, quantitative and qualitative water management

    - Is consulted on the rates and bases of water charges levied for water withdrawals and discharges, consulted for the priorities of the Water Agencies 6-year action plans.

    - At the level of tributaries and sub-basin a Local water commission prepare and follow up on the implementation of the local Water Development and management Scheme (SAGE)

- Water Agencies: implement economic instruments of water policies within their river basin facilitating the various actions of common interest to the basin. Their competences are:

    - financial contribution to complete the construction and operation of structures which meet the requirements determined by the River Basin Committee

    - Survey and research on water

- River Basin Coordinating Prefect: coordinate water resource enforcement and management activities in conjunction with local Prefects.

These bodies work on and with several tools: There is one long-term master plan for water development and management (SDAGE) per basin which is developed by the basin committee on the initiative of the coordinating Prefect. It is updated every 6 years. The Water Development and Management Scheme (SAGE) addresses the implementation of the SDAGE. It is created either by local initiative or at the initiative of the basin committee and sets the principles at sub-basin scale (for example by setting water quality objectives).

For more information visit:

http://www.eau-seine-normandie.fr/index.php?id=8027

Oregon Watershed Enhancement Board (USA)

For more information visit:

http://www.oregon.gov/OWEB/docs/2010_oweb_strategicplan.pdf

General principles for preparing River Basin Management Plans

A successful implementation of the long term basin management plans requires:

- Clearly set objectives (targets)
- Well defined responsibilities
- A clear mandate (authority to implement)
- Use of planning tools such as annual working plans, breaking down the over all objectives into concrete actions, defining a time line and a budget to achieve each of the targets for the year.

Basin plans design principles according to GWP (2009):

- Define the boundaries of the basin
- Establish operational rules which reflect the technical and biophysical characteristics of water ecosystems.
- Ensure collective-choice arrangements that engage village and district stakeholders as well as neutral government water policy people in decision-making.
- Monitor the outcomes of planning and policies through water audits.
- Employ graduated sanctions.
- Build in conflict resolution mechanisms.
- Develop clearly defined property rights.
- Separate the role of water provider from that of the regulator, to avoid conflicts.
- Develop both demand management and supply management options, and encourage water-use efficiency through non-regulatory and regulatory mechanisms, particularly to increase efficiency in irrigated and dry land areas.

3.2.3. Reliance on the Principles of International Water Legislation

At the level of institutionalization it has been observed that the inclusion of international treaty or customary law (such as water law principles and principles of equity) can contribute positively to better governance (Schmeier 2012, 2014).

Assessment RBO Zayandeh Rud

There is no evidence of the adoption of international water legislation principles in the RBO's guideline. In the score cards/ indicator section related to water law Mr. Ehsani has pointed out that: "Instead of concentrating on international law, we must first apply national law which is obligated to be implemented." However, principles of international water law can also be adapted at national level, for example for two or more provinces (where it is referred to states in international treaties on transboundary waters).

Table 5: Reliance on International Water Law Principles

Schmeier	Water Law Principles, underlying international water treaties (e.g. equitable and reusable use, obligation not to cause significant harm, principle of prior notification) are integrated into the RBO.

Main challenges identified

Enquiries on the reliance of principles of International Water Law showed that

- principles of international water law are not on the agenda (yet);
- the application and enforcement of national water legislation is not effective enough;
- both representatives from the Ministry of Energy as well as RBO managers require information / capacity development regarding international water law principles.

Best Practice Examples Water Law Principles

International Water Law Principles

The UN Watercourses Convention (UNWC) is a global treaty adopted by the UN General Assembly in 1997. It is a framework convention governing international watercourses. The UNWC constitutes a global legal mechanism for facilitating the equitable and sustainable management transboundary rivers and lakes around the world. The Convention's principal

objective is to strengthen cooperation between states over their shared water resources following key principles of international law and prevent potential conflicts. These principles can also be applied to national water cooperation efforts, e.g. when it comes to cooperation between provinces.

Despite the strong support the UNWC received during the adoption process in 1997, it has not yet entered into force.

The UNWC User's Guide was designed to enhance the understanding of the Convention's text and promote the UNWC to relevant actors around the world, in the hopes of a swift entry into force of the UNWC. The user's guide provides a list of general water law principles:

- Equitable and reasonable utilization and participation.
- Obligation not to cause significant harm.
- Obligation to cooperate.
- Regular exchange of data.

For more information visit:

http://www.unwatercoursesconvention.org/the-convention/part-ii-general-principles/

3.2.4. Legalization and Institutionalization of RBOs

This design principle encompasses the legal basis and the level of institutionalization and centralization. The legal basis refers to the extent to which the RBO is capable of developing and implementing water governance activities. When the RBO is given the status of a legal entity its actions become separated from the rest of the government system (Schmeier 2012). The RBO is a permanent organization, allowed to make its own decisions regarding staff and finance. It is equipped with legal power (Isnugroho and Nielsen 2011). According to Schmeier (2012, 2015) permanent organizations with legal entity are found to be more successful.

Concerning the level of institutionalization and centralization, a more centralized organization of RBOs has advantages resulting from joint institutionalized management like a higher degree of coordination, facilitated communication, and in terms of costs. Also, decision-making or agenda setting makes more sense at a central level. However, the principle of subsidiarity, i.e. assigning responsibilities to the lowest feasible level, is also important with regards to reaching and involving local stakeholders. For each RBO, thus, the optimal balance of centralization and decentralization should be found (Schmeier 2010).

Schmeier (2012) refers to institutionalization as the extent to which an RBO is capable of

developing and implementing river basin governance activities vis-à-vis its member states (or other government bodies). It describes the independence of the RBO and its decision-making power and also means the degree to which procedures and norms are consolidated both within and beyond the organization. When talking about RBOs' institutionalization, a rough classification is determined by its institutional form like River Basin Committees, River Basin Commissions and River Basin Authorities (Schmeier 2012).

This principle is acknowledged by Hooper as "Rule of Law", which prescribes the existence of laws supporting RBO's management. Those laws ought to be strong and comprehensive but possess a certain degree of flexibility when needed. Regarding the RBO's legalization, both Hooper and Schmeier highlight the importance of legislation, regulation, and decrees identifying "RBOs function, structure and financial base and whose administration and operation is based upon a decision-making process of authority, responsibility and accountability" (Hooper 2006 p. 37).

Table 6: Level of Institutionalization and Legalization/ Rule of Law

Hooper	Legislation specifies structure of the RBO management.
	Legislation specifies accountability mechanisms for RBO management.
Schmeier, Hooper	The RBO's level of legalization and institutionalization is sufficiently high to act as independent player in the river basin and take the "big picture in river basin management".

Assessment RBO Zayandeh Rud

The decision of founding the first RBO in the Zayandeh Rud catchment was taken by the High Water Council on its 10th meeting on the 24th December 2013 and based on Article 1 of the Fair Distribution of Water Law, while Article 6 proclaims the responsibility of the MoE to create such an entity. The only legal document specifying objectives, functions and membership of the RBO is the guideline (Iran Ministry of Energy 2016). According to the guideline and Mr. Ehsani (Personal communication January 2016) the RBO Zayandeh Rud has a sound mandate to manage water resources at the level of an entire river basin. The RBO is equipped with a high level of institutional independence as its power comes directly from the High Water Council (HWC) chaired by the Iranian President (Ehsani, personal communication January 2016). The only institution having higher authority in water resources' matters is the High Water Council which is mainly responsible to ensure coordination among relevant ministries and can be understood as high level steering committee taking

political and strategic decisions on overall water management.

Decisions taken by the RBO Zayandeh Rud are considered binding to both members and non-members. Furthermore the RBO can extend its decision-making power to areas that usually fall into the responsibility of other ministries, if this is considered relevant to achieving its final goals (Iran Ministry of Energy 2016). Thus Mr. Ehsani reported that the RBO has a great authority to take decisions in a coordinated manner and create cross-sectorial programs thanks to its considerable power and the many different interests represented in this organization (personal communication January 2016).

If on the one hand the RBO has the authority to extend its decision-making, de facto it is not so easy to act on the portfolio of other ministries, as shown by the failed attempt of the RBO to modify crop pattern from rice (responsibility of the Ministry of Agriculture). In this case the Ministry of Agriculture made an evaluation and reported to the RBO that the implementation of the decision was not possible (Ehsani, personal communication January 2016).

The question whether the RBO could be considered as an independent actor has however a mixed response. On the one hand the RBO has policy making power and can take decisions independently meaning that it can decide on the creation of working groups with external members, on the other it does not have an independent budget, which makes it difficult to implement decisions. RBOs managers have pointed out that one of the main problems affecting the country's RBOs is the lack of coordination among different ministries (RBO managers, personal communication January 2016). Overall Mr. Ehsani evaluated the performance of the RBO Zayandeh Rud as follows:

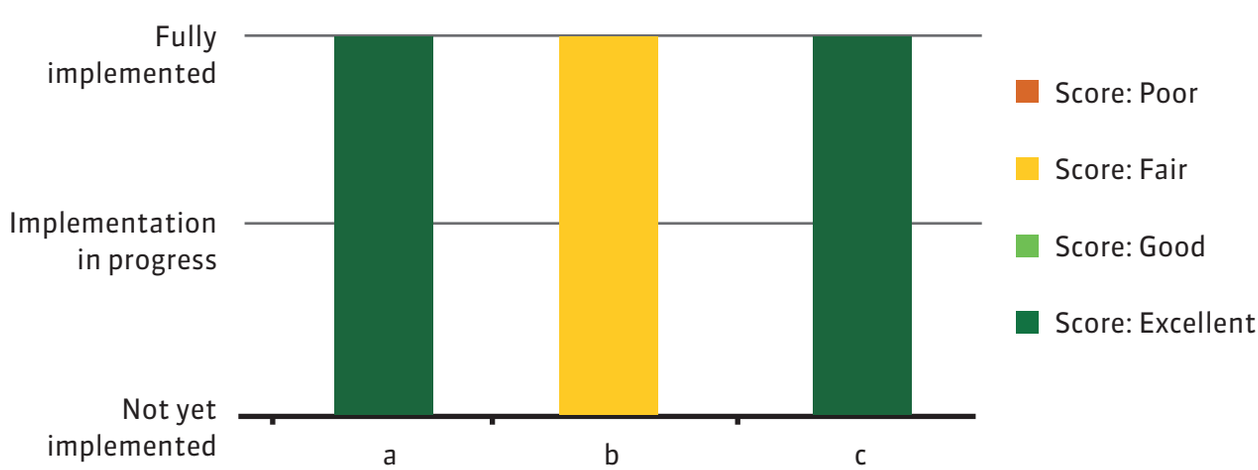

Figure 5: Score Card Level of Institutionalization/Rule of Law. a) Legislation specify structure of the RBO, b) Legislation specify accountability mechanismus for RBO management, c) The RBO's level of legalization and institutionalization is sufficiently high to act independent player in the rivier basin

According to his evaluation all indicators have been implemented and two of them (a and c) were judged as excellent. His assessment of indicator c as "excellent" contrasts with the fact that the RBO does not have an independent budget.

Main challenges identified

On the principle of legalization and institutionalization, the RBO Zayandeh Rud has a solid backing as it derives its power directly from the High Water Council. However,

- it has neither the status of a legal entity nor it is a permanent organization able to take independent decisions on staff and finance.

Best Practice Examples Legalization and Institutionalization

The International Boundary and Water Commission (IBWC) is a binational commission, established to apply boundary and water treaties and agreements between the United States (U.S.) and Mexico. It was founded in 1889 with the aim of providing binational solutions to issues that arise during the application of United States – Mexico treaties regarding boundary demarcation, national ownership of waters, sanitation, water quality, and flood control in the border region. The IBWC consists of a U.S. Section and a Mexican Section. Each Section is administered independently of the other, and is headed by an Engineer Commissioner, who is appointed by his respective President. The U.S. Section receives foreign policy guidance from the U.S. Department of State, while the Mexican Section is administratively linked to the Secretariat of Foreign Relations of Mexico.

Each Section is responsible for maintaining its own legal counsel, engineering staff, and administrative staff, and has field offices situated along the border to operate and maintain joint works. The Commissioner, two principal engineers, a legal adviser, and a secretary, designated by each Government as members of its Section, are entitled to the privileges and immunities appertaining to diplomatic officers. The Commission meets on a regular basis, alternating the place of meetings, and the staffs of the two Sections are in frequent contact. Pursuant to the 1944 Treaty, decisions of the IBWC are recorded in the form of Minutes that, following approval by the U.S. and Mexican governments, enter into force as binding international agreements of the U.S and Mexico.

For more information visit:

https://ibwc.gov/

3.2.5. Organizational Structure

The organizational structure of an RBO is fundamental as it sets the frame for cooperative action. Hydro-politics studies (Dombrowsky 2007, United Nation Publications 2009, Schmeier 2010a) have confirmed that organizational issues influence the governance effectiveness of RBOs. The organizational structure of an RBO should reflect its functional scope and mandates, e.g. implementation-oriented RBO with larger mandates and portfolios tend to be larger and more organizationally differentiated than coordination-oriented ones (Schmeier 2010b).

The fulfilment of river basin governance activities at the appropriate level will grant a higher overall effectiveness. Despite their diversity RBOs possess some organizational constants. The majority of RBOs rely on a threefold organizational setup:

- a high level decision-making body (ministerial-level representatives developing long-term strategic decisions);
- an intermediate body operationalizing political decisions by means of programs and projects, organized in technical committees constituted of high-ranking government officials with technical expertise, or experts that meet in working groups. The latter can be supported by further groups and advisory committees;
- a secretariat (Schmeier 2012, 2014).

Generally speaking there are three existing models that are suitable to different political conditions: River Basin Coordination Committee or Council; River Basin Commission and River Basin Authority.

River Basin Councils are little formalized institutions with limited organizational setup, and do not have the capacity to implement their decisions. They serve as advisory bodies (Schmeier 2012). They may however monitor implementation to ensure compliance, without intervening in daily management. This model applies best to countries with effective water agencies, reliable data collection and data network, no conflictual relationship between major water users and riparian provinces (Millington 2006).

River Basin Commissions are more formally constituted than councils. The board of management, composed of senior water managers, would set objectives and strategic directions, decide on water share, direct the affairs of a technical office, design strategic and short term plans, and supervise the implementation of data network and data modeling. However tasks such as irrigation and other general water management functions would be carried out by existing operating agencies. This model applies where significant development options are being considered in the basin, significant conflicts are present, information and policies ought to be further developed, resource planning and management practices are not detailed and data/ information collection and simulation models need to be developed.

River Basin Authorities have a certain degree of independence, a broad mandate and an independent implementation role (Schmeier 2012) and may in some cases absorb the water management functions of other agencies. This model is more often adopted in developing countries where water resource potential is underdeveloped (Millington 2006).

Hooper identifies “Organizational Design” as a Good Governance Factor. The preconditions for a good organizational design are stable democratic institutions, national land and water

policies that could be used as a basis for IWRM, protocols specifying position and boundaries, and a certain degree of realism and awareness of existing conditions in setting management goals. The organizational structure should reflect the needs of the river basin context.

Table 7: Organizational setup/design

Hooper	National land and water policies stipulate river basin as a management unit for natural resources management.
	Evidence of institutional arrangements for basin management with specific roles and responsibility of different entities and stakeholders.
	River basin management planning process is based on communication, coordination and cooperation within the RBO.
	Decisions are taken using a step by step approach: do what is achievable first[2].
	The organization type[3] reflects prevailing needs for river basin management.
	The RBO structure avoids sector-dominated interest groups (e.g. government, stakeholders, industry etc.).
Schmeier	The organization presents a threefold structure (high-level decision-making body, operationalizing body, administrative body).
	The RBO organizational setup is sufficiently structured to account for IWRM requirements but does not surpass the institutional and technical capacities[4] .
	Strong linkage between the RBO and regional institution exists.

2. The premises to this benchmark is that realistic function is insured – RBOs make decisions aware of the reality of existing conditions; often compromise on the best management option is required; stepwise implementation procedure is needed addressing the most pressing resource management issues first, and recognizing what is possible in the short term; this process must be backed up by long term planning (Hooper 2006).
3. Distinction between different types of RBOs: Councils, Commissions and Authority.
4. The premise to this benchmark is that a certain level of organizational differentiation is required for effective river basin governance, but a too high differentiation leads to inefficiency. The number of organizational bodies constituting an RBO should depend on its functional scope (Schmeier 2012).

Assessment RBO Zayandeh Rud

The RBO Zayandeh Rud was created with the aim of managing the Zayandeh Rud in an integrated manner. The Council has the objective of coordinating water management between riverine provinces and different sectors (Iran Ministry of Energy 2016).

With regard to the Council's typology: when considering the functional scope of the RBO Zayandeh Rud as described in the guideline it appears that in fact the RBO is constituted as a body with functions and responsibilities lying between those of a typical council and a commission. It features commission-type characteristics as it is formally constituted, and it is granted a certain degree of independence, while given its limited organizational setup and budget scope it relies on water authorities external to the RBO to implement its decisions.

Concerning its ability to reflect prevailing needs the RBO's role has so far been important in mitigating conflicts between provinces and water users, by including them into the decision-making on water allocation (Ehsani, personal communication January 2016). However decisions on water allocations are influenced by cultural elements such as the existence of water rights, which date back generations, rather than being based on political or economic goals (Ehsani, personal communication January 2016). Furthermore the Council's meetings do not appear to address the question of water planning in a strategic way as the only criteria for water allocation is yearly water availability, long term concerns such as the effects of climate change on water availability or the question of biodiversity do not feature as central agenda points in the RBO's meetings (Ehsani, personal communication January 2016).

When looking at the organizational structure the RBO Zayandeh Rud does not strictly rely on the threefold organizational setup described by Schmeier (2012, 2015), but it is structured in the following way:

1) The HWC is in charge of high-level policy making, providing guidelines at the national level (Ehsani, personal communication January 2016);

2) The RBO is in charge of policy-making for the river basin;

3) Working groups, a distinction can be made between:

   - a more permanent working group, working under the RBO, headed by Mr. Ehsani, includes all directors from Water Resources Companies, head of Agricultural Organization from Isfahan and Chaharmahal provinces, stakeholders representing environmental and industry related interests and farmers' representatives from Isfahan and Chaharmahal province. This working group meets each time in a different province and is responsible for preparing the agenda for RBO meetings.

   - Ad hoc working groups: those can include RBO members as well as other relevant entities. For each group the composition is decided by the Head of the Council who also establishes their functions.

4) A secretariat exists at the Ministry of Energy (Iran Ministry of Energy 2016).

From the guideline as well as from interviews it appears rather unclear which institutional components are responsible for creating management plans (both short and long term). The guideline specifies that members as well as

non-members are responsible for executing the RBO's decisions; however, there is no mention of an intermediate body in charge of operationalizing decisions taken. As such it might be unclear who is in charge of converting decisions into implementable action plans.

Additionally, the organizational structure is not thoroughly described in the guideline which mentions all of the organizational components described above, but does not present an organizational chart, detailing roles and relationships between the different components.

Considering the RBO structure and membership composition, a prevalence of government officials can be observed. Out of all members only the two representatives of farmers' associations are not part of the government. Furthermore, when looking at the government representatives, the Ministry of Energy is more stronger represented than other sectors: in addition to the head of the Council being from the MoE, the Deputy Minister for Water and Wastewater Affairs as well as the Iranian Water Resources Management Director are both representatives of institutions within the MoE. They might be dominant in comparison to other actors such as the farmers' representatives or other relevant stakeholders selected to take part only within a specific working group. The dominance of the governmental actors is also confirmed by the workshop results, where respondents expressed their expectation of having a RBO which is able to take decisions independently, without being influenced by the political agenda.

The picture that emerges from Mr. Ehsani's compilation of the table of indicators/ scorecards is rather positive as indicators c, e, f, g, h, and i have been fully implemented, while for a, b and d implementation in progress. This picture only partially matches the above mentioned findings, especially regarding indicators e, f and g.

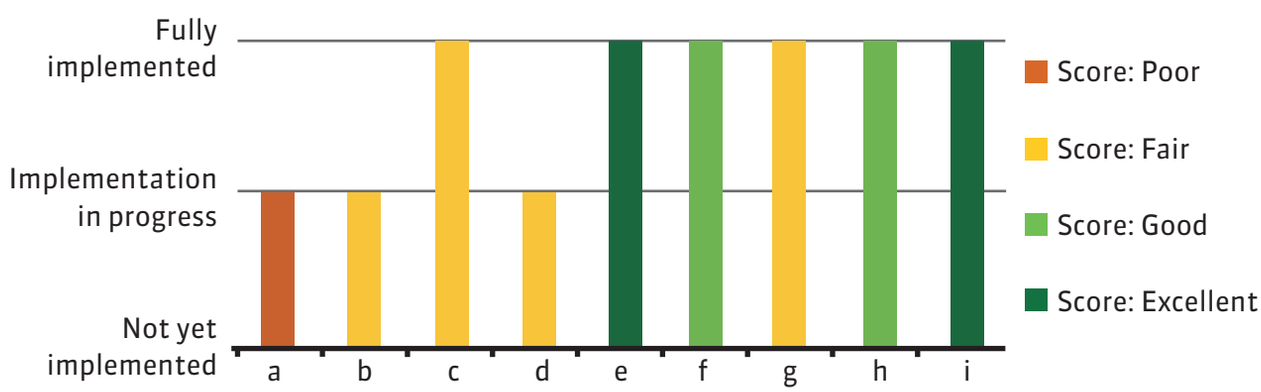

Figure 6: Score Card RBO's Organizational Set-up/Design. a) National land and water policies stipulate river basin as a management unit for natural resources management b) Evidence of institutional arrangements for basin management with specific roles and responsibility of different entities and stakeholders, c) River basin management planning process is based on communication, coordination and coopration within the RBO, d) Decision are taken using step-by-step approach: do what is achievable first, e) the organization type reflects prevailing needs for river basin management, f) the RBO structure avoids one sectore dominance intrest group, g) the organization presents a three fold structure, h) the RBO organizatinal setup is sufficiently structured to account for IWRM requaierments but does not surpass the institution's and technical capacities, i) Strong linkage between the RBO and regional institutions exist.

Main challenges identified

The RBO Zayandeh Rud's organizational structure

- is not fully described in the guideline with the specific roles of each organizational component not being thoroughly specified;
- leaves a lack of clarity and the danger of not all roles being formally assigned, potentially resulting in some tasks not being fulfilled;
- lies between that of a council and of a commission, as its mandate reflects more the commission typology (see Schmeier 2012), however its organizational structure is closer to a council's typology. A secretariat exist, however its role is not clearly specified within the guideline.

Best Practice Examples Organizational Structure

General Lessons Learnt from Around the World

In general, water management and also RBOs should be designed according to the subsidiary principle, meaning that decisions are taken at the lowest appropriate level. Therefore, at best there are different layers in water governance reaching from the national (or international) to the local level. These layers should also be represented in an RBO's structure.

Schmeier (2010) identified a general structure – or core bodies – that most successful RBOs exhibit:

- A high-level decision-making body to coordinate the ministerial level;
- A body of water management (and other) experts that are able to translate strategic decisions into operational strategies (e.g. technical committee);
- A secretariat responsible for administrative tasks.

The overall set-up, however, depends on the institutional situation, i.e. if the RBO is responsible for implementation, just for coordination or if it's only an advisory board.

Some RBOs have also established (ad hoc) working or expert groups that develop recommendations or strategies for specific topics or urgent matters like groundwater management

or flood protection. “Such Working or Expert Groups enable the respective RBO to flexibly respond to challenges in the basin (by setting up such groups if needed, but abrogating them once the issue has been solved) while keeping administrative and financial burdens low (since working and expert groups most often consist at least partially of member states representatives, bringing it technical, human and financial capacity from those states). Establishing working and expert groups can therefore be regarded as an efficient means for river basin management.” (Schmeier 2010: 11).

Moreover, there are RBOs with special bodies that link the RBOs with development partners or donors.

The Bow River Basin Council (BRBC, Canada)

The BRBC is a collaborative and multi-stakeholder, charitable organization that is dedicated to conducting activities and programs that encourage and advance the enjoyment, learning, and protection of the waters of the Bow River Basin.

The Bow River Basin Council was established in 1992 as an advisory body to the provincial Minister of Environmental Protection. Its broad mandate is to promote awareness, improvement and protection of the Bow River water quality, foster cooperation among agencies with water quality responsibilities, and provide communication links among governments, interest groups and the general public. The BRBC includes representatives from urban and rural municipalities, irrigated and dryland agriculture, as well as recreational, industrial and other interests, and First Nations people within the Bow River Basin.

In 2004, the BRBC was designated by Alberta Environment as the Watershed Planning and Advisory Council for the Bow River basin in Alberta’s Water for Life strategy.

The BRBC’s organizational structure (Administrative Manual) can be found at

https://www.icpdr.org/flowpaper/viewer/default/files/nodes/documents/ic004__secretariat_job_descriptions.pdf

3.2.6. Role of the Secretariat

Secretariats’ roles can be quite diverse, ranging from the provision of administrative services (organization of meetings, documentation, and dissemination of RBO’s work), to financial support (drafting RBO’s budget, management of revenue, and expenditure for the RBO or specific programs or projects, fundraising and donor coordination) or even the execution of implementation activities and their monitoring.

According to Schmeier, the existence of a secretariat is a basic institutional design principle, and most of the RBO’s she analysed (94 out of

119) have established Secretariats that fulfil some sort of administrative and secretarial functions.

Table 8: Existence of a Secretariat

Schmeier	Existence of an RBO secretariat.
	The secretariat's functions are well defined and match the RBO's functional scope and focus.

Assessment RBO Zayandeh Rud

According to the guideline the RBO's secretariat is based at the Ministry of Energy, however its functions are not specified.

According to responses given by Mr. Ehsani by compiling the indicator/ score cards sheet, both related indicators appear to have been fully implemented.

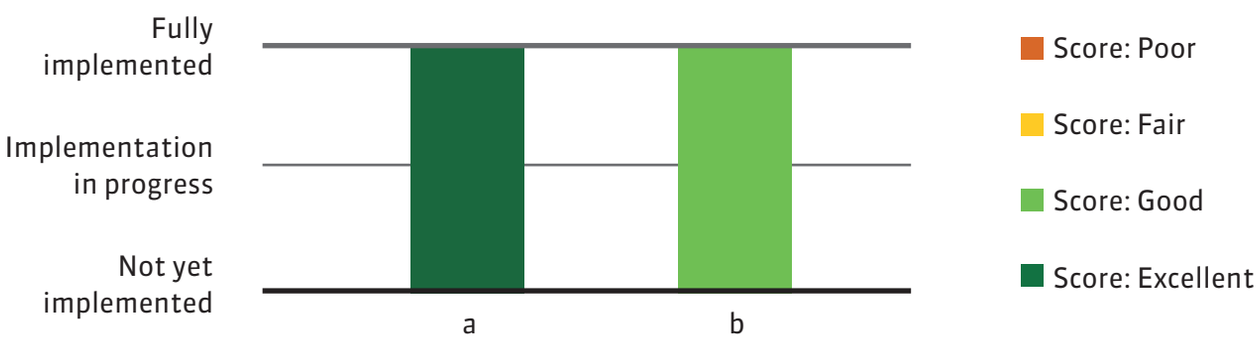

Figure 7: Score Card Status of RBO Secretariat, a) Existence of an RBO Secretariat, b) The secretariat's functions are well defined and match the RBO's functional scope and focus

Best Practice Examples Secretariat

International Commission for the Protection of the Moselle and Saar Rivers (CIPS)

The Secretariat of the CIPS, for example, is in charge of preparing, organizing and documenting all of the Commission's meetings as well as the dissemination of information on decisions taken. It comprises of 2 full-time and 4 part-time positions.

http://www.iksms-cipms.org/servlet/is/391/

International Commission for the Protection of the Danube River (ICPDR)

The secretariat of the ICPDR is responsible for supporting the work of the ICPDR and its expert groups, assisting project development and implementation, and maintaining DANUBIS, the ICPDR Information System. General management and supervisory functions and the related tasks are carried out by the Executive Secretary. Professional technical staff (called Technical Experts) supervises and controls the quality of the Secretariat's main functions and tasks, supported by administrative staff members. The Secretariat also draws support from project staff, interns as well as external consultants.

The job description of the Secretariat can be downloaded at

https://www.icpdr.org/flowpaper/viewer/default/files/nodes/documents/ic004__secretariat_job_descriptions.pdf

3.2.7. Financing

Sufficient financial resources are key to the proper functioning of an RBO since a lack of financial resources impedes its work. Sources of internal funding can be water tariffs and fees, government funding or contributions from members (different states or provinces). There are various ways of determining the share of costs per state: one is the proportionate share of the basin within the territory; another is based on the basin population and economic

Table 8: Existence of a Secretariat

Hooper	River basin management can rely on stable funding for general RBO operations (e.g. communication, coordination, HR etc.)
	Funding exists and is adequate to implement RB management (e.g. basin planning and development, flood forecasting, data acquisition and analysis) addressing at least priority natural resources management issues.
	Transparency mechanism exists to declare all revenue streams, which is transparent to stakeholders.
Schmeier	The RBO clearly defines its financing mechanism using financial procedures.[5]
	The RBO defines a cost sharing mechanism (e.g. equal cost sharing, according to financial capacities, key based cost sharing, fees etc.)

5. Financial procedures are a set of instructions that any stakeholder, including new members of the committee or staff, can use to find out exactly what tasks need to be done; who will do these tasks; and who will ensure the tasks are done properly.Since wells close to the banks of the Zayandeh Rud only extract river water they need to be legally classified and included into the allocation rule accordingly.

capacity. RBOs can also be financed through external funding provided by bi- and multilateral donors which can be important especially in the initial stage of RBO development (Schmeier 2012, 2014). Several authors have identified deficient financing as a symptom of incomplete political decentralization which greatly limits RBOs' freedoms (Hagemann and Leidel 2014, Warner and Thomas, 2014).

Hooper correlates with Schmeier by arguing for financial sustainability as a factor of good governance. In order to be functional an RBO should prove adequate and reliable source of financing. Depending on its evolutionary status the RBO should have carried out an economic assessment of water management options, have implemented cost-recovery mechanisms, and established fair water pricing. The RBO financing should also be transparent (Hooper 2006).

Assessment RBO Zayandeh Rud

The guideline does not contain any indication on the financing of the RBO Zayandeh Rud. According to the information provided by Mr. Ehsani (written communication December 2015) the RBO does not have an independent budget, it is in some cases covered by the Ministry of Energy. In terms of financial sustainability it appears that the RBO Zayandeh Rud has not implemented stable financing mechanisms yet.

As shown in the graph, the four indicators Mr. Ehsani has provided an indication for (a, b, d and e) are in progress however poorly implemented, for indicator c Mr. Ehsani pointed out that the indicator was not clear enough. To date, the RBO cannot rely on stable and adequate funding but relies on budget provided by the MoE; as such its financing appears unsustainable.

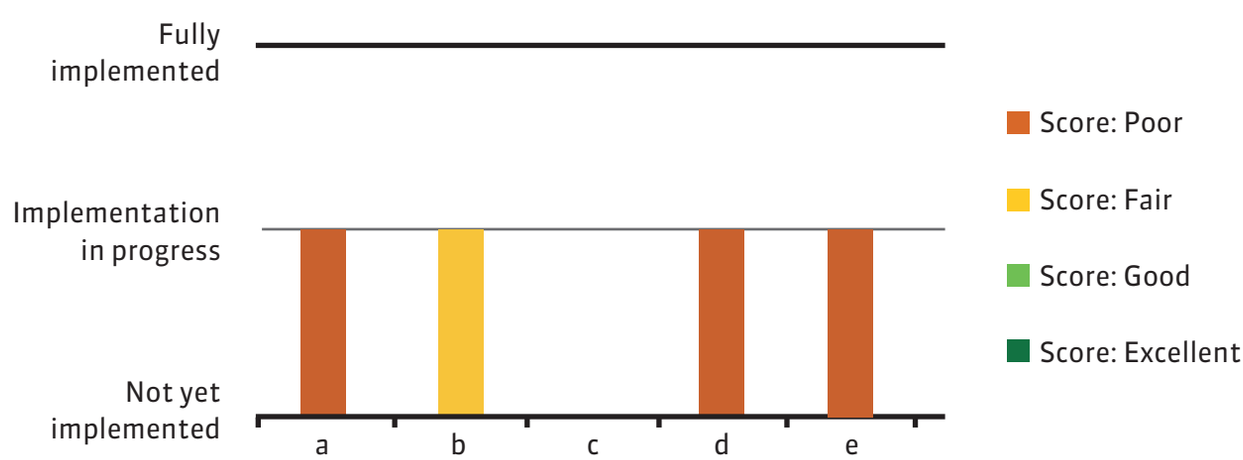

Figure 8: Score Card Financing of RBOs/financial sustainability. a) River Basin Management can rely on stable finding for general RBO operation, b) Funding exists and is edequate to implement River Basin management, adressing natural resources management issues, c) Transparency mechanisms exist, to declare all revenue streams which is transparent to stakeholders, d) The RBO clearly defines its financing mechanism using financial procedure, e) The RBO defines a cost sharing mechanism

Main challenges identified

Main challenges with regards to the RBO's funding are that

- an independent financing mechanism for the RBO has not yet been defined;
- the Council fully relies on the funding provided ad hoc by the Ministry of Energy.

Best Practice Examples Financing

French water agencies

The French Water Law set up a Water Agency in each of the six main river basins in France. The Water Agencies are administrative public institutions with civil status and financial autonomy.

Agencies are financed on the 'polluter-user-pays' principle. Each Agency levies water charges on withdrawals and discharges that affect water quality and modify the water regime. For industries, the charges are calculated according to the type of industry and the amount of pollution they produce. For domestic users, the charges are calculated for each community, and are collected from users together with payments for metered water consumption.

The rates are determined by each Agency and are adapted according to the priorities and quality objectives defined for each basin. They must be approved by the Basin Committee, a multi-stakeholder platform composed of representatives from the State, local governments and users.

Based on the 'water-pays-for-water' principle, 90% of the funds collected by the Water Agencies are then reallocated as loans and subsidies to local communities, industries, farmers and other groups to (1) abate pollution (construct, extend or improve purification plants and waste water collection systems, introduce cleaner production processes, etc.); (2) develop and manage surface water and groundwater; and (3) restore and maintain the aquatic environment. 10% of the funds collected go to cover the costs of the Water Agency and River Basin Committee.

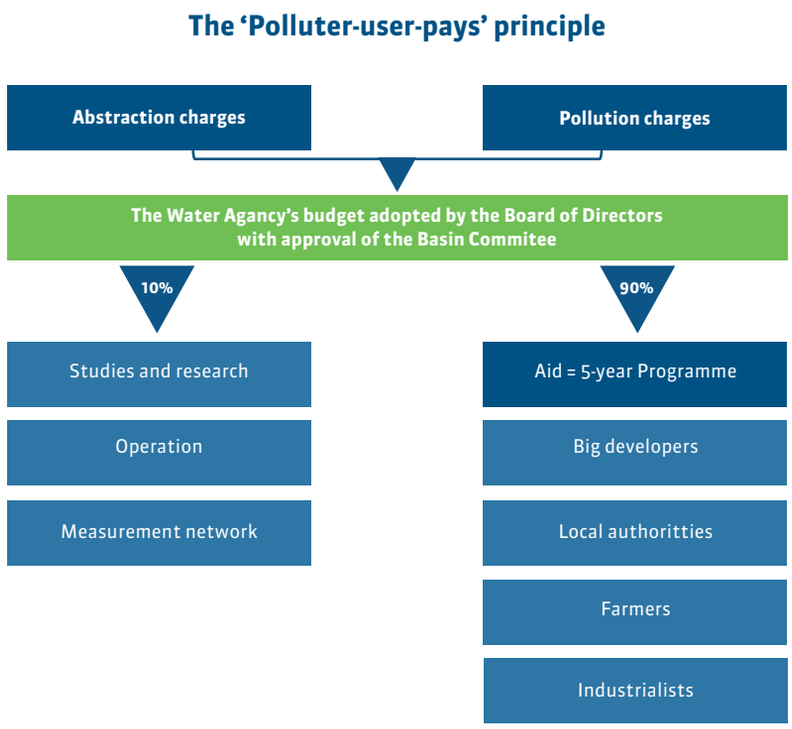

Figure 9: The Polluter-User-Pays Principle
source: (GWP 2009)

Oregon Watershed Enhancement Board

OWEB grants are funded with a small portion of Oregon Lottery dollars, federal dollars and salmon license plate revenue. By collaborating with citizens, volunteers and land-owners in communities throughout the state, OWEB helps Oregonians care for Oregon's watersheds. Grant funds support projects that employ local contractors and labor crews and utilize local resources to create community and provide maximum value for public dollars.

For more information visit

http://www.oregon.gov/OWEB/pages/index.aspx

3.2.8. Decision-making mechanisms

Decisions in RBOs are mostly taken by consensus, decisions based on a negotiated agreement, or following unanimity principles, in which all members endorse decisions. Very few RBOs use majority voting. Consensus and negotiation decision-making are both based on the agreement of all participants. Scholars believe that such a decision-making mechanism is easier as it maximizes the number of parties who accept the decision, and compliance is likely to be higher (Breitmeier, Young, and others 2006). However, majority decisions are seen as most effective as they move ahead political action faster, avoiding blockage. To take decisions efficiently most RBOs rely on the preparatory work of technical experts (Schmeier 2012, 2014).

While Schmeier describes rules to take decisions efficiently, Hooper focuses on principles that should guide the decision-making process. He distinguishes between coordinated decision-making and responsive decision-making. Coordinated decision-making refers to the need to establish cross-sectoral linkages for the coordination of decisions on natural resources. This implies that agencies make decisions based on a systemic consideration of interaction and implication across sectors. This can only be achieved by the establishment of coordination mechanisms between and within agencies and organizations. Responsive decision-making encompasses the organization's ability to adapt its decision process to new knowledge, conditions, and best practices (Hooper 2006). While Schmeier advocates in favor of majority-based decisions, Hooper makes a case for consensus-based decisions.

Assessment RBO Zayandeh Rud

Decision-making rules are clearly specified in the guideline. The RBO takes decisions on the basis of majority voting by the members present at a particular session (to be valid 51% of the members need to attend the session). Participants vote by raising their hands. In case of a member's absence a plenipotentiary representative can be named (Iran Ministry of Energy 2016).

The council meets once every three months but the schedule of the meeting is at times communicated as late as one week prior to the meeting. This may impede the timely implementation of decisions as it can lead to a large number of members repeatedly being absent or substituted. Decisions taken by the RBO are binding, however according to the survey carried out with water practitioners, in Iran a frequent lack of implementation appears to be one of the main weaknesses of Iranian RBOs.

With regard to the level of coordination in decision-making, interviews (Ehsani, personal communication January 2016) show that the creation of the RBO has improved the coordination of decisions concerning water allocation, as now each plan prepared by the MoE is discussed with all RBO members. However apart from the creation of a coordinated water allocation plan at the beginning of each water year and the possibility to create working groups that can work across the range of interest groups there is no further evidence of cross-sectoral coordination and policy linkages.

Decisions on water allocation are enacted at provincial level by provincial water authorities, however once a decision is taken by the RBO it is executed through the Iranian Water Resource Management Company in the MoE and as such there is no direct communication

between the RBO and the local level (Ehsani personal communication January 2016).

The RBO has mainly a coordinating function, so once decisions are taken they will be executed by the competent authority. This implies that it is up to the respective authority (for example the MoE for water allocation) to make sure the decision is implemented, and they will then report to the RBO. There is no further direct communication with the executing agency, only with the decision makers who attend the meetings. Ideally there would be cross-cutting standing working groups with monitoring experts that can follow up with its execution.

Table 10: Decision-making Mechanisms

Schmeier	Clearly defined decision making rules.
	Decisions are taken in a timely[6] manner.
	Decisions are binding.[7]
Coordinated decision making	
Hooper	Strategic planning relies on cross-sectoral communication and coordination within the river basin organization.
	High level cross sectoral policy links exists between natural resources management, health, population, and economic development portfolios of government (i.e. agriculture, industry, energy etc.).
	Decision-making in basin wide planning and management are based on consensus to balance all users' needs for water resources and to provide protection from water related hazards.
Responsive decision making	
Hooper	The basin management design process addresses critical problems first (e.g. water scarcity, flooding, drought for every large and rapidly growing population through risk assessments).

6. Here timely is to be understood as opposed to a lengthy process of decision-making. As a best practice decisions should not be delayed. Examples from the Mekong River Commission shows that when unanimity was hard to reach decisions were delayed hence hampering the overall RBO effectiveness (Schmeier 2012).
7. Binding decisions are decisions that have compulsory legal obligations for participant actors, as opposed to non-binding decisions which have a recommendatory character (Schmeier 2012).

The results from Mr. Ehsani's compilation of the score cards/ indicators depict a positive status quo of institutionalization and design of decision-making mechanisms as all indicators (a, b, c, d, f and g). While indicators a and c match with the information above, indicators b, d and f are in contrast with the facts exposed. Concerning indicator g, the IWRM Zayandeh Rud project could contribute to the identification of the most relevant problems, however the link between the project's finding and the RBO Zayandeh Rud is not clear.

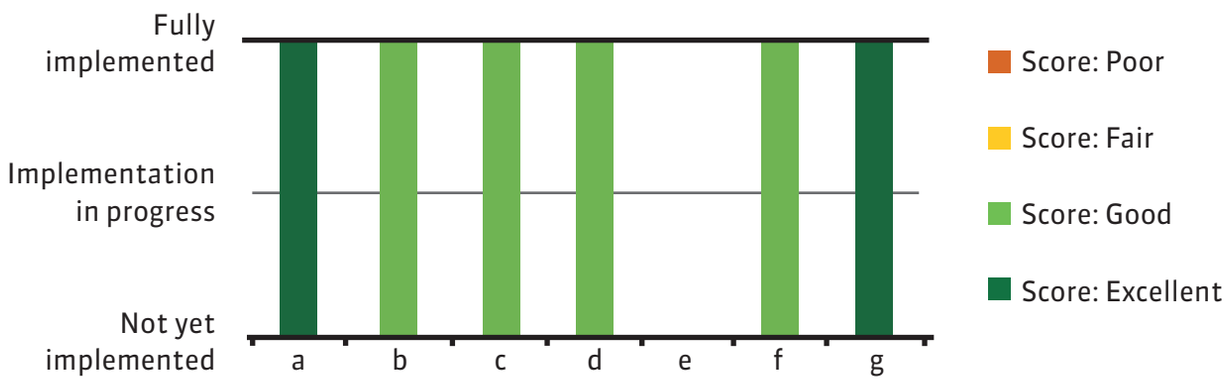

Figure 10: Score Card Decision-making Mechanism. a) Clearly defined decision making rules exist, b) Decisions are taken in a timely manner, c) Decisions are binding, d) Strategic planning relies on cross-sectoral communication and coordination within the river basin organization, e) High level cross-sectoral policy links exist between natural resources management, health, population, and economic development portfolios of government, f) Decisions on basin-wide planning and management are based on consensus to balance all users' needs for water resources, g) The basin management design process addresses critical problems first through risk assessments.

Main challenges identified

Decision-making mechanisms are established and described within the guideline. Nevertheless,

- the potential for a real integrated water resource management is hindered by the lack of high-level cross-sectoral policy links and coordination between the national and local level;
- decisions taken by the RBO are not adequately implemented;
- the council's meetings are scheduled ad-hoc rather than following a predetermined working plan, frequently leading to small numbers of attendants;
- there is no evidence that decisions are based on the work of technical experts which would grant efficiency.

Best Practice Examples Decision-making Mechanisms

The Fraser Basin Council (Canada)

The Fraser Basin Council (FBC) is a charitable non-profit organization that brings people together to advance sustainability in the Fraser River Basin and throughout British Columbia. Established in 1997, FBC is a collaboration of four orders of government (federal, provincial, local and First Nations [aboriginal people]) along with those from the private sector and civil society.

The Fraser River Estuary Management Programme (FREMP) has been quoted often as "Canada's most successful coastal management programs" (Calbrick et al. 2004). Along the Fraser River exists a multiplicity of government agencies, as well as other stakeholders with an interest in resource decision-making. The program therefore used several mechanisms to achieve consensus-based decisions, such as:

- The Coordinated Project Review Process – essentially a multi-agency sharing of information and an orderly circulation of detailed applications for making joint decisions on projects within FREMP's boundaries;
- The establishment of fulltime, locally hired and based regional coordinators, paid by the board, was a critical step in moving towards fulfilling the commitment to foster decision-making processes that were based as much as possible in the communities and watersheds;
- Activity Work Groups which meet to consider both specific current issues and to develop profiles of their focal activity (e.g., Port and Industrial Development Work Group); and
- Development of detailed environmental management plans for major subsystems of the estuary.

For more information and a detailed description of the RBO's evolution visit

http://siteresources.worldbank.org/INTSAREGTOPWATRES/Resources/Canada_Fraser_BasinFINAL.pdf

3.2.9. Data and Information Management

Research (Thiel and Guerreiro de Brito 2014, Dombrowsky 2007) has pointed out the importance of reliable data to guide decision-making. As such RBOs should engage in data acquisition, analysis, and dissemination. RBOs that have a clear mechanism to collect and share data and information do so either by allocating the responsibility for collection to the RBO members or by collecting the data at the national level. Centralized data exchange with clear rules for information access can be expected to be more effective than bilateral informal exchange (Schmeier 2012, 2014).

Under the good governance principle of "Information and Research" Hooper emphasizes the need for clear rules (defining timing and procedures) regarding information exchange. The information gathered should be comparable and accessible to relevant stakeholders. Those information or knowledge systems should be used as base to guide decision-making.

Table 11: Data and Information Sharing Mechanism / Information and Research

Hooper, Schmeier	A uniform information system exists for the entire basin.
	Methods exist to specify type of information, how it is presented and timing of information exchange in the RBO's information system.
	Information system is highly reliable: evidence of lack of breakdowns.
Hooper	Information management systems and models (e.g. DSS) are used for analysis and prioritizing resource management options.
	Use of joint assessment tools like multi objectives decision-making systems (e.g. Pareto optimization, mathematical models), Policy Delphi techniques[8] nd others to manage research output used to make strategic natural resource management decisions.

8. The Delphi method is a structured communication technique, originally developed for systematic, interactive forecasting which relies on a panel of experts.

Assessment RBO Zayandeh Rud

Mr. Ehsani reported (personal communication January 2016) that a centralized database for data collection exists.[9] Data are collected for dams, irrigation networks and ground water resources; additionally an office exists for basic water assessment. The Iranian Water Resource Management Company is in charge of calculating a yearly water balance and issuing an overall assessment report every five years.

To date, data are collected within the MoE and used as a basis for decision-making within the RBO. At the beginning of the water year (October 10), the data are used to make a first proposition on water allocation based on trends from the previous year. To mitigate issues of mistrust at provincial level on data reliability, data collection has been commissioned to two private consultancies (Ehsani, personal communication January 2016).

Evidence from the RBO survey, interviews (Ebrahimnia, personal communication July 2015; RBO managers, personal communications January 2016) and relevant literature (Mohajeri 2016a, b) shows that major problems persist with regards to data collection. Data harmonization is problematic both between and within agencies, as geographical boundaries and political boundaries differ; additionally there is a lack of trust among stakeholders and no culture of data sharing.

Iranian RBO managers have shown their interest in learning how to collect data in a way that makes them comparable, and insure their reliability. Minor concerns were expressed regarding the issues of data transparency; some managers expressed their desire to learn about the required level of data accessibility (RBO managers, personal communication January 2016). Currently data are not available to the general public and only few of the RBO members have access to them.[10]

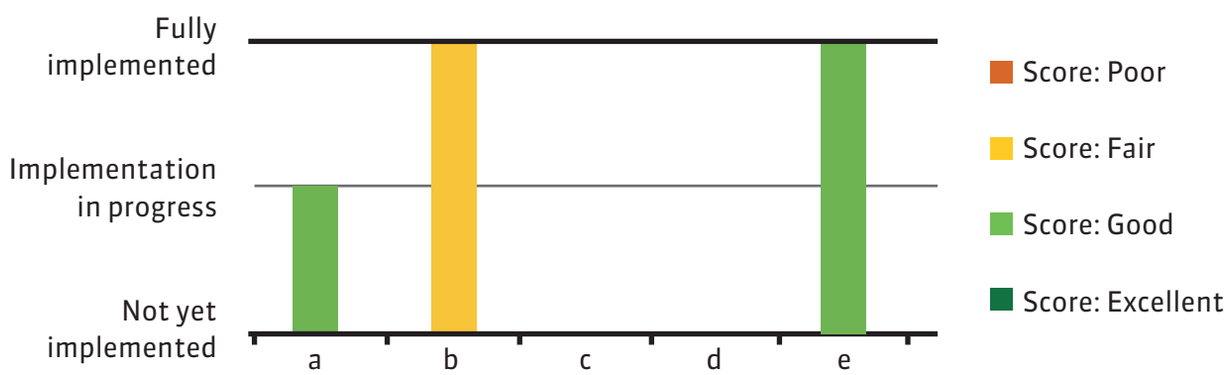

Figure 11: Score Card Data Information Sharing Mechanism / Information and Research. a) A uniform information system (database) exists for the entire basin, b) Methods exist to specify type of information, how it is presented and timing of information exchange in the RBO's information system, c) Information management systems and models are used for analysis and prioritizing resource management options, d) Use of joint assessment tools like multi objectives decision making systems Policy Delphi techniques and other to manage research output used to make strategic natural resource management decisions, e) Information system is highly reliable: evidence of lack of breakdowns

9. It should be mentioned that data are only collected on Shahrestan level but not on catchment level.
10. Also, data are not always available at catchment level but only on Shahrestan level. The IWRM project team collected data for the main water using sectors and has fed them into WMT / DSS.

Overall, as concluded by Mr. Ehsani, the RBO's data collection and sharing mechanism in comparison to international best practice indicators paints a mixed picture. Two (c and d) of the five indicators have not been implemented, while indicators b and e have been fully implemented and a is in progress.

Main challenges identified

Reports on data collection show that

- fundamental problems exist with regard to data collection and data harmonization, especially at catchment level;
- there is mistrust between different provinces which hinders data sharing; . In the RBO Zayandeh Rud data are not systematically used to inform decisions;
- the establishment of the DSS could contribute to filling these gaps. However to help improve data collection RBO would need to promote data centralization and the definition of clear rules.

Best Practice Examples Data and Information Management

Decision Support Systems (DSS)

Decision Support Systems (DSS) can serve as a tool for improving cross-sectoral links (horizontal) and coordination between the national and regional/ local level (vertical). The necessity to gather and analyze required data brings together disciplines, people, and institutions necessary to address complex water resources challenges (cf. Georgakakos 2004).

The mentioned problems in terms of data collection and reliability could be solved with the help of products from the IWRM Zayandeh Rud project.

Within the "IWRM Zayandeh Rud project" a GIS-based Water Management Tool (WMT) / Decision Support System (DSS) is being developed. The tool mainly contributes to a better understanding of water resources and management processes in the catchment and supports decision-making. It models all impacts in the catchment area (water availability and use, dam's inflow, surface water discharge, and natural and artificial inflows) and

includes socio-economic data. Fed with data about the water resources in the catchment and water demands of the different water users, the DSS is able to depict the inter-linkage of important elements like water using sectors, groundwater and surface water, present and future. This way it creates the centre of reference for water management decisions and their implementation across the various sectors. The DSS is therefore the best known tool for handling the multifaceted challenges and issues in the catchment and for the increasing pressures that have been brought on as a consequence of climate change.

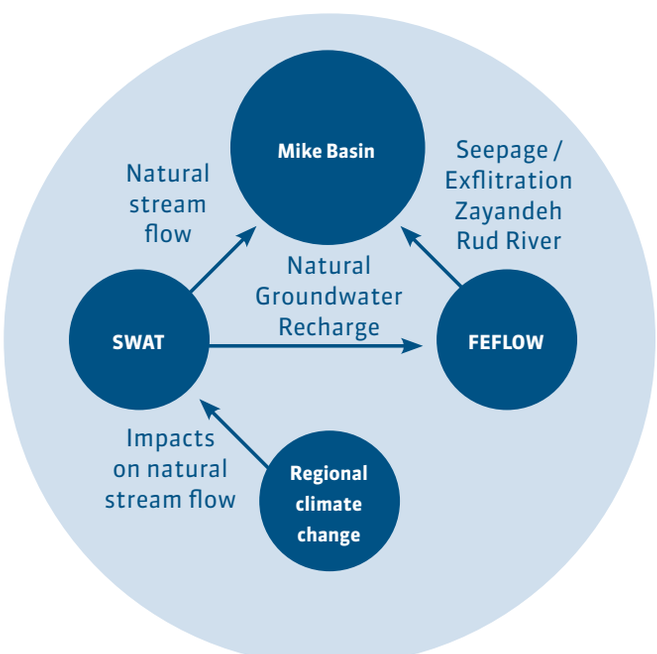

Figure 12: Schematic view of the Water Management Tool
Source: inter 3

This WMT has the potential of contributing to informed decision-making and could help the Iranian transition to IWRM. By the end of the project's second funding phase, the water management tool (WMT) is to be turned into the DSS and will be ready for application. However, its ownership has not yet been assigned to the RBO Zayandeh Rud (Mohajeri et al. 2016 a).

For more information visit

www.iwrm-zayandehrud.com

3.2.10. Monitoring

The quality of monitoring influences effectiveness as "regimes with well-functioning reporting systems and related implementation of review bodies tend to be more effective than regimes with lax reporting systems and no specific review bodies" (Wetterstand 1999:36, in Schmeier 2012). Hydro-politics scholars agree on the importance of establishing a good monitoring system to ensure effective compliance (Bernauer 1997). Two different kinds of monitoring are important for the functioning of RBOs: compliance monitoring and environmental monitoring. The first refers to the monitoring of actors to ensure the compliance of their activities with decisions taken and the RBOs' guiding principles, rules, and norms. The latter aims at monitoring the environmental status of the catchment to gain comparable data on the water status (quantitative/ qualitative). Monitoring can be achieved through the creation of joint environmental monitoring systems or through members reporting regularly on the state of the catchment (Schmeier 2012, 2014).

Hooper's Good Governance Factor "Accountability and Monitoring" is similar to Schmeier's findings. Where Hooper's idea of "accountability" corresponds to Schmeier's compliance monitoring, Hooper's "monitoring" equals Schmeier's environmental monitoring.

Table 12: Monitoring Mechanism / Accountability and Monitoring

Hooper, Schmeier	RBO is accountable to higher authorities.
	RBO is accountable to citizens.
	Reporting mechanisms are in place between RBO and high levels of government (compliance monitoring).
	Monitoring and information mechanism of meteorological, water resource, water use measurement instrument linked to basin decision making (environmental monitoring).[11]

Assessment RBO Zayandeh Rud

As laid out in the guideline, responsibility for supervising implementation lies within the MoE (Iranian Ministry of Energy 2016). The actual monitoring activities are carried out by the Iranian Water Resource Management Company which is in charge of verifying if the decisions have been implemented in practice and reporting this to the RBO. The Company has no sanctioning power in case of non-compliance. Instead, the Council member responsible for a given sector (e.g. representative of the Ministry of Agriculture) can impose sanctions; alternatively the RBO could decide to report to the President through the MoE. A possibility for appeal exists.

The High Water Council has also invited representatives from the RBO to report on their performance, but there is no evidence whether this is taking place in practice (Ehsani, personal communication January 2016). Specifications on the reporting procedures and timing or the procedure for appeals are not described in the guideline.

11. The state of the river basin should be monitored at a certain point in time and over time. This is important to comprehensively capture the state of the river and describe its development overtime as well as to have a clear idea of the influence of actions carried out (Schmeier2014).

The effectiveness of environmental monitoring, the second component of accountability and monitoring according to Schmeier (2012, 2015), is hindered by the problems in data collection (see section 6.6). The issue of water quality protection is mentioned as one the Council's functions in the RBO Zayandeh Rud guideline (Iranian Ministry of Energy 2016). According to Mr. Ehsani (written communication December 2015), taking decisions to maintain water quality is a prerogative of the Council, however to date this issue has never been discussed within the body's meetings.

Generally speaking, current measures in place to ensure implementation appear ineffective as the lack of implementation and monitoring mechanisms has been pointed out as the main weakness of the RBO by survey respondents (see Figure 13).

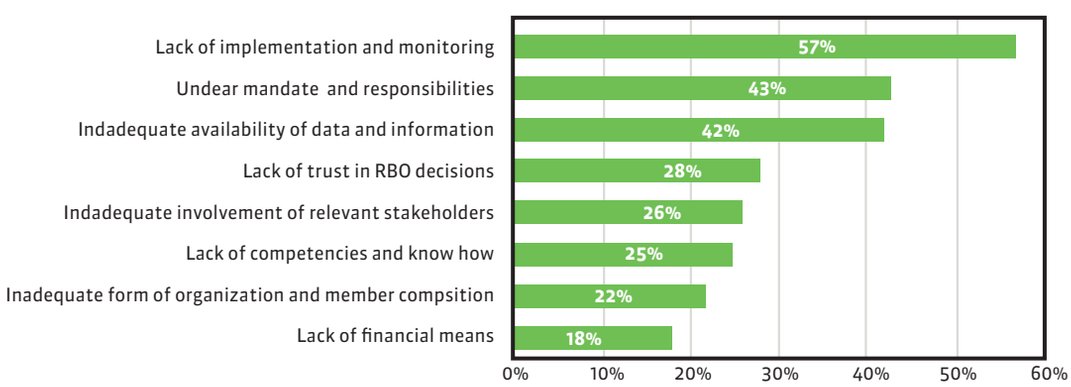

Figure 13: Weakness of RBOs (Results of the RBO survey)

Furthermore, interviews with RBO managers have uncovered a lack of know-how that exists in terms of adequate measures to ensure both compliance and environmental monitoring (RBO managers, personal communication January 2016).

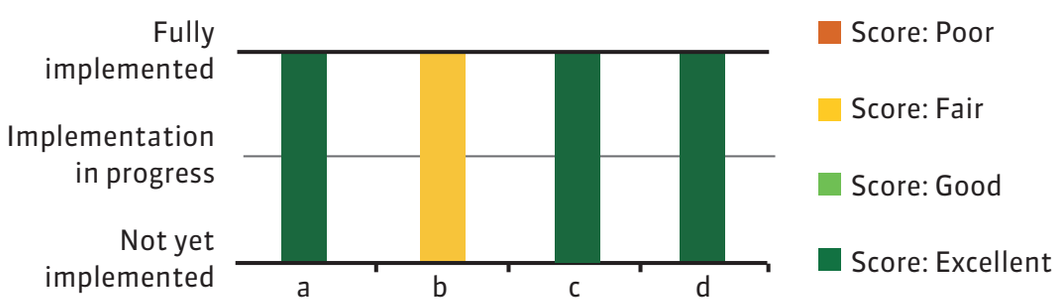

Figure 14: Score Card Monitoring Mechanism/ Accountability and Monitoring. a) RBO is accountable to higher authorities, b) RBO is accountable to citizens, c) Reporting mechanisms are in place between RBO and high levels of government, d) Environmental monitoring exist

Despite these views, Mr. Ehsani's evaluation of the current status of monitoring and accountability mechanisms in view of best practice indicators shows a positive trend as all indicators have been reported as fully implemented.

Main challenges identified

Responsibility for the RBO Zayandeh Rud compliance monitoring lies with the MoE. According to Mr. Ehsani the RBO Zayandeh Rud has implemented all the good practices considered within the analytical framework for this principle. This contrast with the findings from the survey which point out that

- poor implementation and monitoring mechanisms are among the main weaknesses of RBOs;

Among potential problems which could cause ineffectiveness are

- the Council's lack of real sanctioning power, which may undermine its enforcement ability;
- reporting mechanisms towards higher authorities and accountability towards citizens, which have been described as implemented by Mr. Ehsani, do not appear in the guideline;
- as such they appear to only exist informally and therefore may lack comprehensiveness;
- the RBO's environmental monitoring capability is affected by problems of data collection;
- the lack of real sanctioning power (e.g. for not delivering adequate data) could be considered as a further symptom of incomplete political decentralization (Horlemann and Dombrowsky 2010).

Best Practice Examples Monitoring

International Commission for the Protection of the Rhine (ICPR)

The ICPR works on the basis of the Convention on the Protection of the Rhine (signed by all member states in 1999). They thus formally confirm to protect the valuable character

of the Rhine, its banks and floodplains by increased cooperation. The cooperation of the ICPR with the Coordinating Committee Rhine in which all States of the Rhine catchment are represented is subject to separate Rules of Procedure and Financial Regulations. A coordinated work organisation with jointly drafted mandates for all bodies created is at the basis of this coordination.

To achieve the aims set out in the Convention, and in the light of the principles set out (like polluter pays principle, principle of preventive action), the members commit to "initiating the necessary actions in their territory to implement decisions taken by the Commission".

Moreover, they are required to "initiate autonomous actions they deem necessary in their territory, and in any event ensure that compliance with authorisations and general rules is monitored" and "authorisations and general rules are periodically examined and adjusted where substantial improvements in the state of the art so permit or where the state of the receiving medium so necessitates". The members also commit to carrying out, amongst others, analyses with a view to identifying the causes of and parties responsible for pollution.

The member states have to report to the Commission on legislative, regulatory and other measures as well as results of the measures implemented.

For more information visit:

https://www.iksr.org/en/international-cooperation/legalbasis/convention/index.html

3.2.11. Dispute Resolution

Disputes can occur because of differences in actors, preferences, and concurrent interests. One of the key functions of an RBO is to provide mechanisms to solve water conflicts. A consensus seems to exist among scholars who point out that clear mechanisms for conflict resolution lead to more effective outcomes in terms of management (Giordano and Wolf 2003). Among RBOs equipped with such mechanisms three different variants have been identified:

1) dispute resolution by the RBO;

2) bilateral dispute resolution;

3) dispute resolution by third parties.

Hooper does not mention dispute resolution among his Good Governance Factors, however in his writing he points out the need for an advocate capable of engaging "both willing and recalcitrant resource managers", building strong working relationships and mediating conflicts (Hooper 2005 p.49).

Table 13: Dispute Resolution Mechanisms

Schmeier	Clearly defined, binding and institutionalized dispute resolution mechanism exists.

Assessment RBO Zayandeh Rud

Conflict resolution is one of the objectives of the River Basin Council as listed in the guideline's section on objectives no.1-11. The guideline specifies that conflicts should be resolved by means of policy establishment, plans and procedures (no.10). The RBO serves as the institution in charge of solving conflicts regarding water allocation (Iranian Ministry of Energy 2016). According to Mr. Ehsani the RBO Zayandeh Rud stakeholders "have developed a practice of meeting and there is a great difference between the first meeting and the last ones, so they are working towards implementing a methodology, there has been an evolution in trying to achieve common goals by the institution where conflicts are solved" (Ehsani, personal communication January 2016).

The RBO managers (personal communication) have also expressed their interest in learning about techniques which can be applied in case of conflicting agendas.

However the account given by Mr. Ehsani when filling out the score card indicators sheet highlights the absence of "clearly defined, binding and institutionalized dispute resolution mechanism". He has indicated that such mechanisms are "not yet implemented" rather than "not envisaged" and as such their future implementation is conceivable.

Main challenges identified

Dispute resolution features among the objectives of the RBO Zayandeh Rud. The council's existence contributes to reducing conflicts and in fact decisions on water allocation are now more transparent as they actively involve different stakeholders. However there is

- no clearly defined dispute resolution mechanism in place.

Best Practice Example Dispute Resolution

International Commission for the Protection of the Rhine (ICPR)

The Convention of the ICPR provides an own article (16) for the settlement of disputes:

- If a dispute arises between Contracting Parties regarding the interpretation or application of this Convention, the Parties concerned shall seek a solution through negotiation or any other form of dispute settlement acceptable to them.

- If the dispute cannot be settled in this manner, it shall, unless the Parties to the dispute decide otherwise, be submitted, at the request of one of them, to arbitration in accordance with the provisions of the Annex to this Convention, which shall form an integral part thereof.

For more information visit

https://www.iksr.org/en/international-cooperation/legalbasis/convention/index.html

3.2.12. External Actor Involvement

There is consensus among scholars concerning the importance of including external actors in RBO decision-making (Andresen et al. 1995, Bruch 2003, C. E. Bruch 2005, GWP 2002 in Schmeier 2012). External actors relevant for decision-making can be divided in three groups:

1) civil society and NGOs;

2) epistemic communities; and

3) other national or regional institutions.

The first group, civil society, is important as the activities of an RBO affect local communities, so their involvement can support the success of implementing certain policies of the RBO or impede it. Their inclusion in decision-making can vary in extent, ranging from information sharing, consultancy, or granting observer status.

The second group, the epistemic community, is considered important for its function as network of knowledge being able to pronounce informed and scientifically-based judgments on different policies. Cooperation can assume the form of commission researches, joint development and implementation of training and capacity building programs.

The activities of an RBO are very likely to affect other regional institutions. Linking RBO activity with other institutions by defining common goals would increase governance coherence. (Schmeier 2012, 2014)

Hooper (2006) tackles participation issues, referring to it as "Private and Public Sector Roles". Strong community participation is necessary to enhance ownership of the river basin plan. He places great emphasis on raising awareness as a first step that would lead to wide public and stakeholder participation.

Table 14: Mechanism for Stakeholder Involvement / Private and Public Sector Roles

Hooper, Schmeier	Basin communities (i.e. civil society) are aware of river basin management issues.
	NGO and civil society play a role in the RBO.[12]
Schmeier	Participatory mechanisms allowing the inclusion of epistemic institution (e.g. knowledge group, research networks, etc.) in river basin governance are in place.
	All relevant stakeholders (especially those affected by decisions on the catchment) have the possibility to contribute to the river basin governance.

Assessment RBO Zayandeh Rud

The RBO guideline foresees the possibility of inviting relevant authorities, expert associations and entities to attend the RBO's meetings (Iranian Ministry of Energy 2016) and consultation with external members is also allowed (Ehsani, personal communication January 2016).

Specific interests are not represented by direct stakeholders but rather by higher political authorities. As such, for example on issues concerning drinking water, citizens are represented by a MoE representative, while on issues concerning environmental sustainability representation is ensured by the Department of Environment rather than by an environmental NGO (Ehsani, personal communication January 2016).

The RBO's managers have expressed their willingness to learn how to structure participatory processes as well as examine what role NGOs and local communities could play in the decision-making process. So far no concrete action has been taken to implement participatory processes (RBO managers, personal communication January 2016).

Mr. Ehsani's evaluation confirms the fact that with regard to this Institutional Design Principle/ Good Governance Factor, the RBO Zayandeh Rud is still in its "infancy". As represented in the table below only two of the four indicators are being implemented (a and d) with poor results.

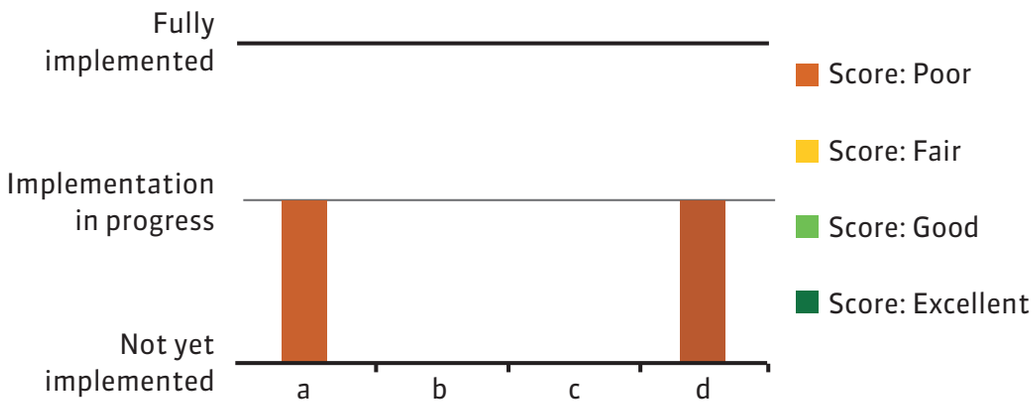

Figure 15: Score Card Mechanism for Stakeholder Involvement/ Private and Public Sector Roles, a) Basin communities are aware of river basin management issues, b) NGOs are civil societyplay in the RBO, c) Participatory mechanisms allowing the inclusion of epistemic institution in river basin governance are in place, d) All relevant stakeholders have the possibility to contribute to the river basin governance

Mr. Ehsani's evaluation confirms the fact that with regard to this Institutional Design Principle/ Good Governance Factor, the RBO Zayandeh Rud is still in its "infancy". As represented in the table below only two of the four indicators are being implemented (a and d) with poor results.

Main challenges identified

External actors' involvement appears possible as the guideline foresees the possibility of inviting stakeholders to the Council's meetings. Nevertheless,

- no systematic strategy exists to involve these stakeholders. This could be problematic as their might be under-represented at the highest levels;
- there is still considerable potential to strengthen the presence of external stakeholders to meet the need of having a diverse and comprehensive membership.

Best Practice Example External Actor Involvement

International Commission for the Protection of the Danube River (ICPDR)

The ICPDR works with 7 expert groups as the backbone of its operational work. Expert Groups report to the ICPDR and propose decisions to the commission at its plenary meetings.

Expert Groups typically meet twice a year at changing locations, chaired by Chairpersons elected by the ICPDR upon nomination of the EG. The work of each EG is supported by a Technical Expert from the ICPDR Permanent Secretariat. In addition to the EGs, there are four Task Groups which report to specific EGs and deal with certain in-depth topics.

The Expert Groups have proven vital for allowing the ICPDR to work in a de-centralised manner: the ICPDR deals with a broad range of issues, despite of its small number of staff. This is only possible because most of the technical decisions are prepared through the Expert Group bodies, which draw from over 200 people which are specialists in their respective countries or organisations. Currently the experts groups are:

- Pressures and Measures
- Accident Prevention and Control
- Monitoring and Assessment
- Information Management and Geographic Information Systems
- Public Participation
- plus one ad-hoc Expert Group for legal and administrative questions (ad hoc Strategic EG).

Moreover, the ICPDR actively involves the public by granting observer status to various organizations. Today, 23 organizations hold observer status. They have the right to participate in the meetings of the Commission with the option to express their views and positions; they have access to the Commission's documents and can submit own documents with suggestions; and they have the right to participate in programs and projects initiated in the framework of the Commission's work.

For more information visit

https://icpdr.org/main/icpdr/expert-groups;
https://icpdr.org/main/icpdr/observers

3.2.13. Training and Capacity Building

Hooper points out the need to provide capacity building mechanisms that suit the specific context and culture. Concerning training, he emphasizes the necessity of developing training programs to ensure the availability of well-trained staff (Hooper 2006).

Table 15: Training and capacity building

Hooper	Training and capacity building programs, to improve the skills of river basin managers and stakeholders (accounting for their specific situation/responsibility and the basin needs) exist.
	Training programs exists in the concept of IWRM and the tools of coordinated management.

Assessment RBO Zayandeh Rud

Training and capacity building programs are essential for IWRM implementation. In Iran two main challenges were identified: training courses do not adequately address the day-to-day needs of water management and educational programs lack focus on innovative practices (Mohajeri et al. 2016 b).

In Iran, trainings on water sector activities are offered by government facilities, however they often do not match the reality of the field. The second problem is caused by the fact that innovative and practice-oriented approaches are often not part of the current training offered by universities and governmental training institutes. The IWRM Zayandeh Rud project is currently tackling this problem by collecting information on the current training activities and establishing a German-Iranian Competence Center for Water and Wastewater Management (GICC). This centre will most likely be integrated into the Isfahan Higher Educational and Research Institute and will offer training modules on IWRM, implement pilot projects and include a platform for German companies to get in touch with their Iranian counterparts and exchange know-how and technology. The operationalization of the center is foreseen for 2018 (Mohajeri et al. 2016 b).

In line with the above, results from the score cards/indicator assessment carried out with Mr. Ehsani show that the RBO Zayandeh Rud is taking measures to improve its performance in terms of training and capacity building.

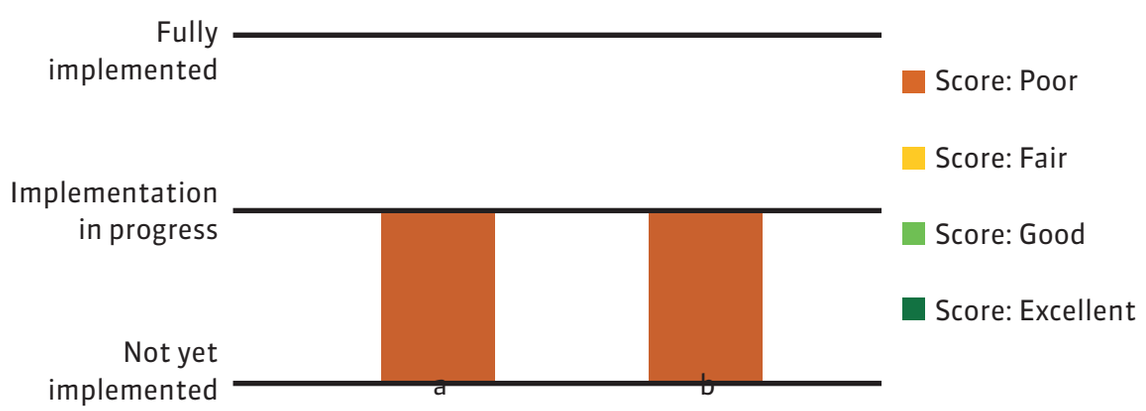

Figure 16: Score Card Training and Capacity Building. a) Training and capacity buildingprograms, to improve the skills of river basin managers and stakeholders, b) Training programme exists in the concept of IWRM and tools of coordinated management

Main challenges identified

The number of questions raised by the RBO managers as well as the willingness to learn from international best practices expressed at the political level show that

- a knowledge gap still exists in terms of IWRM and RBOs in general;
- actors appear keen to fill this knowledge gap.

Best Practice Example External Training and Capacity Building

The Iranian-German Training Center for Water and Wastewater Management

The Iranian-German Training Center for Water and Wastewater Management will offer training courses for water practitioners in cooperation with experienced German training institutions like DWA (German Association for Water, Wastewater and Waste). The training center which will be located in Isfahan, is now in its founding phase. It is based on three main pillars:

1) Training-of-Trainer measures in the field of water and wastewater management bearing "Vocational training made in Germany" as a seal of quality;
2) a strong practical link through the pilot projects which will serve as demonstration sites and within which training modules will be developed;
3) it will provide German companies with the opportunity to present their technology and offer corresponding training. This way a platform for further cooperation will materialise.

For more information visit

http://www.iwrm-zayandehrud.com/aktivitaten/capacity-development/arbeitspaket-e-2/?lang=en

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) strengthens capacities for water resource management at all intervention levels, including the capacities of local water user associations, organisations involved in national water basin management, the national water sector, transboundary lake and river basin organisations and

international water cooperation. GIZ supports capacity development in three action areas:

- water cooperation and governance
- water resource management
- water resource development

On its global campus 21® website (Natural Resource Management NRM-Net Portal) GIZ presents its approaches, for example the River Basin Dialogue programme developed in Africa or the Water Dialogue programme that helps in conflict resolution and promotes an integrated approach to manage water resources in the MENA region. For more information visit

https://gc21.giz.de/ibt/gc21/area=gc21/style=liny/paint=bizyb/en/usr/modules/gc21/ws- FLEXportal-NRM-Net/info/ibt/p_overview.sxhtml

Cap-Net

Cap-Net is an international network for capacity development in IWRM. It leverages international, regional and national institutions and networks committed to capacity development in the water sector through support for IWRM and the achievement of the MDGs. It offers online courses (in cooperation with water specialists like Global Water Partnership or UNESCO-IHE) and a virtual campus, a state of the art platform making use of the latest developed tools and open source software.

For more information visit

http://campus.cap-net.org/en/

3.3. Conclusion

This study investigated the RBO Zayandeh Rud's institutional capacity to address water management challenges in the catchment. Establishing the RBO Zayandeh Rud in Iran presents one step towards the implementation of IWRM practice and principles. Its establishment can be seen as a switch from "government to governance" provided that the government gives up its role as sole decision-maker, opening up to civil society, technical experts and the private sector. In addition, institutional design choices are highly political matters and thus can be subject to vested interests. Hence, the success of the RBO Zayandeh Rud largely depends on how this institutionalization is carried out.

Besides water scarcity, survey results have revealed that other key water management challenges are: power asymmetries among sectors which prevent equal access to water, politically motivated interventions, lack of stakeholder participation in decision-making, no transparency on available data, a sectoral and disintegrated water management approach characterized by little integration among different actors, the lack of basin oriented governance, and an imperfect legal framework guiding water management practices.

Results from this research show that the RBO Zayandeh Rud represents a first step to mitigating social conflicts, as its establishment allows for dialogue among different stakeholders to take place, meaning they are also involved in decision-making on water distribution. However, currently no conflict resolution mechanism is foreseen in case of disagreements among the Council's members.

The RBO also partially contributes to solving problems related to sectorial disintegration, as most of the relevant representatives from the ministries are members of the Council. However power asymmetries among sectors are visible within the RBO, as government officials dominate the membership in numbers and few key stakeholders from other fields are currently members.

Involving different stakeholders also denotes an improvement in terms of transparency as data on water availability are now shared with the RBO's members and are used as the basis for decision-making in water allocation, whereas in the past the decisions had been taken solely by the MoE. However, data are

not publicly available and the RBO lacks a mechanism ensuring stakeholders' participation.

Concerning its ability to implement an Integrated River Basin Governance concept the RBO has shown several flaws in terms of institutional design. The main challenges are:

- The Council has little enforcement power which together with the lack of an independent budget, and the uncertainties on its legal status can be interpreted as signs of incomplete decentralization.

- Its mandate is appropriate in terms of the level of authority, however its functional scope is very broad and its organizational structure and roles are not formally specified.

- The RBO Zayandeh Rud is not effective in terms of data collection and harmonization. This in turn affects its ability to take decisions based on available data and its capacity to perform environmental monitoring. Managers expressed their demand for training in this regard.

- The Council lacks a long-term vision and a river basin management plan, meaning that the current water management is oriented towards crisis management, rather than long term solutions. Both a long term vision and a river basin management plan are key to achieve a resilient and integrated basin management.

- The current guidelines do not account for international water law; their inclusion could contribute positively to better governance.

- There is a need for training and capacity building in IWRM, and a demand to learn how to structure participatory processes, conflict mitigation.

- There is the need (expressed by managers) to learn from international best practices.

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