Institutionalizing IWRM in Developing and Transition Countries – The Case of Mongolia

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Abstract Integrated Water Resources Management (IWRM) forms the widely accepted ecosystem approach to manage water and its related resources in a sustainable way. Nevertheless its implementation is still lacking behind, especially in developing and transition countries which are often short of essential resources and face complex political dynamics. IWRM often requires a fundamental realignment of institutions and governance structures. This may lead to problems of fit and institutional interplay as particular challenges of multi-level governance. Against this background a case study of Mongolia was carried out, a transition country suffering from extreme climatic conditions and increasing depletion of its resources. While an attempt to introduce IWRM exists on paper, it is less clear how it will be made politically and institutionally applicable. A document review and stakeholder interviews were carried out in order understand progress and problems of introducing IWRM in Mongolia in the face of its transition and decentralization process. Problems of fit and interplay were identified as well as approaches for their solution. Results show that the decentralization itself has led to problems of fit and interplay. Attempts are underway to overcome problems of fit like the establishment of river basin councils which do now face challenges concerning their room for manoeuvre. Problems of interplay arise when it comes to the cooperation and coordination of numerous water related organisations which often leads to inconsistent water governance.

Keywords: IWRM, problems of fit and interplay, institutions, transition countries, Mongolia

1 Introduction: Introducing IWRM in Developing and Transition Countries

Building upon on the 1992 Dublin Principles, Integrated Water Resources Management (IWRM) today forms the widely accepted paradigm to manage water and its related resources in a sustainable way. IWRM highlights the coordinated development and management of water at the watershed level (Global Water Partnership 2000). It ideally replaces command-and-control approaches and promotes a shift toward participatory, bottom-up decision-making procedures. IWRM thus often requires a fundamental realignment of institutions and governance structures (Bandaragoda 2000; Saleth and Dinar 2000; Rogers and Hall 2003; Dombrowsky 2005; Fischhendler 2008; Huitema, Mostert et al. 2009).

The institutionalization of IWRM may lead to coordination problems which were depicted by Young (1999) for global environmental governance and adapted by Moss (2004) for water management. These problems encompass at least three dimensions: fit, horizontal interplay and vertical interplay. Firstly, it is assumed that institutions are most efficacious the better they match the biophysical systems they refer to. Emerging problems of fit that result from a mismatch of hydrological and administrative borders can be addressed e.g. by establishing river basin organisations (Moss 2004; Mitchell 2005; Dombrowsky 2008; Herrfahrdt-Pähle 2010). The horizontal dimension of institutional interplay refers to the inter-sectoral coordination of water related institutions. Vertical interplay, on the other hand, focuses on interactions of institutions at different administrative levels and thus aims at addressing problems of multi-level governance (see Figure 1).

It is assumed that IWRM at best addresses problems of spatial fit and institutional interplay simultaneously, but since there will never a perfect balance, Moss (2004: 87) argues that "the *process* of institutionalising river basin management, rather than the end-result, acquires particular significance" (own emphasis). This particularly involves "complex negotiation and bargaining processes with other parties relevant to water resources management and the creation of new partnerships to solve basin specific problems" (Moss 2003: 95).

In general, the introduction of IWRM remains a considerable institutional challenge. In the European Union, the introduction of a river basin management approach is supported by the EU Water Framework Directive. But federal countries, such as Germany, where the main responsibility for water management lies with the federal states, face challenges in its institutionalization as the respective federal states have to work together at the basin scale (Moss 2004; SRU 2004). It is assumed that the implementation challenges are even greater in developing and transition countries, because these countries typically lack essential financial, institutional and human

resources to facilitate a sustainable water management. In addition, transition countries often face rapid institutional change, e.g. through the introduction of a market economy, democratic structures or decentralization processes, and as such particularly complex political dynamics (see e.g. Starnes 2003). A number of case studies on the implementation of IWRM in developing countries has been carried out (see for example Saleth and Dinar 2000; Björklund 2001; Edig and Edig 2005; Hedden-Dunkhorst 2005; Klaphake 2005; van der Zaag 2005; Lankford, Merrey et al. 2007; Shah 2007; van Koppen, Giordano et al. 2007; Herrfahrdt-Pähle 2010). Significant contributions on transition countries concentrated on the agricultural sector and infrastructure systems (Theesfeld 2003; Theesfeld and Boevsky 2005; Herrfahrdt, Kipping et al. 2006; Abdullayev 2009; Sehring 2009). Little, however, has been contributed on the particular challenges transition countries face in introducing IWRM as a holistic approach to water management. For these countries, there is a need to get a better understanding on how parallel processes of transformation and decentralization and the introduction of IWRM affect institutional cooperation and coordination.

Against this background a case study of Mongolia was carried out, a transition country suffering from extreme climatic conditions as well as increasing depletion of its resources. Mongolia was transformed into a democracy and market economy in 1990. The transformation of its political system includes an ongoing process of decentralization (Lkhagvadorj 2010). Problems with regard to water quantity and quality result from its (semi-)arid climate, heavy climate fluctuation and climate change, increasing economic activities particularly in mining and agriculture, and out-dated infrastructure. A lavish handling of water in mining, agriculture and domestic use is motivated by extremely low water prices. Hence, water supply cannot be secured for all water using sectors at all times (FAO 2009).

Water quality is mainly affected by industrial and domestic uses as well as by agriculture. Mining activities produce waste water containing toxic substances which is often fed into rivers without treatment. Poor conditions of sanitation infrastructure result in the discharge of infiltrated waste water into rivers or percolation into groundwater (Dore and Nagpal 2007: 1; NWC, pers. comm. 2009). Agriculture and herding produce high nutrient inputs (MoMo 2009).

The looming situation has been recognized in politics, and while an attempt to introduce IWRM exists on paper, it is less clear how the IWRM concept will be made politically and institutionally applicable and operational in Mongolia. This is not least due to the fact that in general no blueprint for an ideal water resources management exists. The water sector reform is thus a process of trial and error.

In order to understand ongoing processes, progress and problems of institutionalizing IWRM in Mongolia, a document review and comprehensive stakeholder interviews were carried

out.[1] Based on the assumption that a successful implementation of IWRM implies that a country is able to address problems of fit *and* interplay, several questions were pursued: Which institutional preconditions for an IWRM in Mongolia are in place or being established? Where do problems of fit and interplay occur and what approaches have been drawn upon to overcome them? What are the specific challenges of IWRM in Mongolia in the face of its transition and decentralisation processes?

Chapter 2 introduces theoretical foundations of the problems of fit and interplay with regard to water management. In Chapter 3 the institutional setup and governance structures of Mongolia's water sector are described. Chapter 4 applies the theory of fit and interplay to the case study of Mongolia. Chapter 5 draws conclusions and revisits the expediency of the fit and interplay concept in explaining challenges in the institutionalization of IWRM in the light of the case study.

2 IWRM and Problems of Institutional Fit and Interplay – Theoretical Foundations

Young (1999) introduced the concepts of fit, interplay and scale[2] as analytical categories towards the study of institutional dimensions of global environmental change. Institutions are principally understood as formal and informal rules created to order interpersonal relationships of a society, be it between individuals or between and within organisations (North 1990; Ostrom 1990). Building on Young's approach Galaz, Olsson et al. (2008) broaden the perspective and look at problems of fit "between biophysical systems and *governance systems* of which institutions are a part" (ibid.: 168). Besides institutions, governance systems also comprise the respective actors, their interaction modes and governance structures (e.g. Scharpf 1997). We will take up this broader view in this paper since it allows us to incorporate aspects of Mongolia's multi-level institutional setting.

Problems of fit may arise as result of a mismatch between institutional and governance arrangements dealing with environmental issues and the ecological systems they refer to. They thus focus on the interactions between humans and the environment, or social and ecological systems. Problems of fit can occur in terms of time, scale or function (Folke, Pritchard et al. 2007; Herrfahrdt-Pähle 2010).

With regard to temporal misfits, Folke, Pritchard et al. (2007) state that "because of the organizational and temporal complexity of ecosystems, human intervention may have different

1 The research has been carried out in the framework of the International Water Research Alliance Saxony (IWAS), funded by the Federal Ministry of Education and Research (BMBF).
2 According to Young (1999) the problem of scale deals with the transferability of certain institutional regimes in time and space. In this paper we will only focus on the dimensions of fit and interplay as they are most relevant for the analysis of problems with the institutionalization of IWRM in a particular case.

effects at different times". For example, due to path-dependencies institutional arrangements may need a longer time to change than ecosystems or technologies (Young 2002; Ekstrom and Young 2009).

Problems of functional fit relate to the scope of institutions, i.e. it "concerns the failure of an institution or a set of institutions to take adequately into account the nature, functionality, and dynamics of the specific ecosystem it influences" (Ekstrom and Young 2009).

Spatial fit refers to the matching of the boundaries of both the ecosystem and the organisation it relates to. Problems may occur when a "lack of fit causes spatial externalities, benefiting free riders and harming others beyond the spatial reach of the responsible institution" (Moss 2004: 87). Figure 1 indicates the misfit between the boundaries of a river basin and of jurisdictions (e.g. countries or provinces).

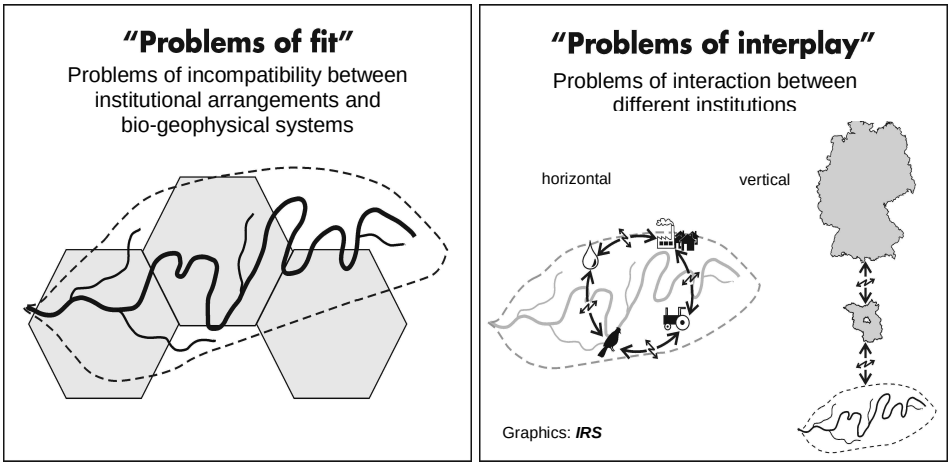

Figure 1: Problems of Fit and Interplay. *Source*: Moss (2003b: 34, 37).

The conventional answer to problems of fit in water management is the establishment of river basin organisations (Moss 2004; Mitchell 2005; Dombrowsky 2008; Herrfahrdt-Pähle 2010). This, however, usually requires a realignment of institutional arrangements (i.e. water laws, policies and organisations) which changes their relations to the water institutional environment (Saleth and Dinar 2000). But, firstly, river basin organisations are not always the appropriate answer to problems of fit, and secondly, they can differ considerably with regard to their design and decision-making and discretionary powers. Ribot states that institutions created in the course of decentralisation processes in order to increase local (self-)governance are often short of both real "power transfers and accountable representation" of local communities (Ribot 2002: 1). This, however, may lead to a lack of legitimacy and ultimately a collapse of the new institutions. He describes a best practice case where "legal decentralization of natural resource management provides local authorities with *executive* (decision-making and implementation), *legislative* (rulemaking),

and *judiciary* (dispute-resolution) *powers*. Having meaningful discretionary powers in any or all of these three domains provides legitimacy for new democratic local authorities" (ibid: 6).

To increase legitimacy of governance structures, Meadowcroft (2002) argues, it is important to recognize the plurality of participating groups rather than to seek a perfect fit of institutions and ecosystems. Moreover, a perfect fit would neglect the relevance of existing institutions "which result from long-term patterns of societal development" and "cannot simply be redrawn at will" (ibid: 177). He recommends a balanced composition of old and new structures: "Indeed, the most effective response [to environmental problems] may often involve drawing representatives from pre-existing bodies into a context where a collaborative response to emergent issues can be constructed."

A river basin organisation always forms an additional scale within an existing – even if changing – institutional environment and decision-making powers remain distributed at different scales and levels. The appropriate scale or level for decisions on environmental policies and measures depends on the respective case. Marks and Hooghe (2004) distinguish between two contrasting types of institutions, type I shaped by general-purpose jurisdictions (like provinces in a federal state), type II shaped by task-specific jurisdictions (like river basin organisations). They underline the distinctive virtues of each type with regard to their "visions of collective decision-making" (ibid. 2004: 29) and their form of addressing resource conflicts, and highlight their complementary character (see also von Keitz and Kessler 2008 on the European Water Framework Directive).

In general, Young (1999) recommends to shape institutions in such a way that the maximum compatibility between institutional attributes and biophysical properties is given. But this does not only involve the spatial scale. Young highlights the importance of managerial or coordinative capacities of institutional arrangements: "The principle conclusion is that sustainability in human-environment relations requires a commitment to creating arrangements that can manage functional interdependencies on a continuing basis rather than an exercise aimed at selecting the proper level of social organisation at which to respond to particular problems" (Young 2002: 86).

The attempt to solve problems of fit through the "replacement of existing institutional units by institutions oriented around biophysical systems will inevitably create new boundary problems and fresh mismatches" (Moss 2004: 87). These new boundary problems then do no longer relate to spatial scales but to social and political spheres of influence. Two aspects become obvious: Firstly, the sheer complexity of social-environmental relations makes a perfect "fit" of institutions virtually impossible. Secondly, related to this, "boundaries separating institutional systems […] are often indistinct and difficult to identify with precision" (Young 2002: 83). The design of institutional arrangements as well as the coexistence of complementary and overlapping

jurisdictions leads to the question of cooperation and coordination and thus to the issue of institutional interplay. Here, vertical and horizontal interplay can be distinguished (see Figure 1).

Problems of vertical interplay arise as consequences of multi-level interactions, e.g. between the different administrative levels. In water management, policy-making, regulation, and enforcement powers can be allocated among organisations at international or transboundary level, national or federal, provincial or state and municipal levels with their respective institutional arrangements (Moss 2004). Especially in the case of the establishment of a river basin organisation as a new administrative unit, institutions at all levels have to be adjusted to avoid institutional disorder with overlapping responsibilities or policy gaps.

Horizontal interplay concerns linkages of institutions at the same level, e.g. of water using sectors within a river basin. Since IWRM aims at balancing the demands of all water users within a watershed or river basin, their respective institutional arrangements have to be taken into account. Possible conflicting sector institutions - like economic and environmental policies - have to be coordinated which eventually requires cooperation among administrative bodies of different sectors.

Moss (2004) sees the risk that the creation of new water institutions unavoidably leads to coordination problems, e.g. between institutions for water management planning on the one hand and for land-use planning on the other hand. The reason is that "the effective protection of water resources cannot be achieved by institutions of water management alone. The quality and quantity of water resources are affected by a wide range of human activities […] each framed by its own institutional arrangements" (ibid. 2003: 94).

Since IWRM replaces sectoral approaches as well as pure top-down management approaches, both problems of horizontal and vertical interplay have to be addressed. The biggest challenge, however, seems to be the simultaneous solution of problems of fit *and* interplay. Following the line of argument it can be concluded that the better the spatial fit the more considerable the problems of interplay. It seems that the spatial fit can only be achieved at the expense of interplay (Moss 2003). IWRM therefore never provides a blueprint, and a balanced institutional design has always to be attuned to the particular situation.

3 Water Governance in Mongolia

Mongolia has been divided into different administrative units since the foundation of the People's Republic in 1924. Notwithstanding a federal appearance, the ruling Mongolian People's Revolutionary Party (MPRP) pursued a type of Democratic Centralism until the end of the Soviet era in 1990. It was characterized by central leadership and planning authority while the "democ-

ratic" component was limited to the election of political representatives. And "there existed no division of powers in the administrative structures. This was only a division of labour under direct control by the Party" (Tserenchimed 2009: 68, translation by authors).

Today, the country consists of a central government with three levels of local governance. These are 21 aimags (provinces) plus the capital Ulaanbaatar, the aimags are again divided into soums (districts) and baghs (municipalities). With the 1992 Constitution first steps towards decentralisation were taken. A dual governance system was adopted in which the lower administrative units had to "be organized on the basis of a combination of the principles of both self-governance and central government" (Government of Mongolia 1992: Art. 59.1)[3]. Thus, legislature today comprises of the national parliament (Great Khural) and its counterparts on aimag, soum and bagh level[4]. The national government as main executive authority has its equivalence at each sub-national level where governors, representing the national government, are responsible for the implementation of national legislation (Government of Mongolia 2006).

Responsibilities in Mongolia's water sector are mainly determined by the 2004 Law on Water (Government of Mongolia 2004). Traditionally, water management has been highly centralized and fragmented at the same time, with various government agencies implementing water related policies for agriculture, industry or urban water supply. The introduction of the law implied a shift towards a more stringent water policy. Nevertheless, "more than 20 organizations have some responsibility for aspects of the water sector under existing legislation" (Livingstone, Erdenechimeg et al. 2009: 15).

According to the water law the main responsibility for water policy lies with the Ministry of Environment and Tourism. Aimag parliaments (Khurals) adopt management programs which are submitted by River Basin Councils and the Governor. Khurals at aimag and soum level are responsible for monitoring the implementation of the water legislation. Budgets for implementation measures are approved by soum Khurals based on estimations of the governors. The aimag and soum governors are responsible for the management of water exploitation, protection and restoration activities. Aimag governors also issue water use permissions for water uses between 50 and 100 m^3 per day, soum governors based on decisions by the Water Agency, the aimag department of environment or the soum ranger, depending on the amount of water that is supposed to be used. The Public Meetings at bagh level predominantly regulate the possession and use of wells within their territory.

3 All citations of Mongolian laws are taken from the translations by the Asia Foundation (in cooperation with the Dutch government) in the „Compendium of Laws" (The Asia Foundation 2008).
4 On bagh level: Public Meeting.

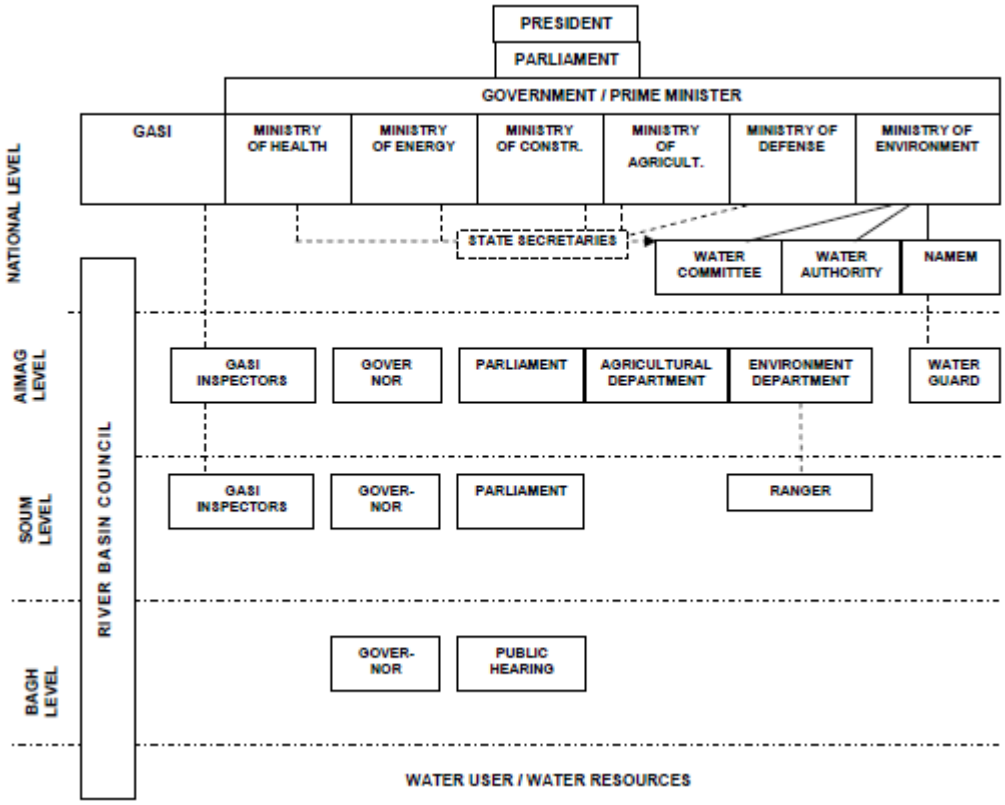

Figure 2: Responsibilities in Mongolia's Water Sector (simplified). *Source*: by authors.

Under the auspices of the Ministry of Environment two key organisations were established to ensure both the implementation and coordination of water policies and the National Water Program which is currently under revision.[5]

In 2000 the National Water Committee (NWC) was founded to coordinate and integrate the activities of the water related ministries. The number of participating ministries was reduced from ten to six in 2008 and today comprises the Ministries of Environment and Tourism; Mining and Energy; Roads, Transportation, Construction and Urban Development; Health; Food, Agriculture and Light Industry; and Defence. Head of the Water Committee is the Minister of Environment and Tourism, and the steering committee consists of the state secretaries of the five other ministries. Besides its coordination tasks, the committee is also taking part in the formulation of the National Water Program and is responsible for submitting it to the parliament and government. Additional duties are the development of guidelines for the establishment of River Basin Councils and to give advice to the government (NWC, pers. comm. 2009).

Complementary to the NWC in 2005 the Water Authority (WA) was founded which serves as the government's implementing agency. It also shall support the vertical coordination

5 According to www.dauriarivers.org/mongolia-water-program/ a draft version has been approved by the Standing Committee of the Great State Khural on Nature, Environment, Food and Agriculture on April 15th, 2010.

and cooperation from ministries at national to the private sector at local level.[6] Based on information gained through nation-wide data collection and monitoring the authority's duty is to determine the amount of water used by each sector and to issue water use permissions for uses of more than $100m^3$ per day. With support of the Dutch development cooperation the authority is also engaged in the development of a national IWRM strategy.

Monitoring of water uses is carried out mainly by inspectors of the General Agency for Specialized Inspection (GASI), the main supervisory agency of the government, and includes inspection and sanctioning of non-compliance with environmental legislation. Additionally water guardians, employees of the National Agency for Meteorology and Environmental Monitoring (NAMEM), are responsible to monitor water levels and quality at soum level. By law, monitoring of water uses is additionally conducted by the aimag departments of the agricultural and the environmental ministries at aimag level.

An additional layer of water governance was introduced in the 2004 water law with the objective of establishing river basin councils. According to the water law the councils are supposed to "engage citizens in local water management for protection of water resources, its effective use and restoration" (Government of Mongolia 2004, Art. 19.1). This probably marks the most important alteration in water governance since planning and monitoring are supposed to be delegated to the basin level. The following sections will elaborate on problems of fit and interplay observed in the process Mongolia's reforms of water resources management, as well as attempts to address these problems.

4 Decentralisation, Fit and Institutional Interplay in Mongolia

Problems of Fit

In 2009 Mongolia's river basins were officially delineated based on hydrological criteria and the economic relevance of the respective basins. Accordingly, 29 river basins were defined. Figure 3 outlines these river basins on the one hand and aimag boundaries on the other. If we look at the matching of institutions and river basins, it becomes evident that the decentralisation process – the transfer of water management duties and economic responsibilites to the aimag and soum levels – itself led to problems of spatial fit: With the lower administrative levels gaining more decision-power, there is the risk that unilateral decisions of respective local parliaments lead to transboundary negative external effects. As figure 3 shows most of the river basins lie transverse to provincial borders, and this picture exponentiates at soum level.

6 See website of the Water Authority (www.water.mn).

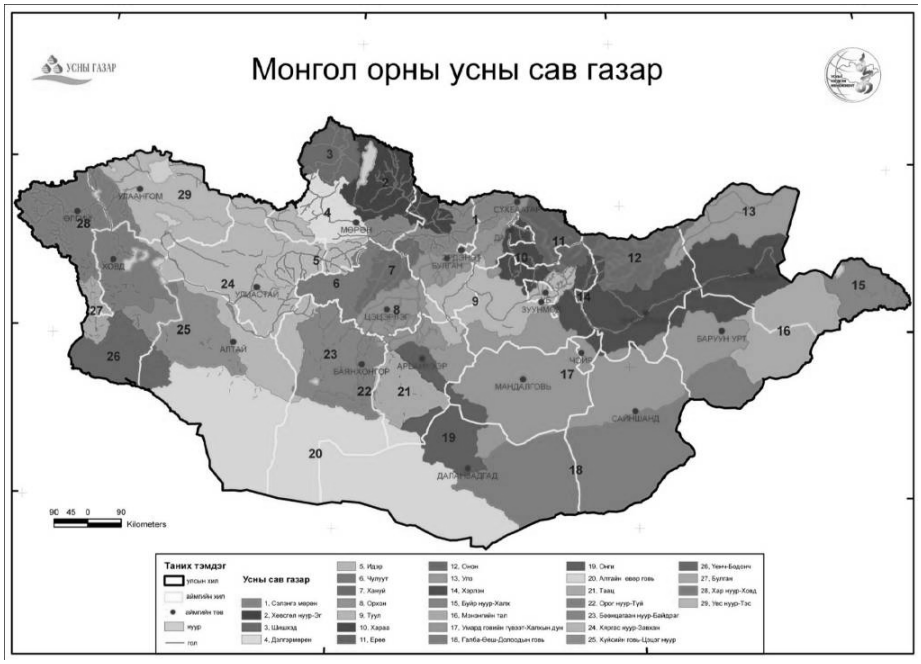

Figure 3: River Basins in Mongolia, *Source*: Batbayar (2009). Bright lines indicate aimags, grey areas indicate river basins.

At the same time, the water law has made provisions for the establishment of river basin councils. This can be understood as an implicit response to spatial mismatches. According to the water law, the councils' duties are the development of river basin management plans to be approved by respective Khural(s) and to monitor their implementation, to evaluate water uses, environmental impact assessment fulfilment etc., to organize caretaking of water sources and to provide technical assistance on proper water utilization (Art. 19.6). Members of a council shall consist of up to 15 people representing local administration, the aimags' department of environment, representatives from agriculture and industry, NGOs, scientists, GASI, and ordinary citizens (Government of Mongolia 2004, Art. 19.4). The duty of appointing chairpersons and members stays with government authorities and depends on the administrative scope of the respective basins.[7] Financial sources shall include a part of local budget from water users fees, support by water users, contributions by voluntary foundations and others (Annex Reg. 187 Part V).

To date, eleven councils have been established at least on paper (WA, pers. comm. 2009). NGOs and donor organisations (WWF Mongolia and the Dutch development cooperation) have been supporting the process in three cases, and the RBCs in these three cases are generally considered as functioning (Quelle?). Hence, the government just started with the set up of RBCs. At

7 In the case of a river crossing two or more aimags the Minister of Environment and Tourism will appoint the council members on the basis of the submission of the respective aimags' parliaments. If a river crosses two or more soums within one aimag, the aimag's Khural have to appoint the members, and for a river within one soum the soum's Khural is responsible (Water Law, Art. 19.2).

the same time, it turns out that a range of questions remains with regard to the RBCs remains open at this point.

Given the range of RBC functions mentioned in the water law (see above), the first question is which of these tasks can sensibly be fulfilled by RBCs and which might rather be the responsibility of other sector organisations. It can be assumed that the RBC's main task will be to draw up RBM plans. With respect to the other tasks, the question is to what extent it has the capacity and the financial resources also to engage in monitoring and technical assistance at the local level. One interviewee noticed that "[…] the exact role of the basin council is not yet crystallized out, whether they are really the implementer. If it would be like that, how would they generate their resources, financial resources in particular? There is very little arranged for that" (Dutch IWRM Project, pers. comm. 2009).

However, even with respect to drawing up RBM plans, the question is whether the council, in its current design, has indeed the capacity to do so. Firstly, the council constitutes a rather heterogeneous group of people who representing different interests, but not necessarily having the technical planning capacity. And secondly the scope of a river basin to be managed may constitute a challenge: "[…] particularly when you start with councils which are composed of stakeholders, you have to really take into account the reach, the communication between the edges of the area, management capacity of the people involved, and if you take a very large area […] for an organisation like a very young basin council it would be unmanageable, communication is virtual impossible, you cannot expect that people have the knowledge of all the area" (ibid.).

A further question relates to the financing of the council. In order to establish a council, financing has to be proven towards the respective entity responsible for the application, i.e. the Water Authority or the department of environment. So the council is predominantly self dependent in finding sources of finance. Money is particularly needed to pay the chairperson and secretary who shall be permanent staff (WA, pers. comm. 2009), but possibly also to subcontract more detailed planning. While an unspecified part shall be provided out of the local budget earned from water use fees, so far, fees are extremely low, their collection is incomplete and local government have to transfer 40 % of this budget to higher government levels. Further, with respect to the idea that an additional endowment be raised from private sector, NGOs or through the establishment of a foundation which private entity or NGO can be expected to contribute towards the RBCs? Since the law does not provide any rules for public financing mechanisms, the efficacy of the single councils will also highly depend on their ability to raise funds (WWF, pers. comm. 2009).

Finally, there are open questions relating to the legal status of the RBCs. A council's legal status turned out to be problematic for the first time when it came to the registration with the tax

authority. By law, only three legal statuses exist, i.e. the state organisation, non-governmental organisation, or company, "and a river basin council is of course no company, but also no NGO or state organisation" (WA, pers. comm. 2009). Because their membership consists not only of government officials but also of private sector representatives and citizens, a council can not be entitled a state organisation. An interim solution was found by giving the councils an interim status as "non-governmental entity providing services to the state" (WWF, pers. comm. 2009).[8]

As mentioned above, the set up of RBCs is still in an early stage and at least for some of these questions answers may be found. However, solutions to the questions of capacity and financing remain crucial if RBC's are to be effective in Mongolia.

Problems of Horizontal Interplay

Problems of horizontal interplay, i.e. between water using sector institutions, become obvious e.g. at Mongolia's national level, when looking at the allocation of responsibilities among government entities which is still characterized by a strong sectoral segregation. At least six ministries – those that are represented in the NWC – are responsible for water issues.

As a response to this challenge, the National Water Committee was established to achieve cooperation between the ministries and to coordinate activities in the water sector (NWC, pers. comm. 2009). With its members being state secretaries it consists of high-level representatives. The NWC is supported by a technical committee (NWC, pers. comm. 2009). Nevertheless, procedures for institutional cooperation are hardly defined and largely depend on individual willingness. For the time being, the NWC does not have enough influence to actually channel the ministries' activities: "[…] we have so many committees, National Committee for Climate Change, National Committee for Desertification, National Committee for Air Pollution, and all these committees are waiting on the decision how to integrate their works. In early 2000 the Mongolian political life found one solution to integrate some ministries' activities, […] but a committee, if it doesn't have enough empowerment or rights, it cannot do that" (WWF, pers. comm. 2009).

Also the Water Authority could play a facilitating role, but faces problems regarding its influence on ministries and other government agencies. As a result, information and data on water resources that actually should be available in the Water Authority are withhold by respective specialist organizations. For example, "[…] only the Minerals Agency has knowledge on water use in mining, only the Ministry of Agriculture has information on land use, and their cooperation is bad. As far as drinking water is concerned, only the Construction Planning Agency is re-

8 An amendment of the water law is envisaged for the 4th session of the Great Khural (parliament) in October 2010 (WWF, pers. comm. 2010).

sponsible, the Ministry of Energy for hydro-power, ground water drinking water resources are subject to the Ministry of Environment. The Ministry of Health analyses water quality. The Water Authority actually is not able to take reasonable decisions because the cooperation with the ministries is not working. Every agency has its own interests […]" (Water Institute, pers. comm. 2009).

It can be argued that the coordination and cooperation problems at the horizontal level are also due to the fact that both the NWC and the WA are affiliated to the Ministry of Environment and Tourism, a ministry which is attached less importance to, compared with, for instance, the Ministry of Mining and Energy (UNDP, pers. comm. 2009).

The problem of the Water Authority's minor influence has become apparent in the case of the government program which intends to achieve food sovereignty by increasing irrigated agriculture. The Ministry of Agriculture supports investments in irrigation technology with interest-free loans while the Water Authority has taken up a critical position towards the program (Ministry of Agriculture, WA, pers. comm. 2009). The WA sees the danger of further resources depletion if the irrigated area is expanded particularly because to date no price for water used in the agricultural sector exists, only for service where it applies. According to the Law on Fees for Water Use only irrigation of pastures is explicitly exempted from water use fees (Government of Mongolia 1995, Art. 8). But the wording of the law is very imprecise regarding the use of water for irrigating crops, and a government resolution for a final clarification is missing (Ministry of Agriculture, pers. comm. 2009). The Water Agency advocates pricing in the agricultural sector, not only for crop production but also for irrigating pastures. It is not yet clear whether the Ministry of Agriculture supports this attempt. In addition, existing legislation forms a hurdle for the Water Authority to change the water price system, since at least 15 related laws would have to be amended as well (WA, pers. comm. 2009). However, all interviewees mentioned the difficulties of introducing water prices especially in a country like Mongolia where access to water is crucial for the economic development, and where advocating for prices would mean a "political suicide".[9]

Another example for cooperation problems was the approval procedure of the Taishir Hydropower project at the Zavkhan River where the Water Authority didn't have a say. The project was created as a Clean Development Mechanism-project by a Japanese company and the Energy Research and Development Centre of the Ministry of Energy and Mining. As one of the biggest dams in Mongolia the hydropower plant was supposed to provide electricity to the Gobi Altai and Zavkhan provinces. Although the dam has already been built, up to December 2009 the project was not approved by the government because of too low water levels. During the approximately two years it takes to fill the reservoir with water, not only local people are suffering

9 Interview WWF Mongolia (May 2009).

from water scarcity: "Controversial issues include environmental concerns, such as the destruction of a freshwater habitat for plants and animals and the negative impact on fish migration, as well as the temporary disappearance of water sources for people and livestock downstream as the large man-made reservoirs take years to fill" (Wilson 2009). A Water Authority official claims that there was no consultation with his agency regarding available water resources or possible impacts: "And about this dam, the Water Authority and the Ministry of Environment and Tourism cannot say anything because this dam is working under the Ministry of Energy and Mining" (WA, pers. comm. 2009).

Apparently, there is no clear distinction between the ministries' and the Water Authority's tasks. A representative from the WA (2009) states: "[…] the institutional system or structure in the water sector in Mongolia is not clear. The government has its own Water Authority which is responsible for water resources, but so many ministers and organisations are still responsible for water issues. E.g. water for agriculture and animals: the Ministry of Agriculture. Water quality: who is responsible is not clear – we [i.e. the Water Authority] or the Ministry of Health?"

Problems of vertical interplay

The decentralisation process in Mongolia created different levels of administrative and organisational responsibilities and thus also led to certain problems of vertical institutional interplay. This holds particularly true for the application of national law at the subordinate levels. A fuzzy picture of responsibilities at the national level is passed downwards and inevitably leads to poor implementation at the local level. An explicit assignment of responsibilities is often missing.

According to the Law on Environmental Protection environmental monitoring is carried out by the control agency GASI. The Law on Water, however, lays out responsibility regarding the monitoring of the implementation of water users' duties that result from environmental impact assessments to the RBCs (Art. X), while the Law on Environmental Impact Assessment assigns the monitoring to a "licensed economic entity" (Government of Mongolia 1998, Art. 11). The water law, moreover, appoints the Khurals of aimags and soums as well as the local departments of environment. Additionally, the Water Authority is responsible for the monitoring of changes in water resources. 168 NAMEM water guardians monitor water levels at soum level but they are not mentioned in the law (Asia Foundation, WA, pers. comm. 2009). Weak water resources and water uses monitoring, thus, can be regarded as problem of vertical institutional interplay since it discloses overlapping, unclear responsibilities and challenges regarding the implementation and enforcement of national legislation at the different administrative levels.

All these organisations face different challenges, and next to overlapping responsibilities they are understaffed and underfunded or staffs are insufficiently trained. The GASI has staff

members at the local level, but they are limited to 4-5 State inspectors per aimag (WA pers. comm. 2009). Rangers have the duty to "protect natural resources in the area" for which they are responsible (Government of Mongolia 1995, Art. 28.2). The rangers' territories cover up to 120.000 ha in a forestry-steppe area or up to 800.000 ha in a desert area (ibid. 1995, Art. 26.7), a rather huge area given they have to monitor the implementation of not only water legislation but the entire environmental legislation. The Water Authority has no branches at the provincial and district level which would facilitate cooperation with local government entities. Instead it has to act through the aimag departments of environment. These departments, again, are not endowed with branches at soum level. Thus, the local level where monitoring should actually take place, remains virtually understaffed. With regard to the implementation of the national water program, a representative from the Water Committee stated: "We have a problem at the soum level; there is no special person, because all the functions are completed by the rangers, and some of them are not specialized" (NWC, pers. comm. 2009).

Water use, especially in agriculture and mining, therefore remains virtually uncontrolled. Still 60 % of groundwater for commercial purposes are withdrawn without necessary licences or water meters (Dore and Nagpal 2007). According to the Water Authority (pers. comm. 2009), about two thirds of the mining companies in fact use water meters, but since the monitoring is weak, unsteadiness in their usage can also be observed, and some companies just dig holes and get water through bank-filtration.

Weak monitoring can be traced back to weak capacity and capabilities, but also to an "imbalance between the assignment of implementation responsibilities and the allocation of budget resources" (ADB 2005: 53) which holds true for the entire environmental sector. Tortell, Borjigdkhan et al. (2008) claim that a coherent intergovernmental financial transfer system to finance effective management and monitoring is missing. Because of the insufficient financial strength of the responsible agencies and organisations in the environment and water sector necessary equipment for monitoring is missing (Tortell, Borjigdkhan et al. 2008). Local governments do rely on fines and penalties to finance environmental management which in addition leads to a situation where users' compliance to environmental legislation is postponed. In fact 60 % of environmental fee revenues remain within the aimag budgets (except of fees from the mining sector), but only 35 % of these revenues are reinvested in environment and resource protection if at all, the remaining 65 % aren't earmarked (Government of Mongolia 2000).[10] In 2003 revenues from the use of natural resources exceeded expenditures for resource protection by five times (ADB 2005).

10 The Governor of Darkhan Uul states that so far nothing has been reinvested in his aimag (pers. comm. 2009).

Tortell, Borjigkhan et al. (2008) laud the decentralisation of environmental protection in general, but also state that there remains "inadequate capacity, lack of credibility and legal confusion" (ibid.: 27).

Despite Mongolia's division into different administrative units, politics still show a centralized character. Some even call the state being just a "de-concentrated state administration with self-governing elements" (Tserenchimed 2009: 127). Effective institutional interplay requires that all groups or stakeholders affected by water policies are represented in the respective boards or committees (Fischhendler 2008). But most of the policy documents were developed only at national level without the involvement of local governments or the civil society which are essential for their implementation (UNESCO-WWAP 2006; WWF Mongolia Programme Office 2007). With the water policy reform in 2004 public participation in water management has become an important issue. The public shall not only be represented in the RBCs but also actively engage in "restoration and caretaking activities of sources and rivers, streams, and springs, afforestation and plantation of seedlings, augmenting source of water, and prevention from pollution" (cf. Government of Mongolia 2004, Art. 18) as well as monitoring. The development of river basin management plans by the river basin council members thus forms another attempt to address the issue of missing vertical interaction, but its success remains to be seen.

5 Conclusion and Outlook

The aim of this paper was to analyze progress and problems in the institutionalization of IWRM in Mongolia as an example for a developing and transition country. Apart from revealing common problems of sustainably implementing natural resources management in developing countries like a lack of financial resources and capacities, particular problems of institutional change conditions resulting from the country's transition were analysed.

Problems of fit and interplay occurred alongside Mongolia's transition and decentralization processes. At the same time, considerable steps were taken that have potential to address these problems. A new water law was introduced, aiming at an integrated water resources management. Problems of fit are being addressed by introducing river basin organisations which are supposed to balance local water user interests but do now face challenges concerning mandate, capacity, legal form, financing and quorum. A National Water Authority is supposed to streamline water related activities at different administrative levels and may thereby tackle problems of vertical interplay. The National Water Committee was established in order to foster cooperation of the water related ministries and may thus address problems of horizontal interplay. But, long-established institutions and strong sectoral segregation resist efforts for reform. Newly estab-

lished posts are often endowed with little resources for enforcement. Additionally, Mongolia's politics still show a strong centralized character - a relict from the soviet era - which hinders real control over resources by local governments and participation of the public.

On the one hand, it may be argued that the endeavour to establish River Basin Councils represents not only a tool to address problems of fit, but also to deal with problems of horizontal and vertical interplay. Given the composition of the RBCs, they have the potential to coordinate both between different sectoral interests and between different administrative levels at the basin scale. Hence, in the case of Mongolia as a developing and transition country, with little horizontal and vertical interplay in place, theoretically RBCs have the potential to address problems of fit and interplay simultaneously – and not to solve problems of fit at the expense of interplay as suggested by Moss (2003) for the case of Germany as a developed country. However, this really hinges on the effectiveness of the RBCs including their future human resources and financial capacities.

The concepts of institutional fit and interplay are valuable tools to structure the analysis of institutional arrangements conductive and obstructive towards IWRM. The aspect of institutional fit can be applied to river basins and their respective organisations and institutions. The approaches of vertical and horizontal interplay help to depict relationships between the different administrative levels on the one hand and the sectoral institutions at each of these levels on the other. Nevertheless it is hardly possible to explicitly classify a problem regarding the institutionalization of IWRM as either only problem of fit or problem of vertical or horizontal interplay.

Additionally, the approach is not sufficient to explain the underlying reasons for success and failure of certain attempts to institutionalize IWRM. According to the Global Corruption Report 2008 water problems are not so much a physical problem but often a water politics crisis, "a crisis in the use of power and authority over water" (Transparency International 2008: 4). Since power is always held by certain actors – individual or groups – we propose to amend the former approaches with actor centred explanatory approaches. New governance structures and institutions offer new political spheres that are occupied by different political actors, a phenomenon that has been described as politics of scale (Swyngedouw 2004; Görg 2007). There are two main reasons for the choice of the politics of scale approach as add-on to the fit and interplay approaches. First, the scale debate is able to capture the ongoing political and institutional dynamics in today's Mongolia since it deals with the process of scaling and rescaling. Second, it turns the attention to the actors, their interests and strategies towards the institutionalization of IWRM.

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