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**(Re)configuration of
Water Resources
Management in Mongolia:
A Critical Geopolitical Analysis**

The International
Center for Development
and Decent Work

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This research study was presented at the Human Ecology Forum
on 15th October 2013 at the College of Atlantic, United States of America.

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Abstract

In Mongolia 'water' as a concept is constructed by local people based on the values and norms in which it was rooted in the past. Rivers and its resources are considered gifts from "Naga" who is believed to be the snake lord for pure water resources, lakes, springs, waterfalls and rivers. However, the expectation to have "pure water" has been challenged. Stress over water resource has gradually increased. Therefore, water resource management has been one critical theme in politics and policies in Mongolia with respect to climate conditions and socioeconomic impacts. With what scale and level water resources should be governed and managed has been a focal point in the water policy reform process. Mongolia as a transformative country after the decline of the socialist regime in 1990, has been experiencing neoliberal political economic changes. Consequently, new stakeholders have emerged and advanced into more powerful and influential settings in politics and policies in Mongolia. Under the new endeavor to implement the IWRM, the water basin has been submitted as the appropriate scale for water resource management. The selection of water basins as the hydrological scale in water management and institutionalization of water resource management attach with complex power dynamics to a transitional county with rapid institutional changes, political and policy reforms, and economic alterations. The research examines how stakeholders engage or disengage in water resource management in Mongolia and what the competing demands for accessing water resource are. The embedded design in the mixed research method with the interpretative approach was applied by conducting interviews, focus group discussions and water quality and quantity data analysis. The field research was mainly conducted within the multidisciplinary research project, Environmental Flow Assessment in Orkhon and Tuul Rivers Basins. The key analyses that can be derived from the research are as follows: scale (re)configuration connects with contextual power relations and political implications can be observed by analyzing the engagement of stakeholders in different steps with different competencies. Furthermore, these findings may assist to appropriately formulate the competing socioeconomic demands for sustainable water in future policy implementation of Mongolian water resource management.

Keywords: Scale (re) configuration, stakeholders, power dynamics, Integrated Water Resource Management (IWRM), Water Basin, Environmental Flow Assessment

1 Introduction

“ус бол чандмана эрдэнэ”
Water is Wish Granting Jewel

(Mongolian Proverb)

Mongolia, as a landlocked country situated in the north of the central Asian plateau, is experiencing severe climate conditions (*Batimaa et al., 2011; UNDP, 2011*). According to estimates, 78% of areas are under vulnerable conditions of medium to high rates of desertification (*Batjargal, 1998; UNDP, 2011:28*). Due to climate change, severe drought in summer and a harsh winter called “Dzud” is more frequent (*Batimaa et al., 2011*). These extreme climate conditions reduce water availability in Mongolia (*Natsagdorj et al., 2011; Batimaa et al., 2011; UNDP 2011*). Simultaneously, socioeconomic activities also effect a reduction in water availability from surface and groundwater resources (*MNEGD, 2012*). The water demand is rapidly increasing due to rising industrial and agricultural activities, and urbanization. Water stress and maltreatment of water resources is an intensifying concern over water resource management in contemporary policy discourse (*Tortell, 2008; Batimaa et al., 2011*).

Mongolia is considered as to be a country with a transformed political situation from a socialist political background to a liberal democratic system after the decline of the communist regime in 1990 (*Horlemann et al., 2011*). Transitional countries are experiencing rapid institutional changes, political reforms and economic alterations (*Ekiert, 2003; Tamilina and Tamilina, 2012*). These political economic implications transfer into instantaneous institutional changes and complex political dynamics (*Grothe, 2009; Horlemann and Dombrowsky 2011*). Neoliberal economic changes after 1990 – that include price and trade liberalization, financial liberalization, adopting open market principles, privatization, deregulation and decentralization of power and responsibilities (*Shagdar, E. 2007*) could relatively establish liberal values such as good governance, democracy and freedom in Mongolia. Meanwhile, communist political influences could still play an important role in socio-political behaviors and institutional practices of transitional countries (*Ekiert, 2003; Grothe, 2009*). With these complexities, new trends in the political economy of Mongolia lead to the emergence of new stakeholders and their influential role in politics and policies. With the economic liberalization and political democratization process in Mongolia, new internal stakeholders are emerging and the impact of external stakeholders in Mongolia is also being reinforced. Also, new power alliances between stakeholders can be observed (*Horlemann and Dombrowsky 2011*).

Water, a resource which is connected with multi-stakeholder interests, is highly politicized (*Budds and Hinojosa-Valencia, 2012*). In Mongolia, water resources management cannot be detached from complex political and socioeconomic process. The Integrated Water Management National Assessment Report II (2012) by the Ministry of Nature, Environment, and Green Development (MNEGD) in Mongolia stated that the Integrated Water Resources Management (IWRM) model came into operation in Mongolia as the new governance and management approach based on these considerations (*MNEGD, 2012*). Significantly, the introduction of the IWRM into water governance in Mongolia constitutes water basins as the hydrological scale in water management. The demarcation, selection and reconfiguration of water basins as the appropriate hydrological unit in water resource management have political implications (*Howitt, 1998*).

The research paper examines **how stakeholders engage or disengage in water resource management in Mongolia and what the competing demands for accessing water resources are**. The explanatory question has three elements: “**who produces scale, how, and for what purposes?**” It was promulgated by James McCarthy (2005) and applied to analyze power dynamics in water resource management in Mongolia. This research paper is organized as follows. The next section provides a brief overview about the climate condition of Mongolia by examining water availability. The following section turns to a theoretical framework for the research analysis on the politics in scale (re)configuration based on the explanatory question posed by James McCarthy (2005) to critically understand the different engagement of stakeholders in scale configuration, especially in water resource management. The third section will analyze and address the posed research questions. The research paper concludes with a brief summary of the findings and future research possibilities in this area.

2 Climate Condition and Water Availability

According to the Geographic Coordinate System, Mongolia is located between 41° 35' –52° 06' north latitude and 87° 47'–119° 57' eastern longitudes. Mongolia is a landlocked country which is in the north of the central Asian Plateau and is surrounded by China and Russia. In relation to sea level, the average height is between 900 m to 1500 m. The total area of the country is 1 566 500 km² (*Basandorj and Singh, 2009: 10; MHDR, 2011:8*). Mongolia belongs to the intermediate transitional climate region between the great Siberian taiga and the Central Asian desert (*Batsukh et al, 2008*). As a land-locked country, Mongolia has a harsh climate and is threatened by severe and moderate desertification. Approximately 23.4% of Mongolia is covered by the Gobi desert. The rest of the country contains semi-arid or arid areas (*Batsukh et al, 2008*). There is an uneven distribution of natural zones in terms of climate, aridity and geological variation (**Figure 1**).

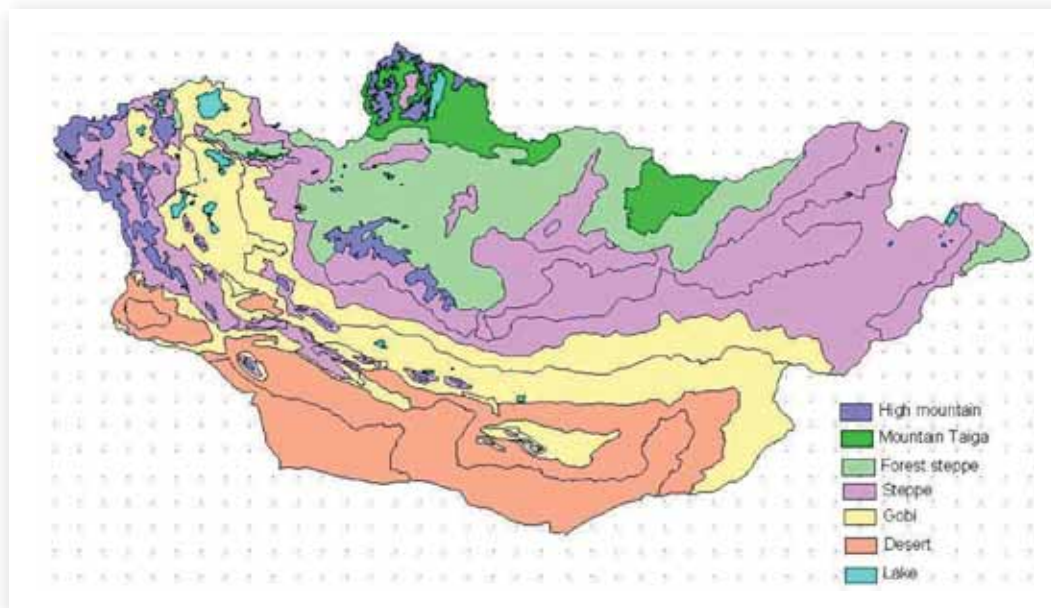


Figure 1. Natural zones of Mongolia

(Source: Integrated Water Management National Assessment Report, volume 1, WA, 2012)

Generally, Mongolia experiences short, very hot and dry summers and long and very cold winters. Most days are passing with the unclouded sky which intensifies the evaporation (Batsukh et al, 2008). The people and livestock are affected by severe drought in summer and harsh winter called “Dzud” (Batimaa et al, 2006). The climate change harshly impacts the ecosystem in Mongolia. Concerning the temperature, it is estimated that annual mean temperatures have increased by 2.14 °C since the 1940s (Batimaa et al. 2011). As a result of climate change, Mongolia experiences extremely cold weather. In the winter period, annual precipitation increases between 12.6% and 119.4%. In the summer period it has warmer weather by which annual precipitation declines from 11.3% to 2.5%. Also in summer, most of its regions experience 13% to 90.9% increase in evapotranspiration (Batimaa et al. 2011). It is estimated that 78% of areas in Mongolia are affected by medium to high rates of desertification (Batjargal, 1998; MHDR; 2011). These extreme climate conditions reduce water availability in Mongolia. According to the National Statistical Data analysis in 2011, the data illustrate that surface water resources such as rivers, lakes and streams are exsiccating in a considerable amount. Because of the lack of surface water availability, 80% of drinking water has to be pumped from groundwater sources (Batimaa et al. 2011). Groundwater is considered as a major water source in terms of industries (especially for mining industries in the Gobi region) and urban water usage.

Mongolia has uneven distribution of surface and groundwater. The high mountain range which includes Altai, Khangai, Khuvsgul and Great Khyangan produce 70% of surface water (Batsukh et al, 2008). These mountain ranges constitute the catchment areas for main rivers. Orkhon, Eroo, Selenge, Tuul, Kharaa, Khov, Onon, Bulgan, Khanui, Ider and Herlen rivers can be noted as the main rivers and tributaries in Mongolia. According to Miguel Alonso (2012), lakes are one main surface water source as well as recharge source for groundwater in Mongolia. In the North Eastern, Western and Central parts of the country, the landscape is covered with big and small lakes, including Khuvsgul Lake in the Southern slopes of the Altai-Sayan mountain range, Bayan Lake in the North watershed of Khangai mountain range and Sharga Lake in Bulgan region (Interview, 2012.08.22 and 2014.02.22 and the Limnological research database)¹. However, 54% of lakes are located in the Gobi region, but most of them are small, shallow or salinized (WWAP, 2006). Glaciers in the North-West and South-East region which are located 2750 m above sea level are also another water source in Mongolia, such as Potanin’s glacier (Batimaa et al. 2011). According to the National Water Committee report “Water resources of Mongolia”, hydro-geologists define four physical-geographical zones, namely Khangai-Khenti mountain region, Altai mountain region, Mongolian Dornod region and Gobi region. There are 133 groundwater basins identified through the hydrological research (NWC, n.l).

¹ Please refer to the research data base on “Limnological catalog of Mongolian lakes” (Prof. Miguel Alonso) for further information on http://oslo.geodata.es/mongolian_lakes/index.php (Accessed 2nd of January 2014)

3 Political System

In 1992, the coalition government ratified the new constitution. On the basis of the contemporary governing structure, this constitution brought several changes into Mongolian politics including a parliamentary democratic system (*Article 20*), separation of powers between Executive, Judicial and Legislature layers (Chapter III), and self-governing powers vested to local government units into three tiers as administrative bodies (*Article 59*) (*Parliament of Mongolia, 1992*). The political governance system in the 1992 constitution is identified as a dual governance system which facilitates lower administrative units to organize their functionalities and responsibilities with supervision by the central government (*Horlemann and Dombrowsky 2011*). Constitutionally, this process is powered by the principle of subsidiarity, which allows direct solutions to local scale issues where they can be easily resolved at the administrative level (*Article 62; Parliament of Mongolia, 1992*).

As Article 57 is ratified, Mongolia is divided into 21 main administrative units at the provincial level called Aimag along with a special system in the capital city, Ulaanbaatar (*Parliament of Mongolia, 1992*). The Aimags were then further divided into Soum as the local level government and administrative body. There are 340 Soums, which are even further subdivided into Bhags as the lowest administrative level (village level). There are 1592 Bhags in Mongolia. In Ulaanbaatar, there are nine districts called Duregs and 152 small administrative units called Khoroos (**Figure 2**) (*National Statistical Office of Mongolia, 2013*).

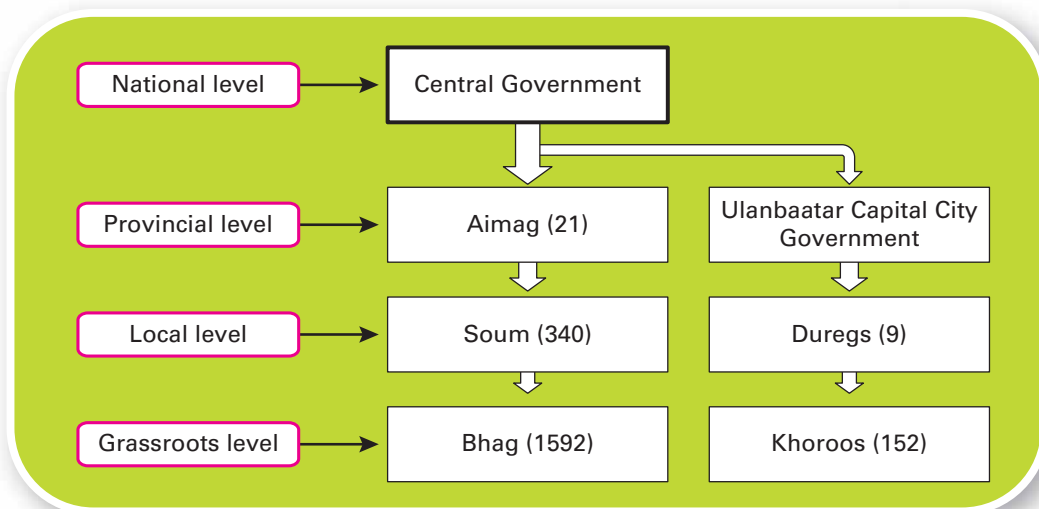


Figure 2: Governance System in Mongolia

4

Theoretical Framework:

“who produces scale, how, and for what purposes?”

The theoretical discussion about scale is determined by recent attention to socio-economic transformation and new dimensions about the environmental phenomena. Clark C Gibson et al (2000) define scale as the spatial, temporal, quantitative, or analytical dimensions that are used to measure and study any phenomenon (Gibson et al, 2000). However, critical political geographers explore further about the construction and application of scale in different contexts, including natural resource management. Scales are identified as socially constructed and politically mobilized (Marston, 2000; Budds and Hinojosa-Valencia, 2012). As a pioneer of this debate, Neil Smith (1992) theorizes, **“construction of scale is a social process, [...] scale is produced in and through societal activity which in turn produces and is produced by geographical structures of social interaction”** (Smith, 1992:62).

Stakeholders' involvement in scale (re)configuration is shaped by the process of organizing knowledge, assessments, data interpretation, mapping, decision-making process, agenda setting, framing, policy implementation, institutionalization and lobbying interests (Lebel, 2006). In this research study, scale (re)configuration is identified with these different processes of involvement. Concerning scale (re) configuration and environmental phenomena, the **production of socio-nature and the scaled social spatialities** cannot be detached (McCarthy, 2005). According to Louise Lebel et al., (2005), scalar (re)configuration is a joint process of social and biophysical processes (Lebel et al., 2005). At a glance, the choice of scale in a scientific scaling of assessments is observed based on biophysical diagnostics; they are defined in a political context by specific stakeholder interests (Lebel, 2006). Accordingly, a scale is a production of social interactions and power struggles (Smith, 1992; Görg, 2007).

What would be the appropriate scale to manage natural resources is one of the main entry points in natural resources management (Pahl-Wostl, 2007; Termeer et al., 2010). In the IWRM approach, the river basin is submitted as the hydrological scale to manage water resources (Agarwal et al., 2000; Grover and Cruickshank, 2012). In the IWRM literature, furthermore, river basins are articulated as a “natural” and a “rational” unit for the planning and management of water resources on the basis of biophysical characteristics (Warner et al., 2008; Venot et al., 2011). However, defining and demarcating a river basin as a scale of water resource management and further process in scale (re) configuration such as ratifying legislation and policy documents and setting up the institutional framework is not a neutral process, nor does it only consist of biophysical characteristics (Mollinga, 2008; Saravanan et. al, 2008; Molle, 2009). A river basin consists of a multiplex of several biophysical, socioeconomic and political-administrative scales.

a) Manifestation and delimitation: who produces scale?

Within this socio-political construction, it is important to identify who the stakeholders are that are strategically involved in the scale (re) configuration across spatial, temporal and jurisdictional levels (*Label 2006*). According to McCarthy (*2005*), the analysis of this particular inquiry needs to go beyond the state and capital centric perspective. Furthermore, environmentalist intervention, behaviour non-government organization and social movements in scale (re) configuration are to be examined in the context of environmental governance (*McCarthy, 2005*). Various stakeholders are involved in scale configuration such as the epistemic community, political parties, donor agencies, international organizations, civil organizations and local government bodies and communities in water resource management (*Miranda et al., 2011*). Thus, opening the black box of power in water resource management is a vital factor to recognize whether each stakeholder's engagement in the scale (re)configuration process is equal or not.

b) Scale as a constituency of power relations: how are scales (re) configured?

In the critical geographic literature, power relations are identified as a decisive factor in scale (re) configuration (*Swyngedouw 2004a; Brenner, 2001; Marston, 2000*). In the context of water resource management, power relations could appear through policies and politics at different levels, such as international, national, regional and local. Erik Swyngedouw (*1997, 2004a and 2004b*) analyzes scale configuration as a result of the continuous moment of socio-spatial power relations (*Swyngedouw 2004a; Swyngedouw 2004b*). Thus, analyzing the power relation and the different locus of stakeholders would assist to trace the alliances or estrangement in water resource management.

**c) Scale as a terrain of interests:
for what purposes are scales (re) configured?**

Scale (re) configuration in a particular context stands for the spatial modality of problem solving (*McCann, 2003*). When a certain scale does not address the issues that it should solve, the shifting of a scale can be observed in policy-making processes. The application of river basins as a hydro-political scale is aimed to address complex issues of water resource utilization and ecological conditions. Thus, many countries are restructuring their national and international water management policies with the IWRM principles. In this policy adaptation, river basins are applied to design water resource management (*Moss and Newig, 2010*). According to the technical interpretation in the IWRM, the river basin functions as the terrain of stakeholder integration through the process of a participatory problem solving mechanism (*Agarwal et al., 2000; Jaspers, 2003*). However, some scholars critically question this proposition due to the complexities and dynamics of power under real world conditions (*Saravanan et al., 2008; Mollinga et al., 2007*). V.S. Saravanan et al. (2008) argue that the positions of stakeholders in the water management process are configured by the intrinsic interests of water usage (Saravanan et al., 2008). This may be defined by historical reasoning, economic factors or culture or political manifestation. Some interests are articulated more than others. Peter P. Mollinga et al. (2007) emphasize that particular interests have considerably more political power than others who are thus able to manipulate the water management or governance process in their favor. The functionality of each stakeholder depends on their position and interests that correlate with the social relation of power, not only in the water realm but also in the general social system (*Mollinga et al., 2007*). Thus, the river basin or water basin is a site where stakeholders contest and negotiate based on their competing interests (*Houdret et al., 2013; Moss and Newig, 2010*). John Dore and Louis Lebel (2010) analyze scales and level as the terrain of competition, conflict and cooperation of stakeholders based on their contemporary and future interest and impacts on water resource management (*Dore and Lebel, 2010*).

The aim of this theoretical discussion is to create an analytical framework to study the different way of stakeholder involvement in scale (re)configuration of water resource management in Mongolia. This framework may facilitate identifying the governance and management of problems critically.

5 Materials and Methods

The embedded design in the mixed methods research approach (*Creswell and Clark, 2007; Hesse-Biber, 2010*) is applied. Qualitative and quantitative research approaches were applied as the data gathering method in the field research. Qualitative methods in the data collection process included primary and secondary data, semi-structured interviews, focus group discussions and community observation. Expert and official levels interviews (N=49) have been conducted in several government institutes, research foundations, international organizations, donor agencies, political parties, civil organizations and universities. Moreover, the focus group discussions (N=3) and individual interviews with local people (N=20) were conducted at community level (**Table 1**). The interview and focus group discussion questions were slightly altered based on locational and positional factors, but always fixed with the main thematic area of the research. Furthermore, analyses of legal documents, policy papers and technical reports were other methods. Most of this study is enriched by the field research data analyses within the Environmental Flow Assessment (EFA)² in Orkhon River from July 2012 to January 2104. Technical analyses of stream flow changes in the Orkhon River (**Picture 1**) and its tributaries, as well as water quality and quantity were examined through physical and chemical experiments. These quantitative analyses were only applied in this research paper as supportive data to the qualitative analyses. As this research based on a critical geo-



political question of scales in water resource management, the gathered data has been analyzed by applying the interpretative approach within the embedded design of the mixed methods research.

Picture 1: Orkhon River Basin

² The Environmental Flow Assessment assesses the sustainable use of rivers by measuring the adequate flow requirements of a river to maintain ecological condition and the ability to continue the socioeconomic demands (O'Keeffe, 2012).

Table 1. Interview partners in the field study (2012–2014)

Category	Name of institution / agency / Soum (number of interviews in brackets)
Government	
	Ministry of Environment and Green Development – MNEGD (1)
	• Division of Cadastre on Forest Conservation and Reforestation Area (1)
	• Division of River Basin Management (1)
	• Division of Water Resources (1)
	National Water Authority (Before terminating) (2)
	National Water Committee (1)
	Institute of Geo-ecology (1)
	National Agency for Metrology and Environment Monitoring (1)
	The Government Implementing Agency of Mongolia (1)
	Orkhon River Basin Council Secretariat (1)
	Tuul River Basin Council Secretariat (1)
	General Agency for Specialized Inspection (GASI) (1)
	Selenge Aimag Office
	• Sustainable Living Project (1)
	• Forest Section (1)
	Political representatives in Soum and Bhag level governments (6)
	• Governor and Deputy Governor in Bat-Olziy Soum
	• Deputy Governor and the citizen representative Olziyt Soum
	• Deputy governor of Orkhon-Tuul Soum 3rd Bhag 3rd Bhag
	• Governor of Orkhon Soum
	Water Security Officers at Soum level (3)
	• Olziyt Soum
	• Kharkhorin Soum
	• Orkhon Soum
	Environmental Officers (2)
	• Shammeeer Soum
	• Kharkhorin Soum
	• Orkhon Soum
	Orkhon River Basin Natural Park Research Office (1)
	Soum level hospitals – Luun Soum (1)

Political Party
Civil Will Green Party – CWGP (1)
International Organization / Donor agency
United Nation Development Program (UNDP) – Mongolian branch (1)
World Health Organization – Mongolian branch (1)
German Development Cooperation (GIZ) (3)
Royal Haskoning Enhancing Society (1)
Dutch-Mongolian IWRM Project (2)
World Wild Fund (2)
UNESCO-IHP Paris Headquarters (2)
MoMo Project (3)
WATERCOPE Project-ICDD (1)
Research Institute /University
The National University of Mongolia – NUM (2)
Mongolia Research Centre for Economic and Financial Policy – MRCEFP (1)
Civil organization / local consultant
Water Forum in Mongolia (1)
Eco-Trade consultant agency (1)
Focus group discussion (3) / Individual interviews with locals (20)
<ul style="list-style-type: none"> • Olziyt Soum • Luun Soum • Orkhon-Tuul Soum 3rd Bhag • Erdenet Soum • Kharkhorin Soum • Bat-Olziy Soum • Orkhon Soum • Shammeer Soum • Tsenkher Soum

6 Results and Discussion

6.1 River basin as a scale of assessment

The first blueprint of a river basin oriented assessment and management plan was initiated from 1971 to 1975. It was called the “General scheme of integrated use and conservation of water resources of the People’s Republic of Mongolia” with the Ministry of Water Affairs and the Institute of Water Expedition and Research (*Batsukh et al., 2008*). Even though the main scale for water resource management was the political-administrative system at the national and local level in Socialist Mongolia, the General Scheme was conducted with mainly Orkhon, Kherlen, and Selenge river basins with a focus on tributaries of the Kherlen River (1980–1981), Ikh Nuur Hollow (depression of Great Lakes) (1983–1984), and small rivers in the Gobi region (1987), as well as the Onon, Ulz and Khalkh rivers (1989). The river assessment and management plan particularly focused on preserving water resources for socioeconomic sectors (*Batsukh et al., 2008*). Among the driven interests of this General Scheme were water distribution and allocation for the mining industry as significant factors (*Interview, National Water Authority, 2012.08.08 and 2012.08.16.*). Though there was limited space for plurality in the political society, the impact or engagement of some specific external and internal stakeholders can be noted. For example, the Central Committee of the Mongolian People’s Revolutionary Party (MPRP) was the most decisive political body in governance (*Radchenko, 2008*). Policies and planning were designed based on the party agenda and its political economic interests (*Landman et al., 2005; Basandorj and Singh, 2009*). As the key external stakeholders before the 1990s, different engagements of the Union of Soviet Socialist Republics (USSR) can be observed in water resource management. For example, the presence of USSR experts in the General Scheme and other river basin assessments is accentuated (*Interview and group discussion, National Water Authority, 2012.08.08 and 2012.08.31*).

6.2 Defining and demarcating water basins in legal and policy documentations

The recent development of water legislation and policies has directed Mongolian water resource management toward a particular hydrological scale. The Water Law in 2004, as a major legislative amendment in the water sector, has been ratified with the water basin as the model hydrological unit for water governance and management in Mongolia and the water basin council (WBC) as the authority at the level of local water management (*Article 19.1*) (*The Parliament of Mongolia, 2004*). However, the adoption of the Water Law of 2012 advanced some main components and re-modifications of subjects within the law, including: comprehensively acknowledging the IWRM as the model for future water resource management (*Article 4*) and water basins are identified as the optimal scale for water resource management based on the IWRM principles (*Article 4.7*) (*the Parliament of Mongolia, 2012*). In a document dated 10th November 2009, the Water Authority in collaboration with Strengthening IWRM in Mongolia, a project funded by the Dutch government, defined 29 water basins in Mongolia primarily on the basis of hydrological data and socioeconomic considerations (*WA, 2009*). This report document was accredited by the Ministry of Nature, Environment and Tourism (*MNET*)³ in 2009 as the 332nd policy order on “River catchment areas of Mongolia” (*Altansukh, 2012*). Orkhon and Tuul rivers in Orkhon-Selenge River basin (**Picture 2**) are gained more focus within the project “Strengthening IWRM in Mongolia” and is upgraded as a management body within the Orkhon River Basin Administration system (*Water Forum of Mongolia, 2013*). **Figure 3** illustrates the 29 water basins and Aimag boundaries.



Administratively, a water basin should consist of two entities, a water basin council (WBC) as the governance entity and a water basin organization (WBO) as a professional and technical authority of water management.

Picture 2: The confluence of the Orkhon River and Tuul River at the Orkhon-Tuul Soum

³ Consequently with the new ministerial changes from September 2012, the Ministry of Nature, Environment and Tourism (MNET) has been replaced with the Ministry of Environment and Green Development (MNEGD). The Civil Will Green Party leader, S. Oyun, was appointed as the Minister of Nature, Environment and Green Development (MNEGD).

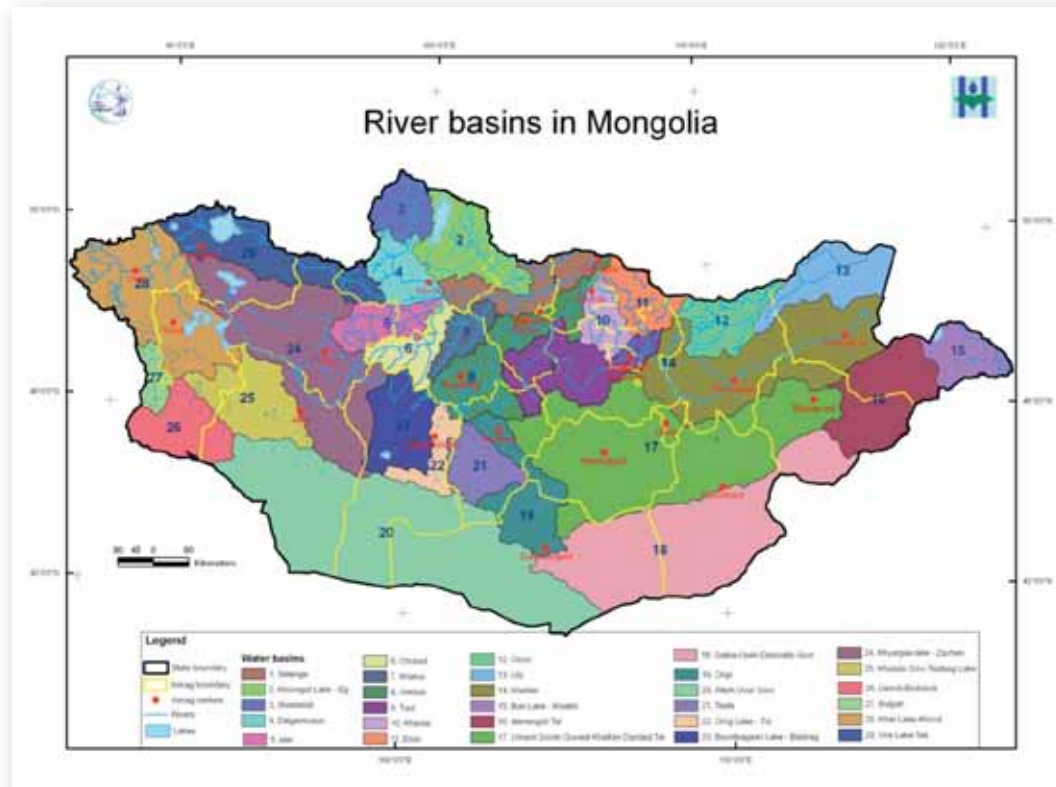


Figure 3. Water basins/River basins in Mongolia
 (Source: Integrated Water Management National Assessment Report, volume 1, Water Authority, 2012)

The research recommendations, assessments and estimations of the epistemic community (individual and institutions) have a relatively considerable influence in the process of defining and demarcating water basins. Particularly the use of the term “water basin” instead of river basin in legal documentation has been articulated by these experts. On the basis of the Southern Mongolian hydrological conditions, completely dependent on groundwater resources, some experts argue that the use of water basin in legal documents would allow expansion to the institutionalization process in regions that fully depend on groundwater sources (*Interview, National Water Authority, 2012.08.16 and UNDP, 2012.10.01*).

6.3 Geopolitical dynamics in political parties: manifestation and mobilization

Political parties have been a decisive factor in the scale (re)configuration process in water governance and management in Mongolia. Mongolian political parties are mobilizing public or individual opinions into a certain political agenda based on party manifestations. Hence, the role of political parties can be observed through party manifestations, election campaigns and also governance policies. The environmental protection and the application of natural resources into socioeconomic development could be examined as anchors in political a party's vision.

The importance of water and sanitation and the protection of riparian areas from harmful mining activities were some themes related to environmental governance that political parties focused on in the last parliament election campaigns in 2012. Furthermore, the interviews and the field research findings illustrate that the water issue was one priority for local people. The Tuul River Basin, the Orkhon River Basin, and the Gobi area water issues are highlighted in politics. In this situation, the theme of water converts to "politics" rather than "policies" (*Interview, CWGP, 2012.09.26 and UNDP in Mongolia, 2012.10.01*). The recent changes in the political system in Mongolia are another significant political dynamic in environmental governance. Among the dynamics of political parties, the Civil Will Green Party (CWGP) demonstrates more concern over environmental protection in the party's manifestation as one coalition partner in the government, (*Interview, CWGP, 2012.09.26*). The Ministry of Nature, Environment and Green Development (MNEGD) is headed by the CWGP in the new government. The impact of the global green development discourse in Mongolian governance strategies can be observed through the renaming of the Ministry with green development. Also, some popular opinion about politics says that the impact of the green party is especially visible in the government, for instance the prioritization of green policies.

Concerning the water sector, the new government policy demonstrates priority over river headwaters and protected zones of water reservoirs within a comprehensive water management policy (*The coalition government platform, 2012*). Under the new institutional changes, water management is one priority of the MNEDG with reforestation and pollution eradication (*Byambadorj, October 5th, 2012 UBPOST*). As a thematic area of policy implementation under the new manifestation of the CWGP, three divisions have been established for water related areas in the Department of Policy Implementation, namely the Division of Water Resources, the Division of Water Monitoring, and the Division of River Basin Management. Significantly, the Water Authority has been terminated. The power of General Agency for Specialized Inspection (GASI) regarding the inspection of water resource utilization has been shifted to the Division of Forest, Water

and Protected Areas in the Department of Environment and Natural Resources as well as the WBCs and WBOs under the new institutional changes (*Interview, MNEGD 2012.09.28*). With these new institutional changes, most of the power and responsibility concerning natural resource management were brought into the ministry.

6.4 Institutionalization of water basin management

The Ministry of Nature, Environment and Green Development (MNEGD) has more interest in advancing the new scale for water resource management based on water basins (*Interview, CWGP 2012.09.26; Interview, MNEGD, 2012.09.28*). For example, the establishment of a special division for river basin management and more policy drafting on water basin management can be examined. The projected institutionalization of water basin management was to establish 7 water basins in 2012. However, 19 WBCs and WBOs wanted to be instituted at end of 2013 according to the new ministerial plan. 2014 is the target year to establish WBCs and WBOs in all 29 water basins (*Division of River Basin Management in the MNEGD*). However, these aims are challenged by a lack of internal financial capacities, contesting power and responsibilities between cross-scale institutions (will be further discussed in Section 6.6), and the other competing interests of stakeholders. The institutional changes and political dynamics led to a shift of power relations, new roles of stakeholders and conflicts of interest with new policy formation and implementation in the IWRM in Mongolia. In the process of institutionalization of water basins, the engagements of different external and internal stakeholders are more significant in Mongolia. The IWRM as the international application for the local level water resource management, the international organizations and donor agencies play a considerable role in national-policy implementation in water resource management. They engage through consultations, policy advising and conducting and facilitating research and financial aid. The lack of internal funds for facilitating WBCs may cause particular dependence on foreign financial sources. Mongolia is a highly donor-dependent country (*Landman et al., 2005*). WBCs are designed to be financed by projects, donations and aid (7.4 in the policy document, unpublished, MNEGD). Thus, the connectivity to donor agencies and international organizations may be a vital factor in the functioning of the river basin management system in Mongolia. **Table 2** illustrates some key engagements of international organizations and donor agencies in the institutionalization process of IWRM in Mongolia.

The World Bank has planned to start a project to improve groundwater resources in the Gobi region with AusAID funding. Under this World Bank- AusAID funding project, it is planned to establish one WBC and three WBOs in the three Aimags of Dornogovi, Omnigovi and Dundgovi (*World Bank, 2012*). This engagement can be theorized as a new alliance among stakeholders in favoring the establishment of a certain hydro-scale in water resource management.

Table 2. Some key engagements of international organizations and donor agencies in the IWRM implementations and river basin managements (Source: Authors' own compilation)

World Wildlife Fund (WWF): Funds from WWF Netherlands
1. National workshop on IWRM (2003)
2. <i>Khar Lake – Khovd River and Buyant River</i> basin project (from 2008)
3. Onon River basin project (from 2011)
IWRM MoMo project
<i>Kharaa</i> River basin project (2006–2013)
Dutch-Mongolian IWRM Project, Royal Haskoning Consultancy Agency and Deltares Research Institute
1. Project 'Strengthening Integrated Water Resources Management in Mongolia' (2007–2012)
2. <i>Tuul</i> River basin, <i>Orkhon</i> river basin program (from 2008)
World Bank – AusAID
Gobi Region Water Basin Council (expected from 2013) one water basin council and three water basin authorities in the three <i>Aimags of Dornogovi, Omnigovi and Dundgovi</i> ¹
WATERCOPE project
Conducts research and testing of improved water management practices in the transboundary Central Asian Altay-Dzungarian Basin (China-Mongolia, from 2012 ²)
UNDP
1. Several policy studies and direct engagement in water resources management in Mongolia
2. Project based on "Adaptation Fund" facilitating the MNEGD for water basin management system – the Altai Mountain/Great Lakes Basin (Khuvsgul Lake) and the Eastern Steppe basin areas
¹ Refers to the Project Design Document for AusAID Funding to Strengthen Groundwater Management in Southern Mongolia (February 10, 2012).
² Refers to WATERCOPE-ICDD program 2013.

There are several non-government organizations (NGOs) and community based organizations (CBOs) in the water sector lobbying for water and sanitation issues in the policy making process (*Livingstone et al., 2009*) or participating in the policy implementation process in water basin management system as stakeholders. Neoliberal economic changes and liberal values after the 1990s afforded space to establish civil society organizations (*Horlemann and Dombrowsky, 2011*). In the basin council system, civil society organizations are engaged as representatives of civil society, for example “Ariun Suwraga” in the Orkhon Basin Council (*Orkhon Basin Council A- 456 report, 2011*). In the WWF supported Khar Lake/Khovd River and Buyant River basin management, the participation of citizen representatives and local community groups could be observed in the establishment of WBC and WBO in the Bayan-Olgii, Khovd, and Uvs provinces (*WWF, 2008; WWF, 2011*).

The civil society engagement in water basin management can be observed as a lobby or surveillance group (*Horlemann et al., 2011*). Some are linked with international civil society networks or function as local branches. At the national level, NGOs are engaged in the policy making process as well as the lobbying process. The water basin management system, water and sanitation issues, urban water supply, and the IWRM application are the main scope of the NGOs. They maintain connections with government, international organizations, donor agencies, media and communities. Some national level NGOs in the water sector could mobilize social views through their community based programs, media and lobbying programs. The Tuul Goloo Hamgaalay is one environmental civil society organization which advocates for the protection of the Tuul River basin. Ongi River Movement, Gobi Soil NGO, Oyu Tolgoi Watch NGO, and Citizen Alliance Centre can be considered as powerful civil society organizations which stand for protection of river and basin areas from gold mining activities.

6.5 Spatial mobility: mining industries in water management

In Mongolia, the mining industries are one of the powerful stakeholders in politics and policies. The multinational mining companies and their locally-owned franchised companies can be identified as key stakeholders within the mining conglomerate. The mining industry has substantial lobbying power in the policy making process and research and development (R&D) where certain expert reviews may be moderated for their interests (*Interview, Water Authority, 2012.08.08, GASI, 2012.09.28 and UNDP, 2012.10.01*). Also, some pro-mining lobby groups are funded by these companies to promote their ideas in the public arena.

The mining industries have shown interests in a particular spatial mobility for water resource management. The geopolitical and political economic importance of the South Gobi region in Mongolia mingles with mineral resources. The Oyu Tolgoi Limited Liability Company⁴ plans to launch an Undai River diversion project to install a pit mine and waste rock dump. Due to this river diversion, the Bor-Ovoo spring, which is used by local communities, is intended to be closed (*Factsheet Undai River Diversion-ESIA, 2012*). However, civil society organizations have expressed their disagreement with the Undai River diversion project (*Mine Watch Mongolia, 2013*). Members of powerful civil society organizations such as Gobi Soil NGO, Oyu Tolgoi Watch NGO, Citizen Alliance Center, Steps without Borders, Centre for Human Rights and Development, Federation of Trade Unions, and Eco-Asia Institute are lobbying the issue of the proposed Undai River diversion.

With a focus on rich mining resources in the South Gobi region, the demanding challenge is a shortage of water for industrial production process. Based on this competing demand, there are two proposed water diversion projects to South Gobi, namely the Orkhon-Gobi and Kherlen-Gobi water transaction projects. The World Bank supported project, called "Mining Infrastructure Investment Support Project (MINIS) for Mongolia" is the framework to launch these water diversion projects (*World Bank, 2014*). The proposed Orkhon-Gobi water diversion project is illustrated in **Figure 4**. The deliberate engagement of stakeholders for common and shared interests (Dore and Lebel, 2010) could be observed among donor agencies and mining industries in Mongolia in water resource management. Based on the hydro-engineering feasibility studies and water demand of multinational mining companies in the Gobi area, the water diversion project is possible to be launched. The government interest on this project is powerfully lobbied and supported by mainstream construction engineers and mining conglomerates

⁴ The Oyu Tolgoi mining project is a recent and large investment project which will contribute thirty times in Mongolian GDP (Lenz, 2012). It is one of the biggest copper-gold mining projects in Southern Mongolia.

(Interview, NUM, 2014.2.20). Concerning the Orkhon-Gobi, The proposed projects will construct a dam in the middle reach of the Orkhon River and divert water through a pipeline to the South Gobi region. The tendency to scale (re) configuration of water management toward a new hydro-political scale could cause the emergence of fragmented policy implementation, policy gaps or clash of interests which form disproportionate opportunities among stakeholders in accessing water resources. According to Olivier Graefe (2011), this shift can be theorized as water resource management beyond a watershed towards a problem-shed. There are internal and external pressures or indications about this mega and multi-purpose dam project. Firstly, the research findings from EFA are analyzed.

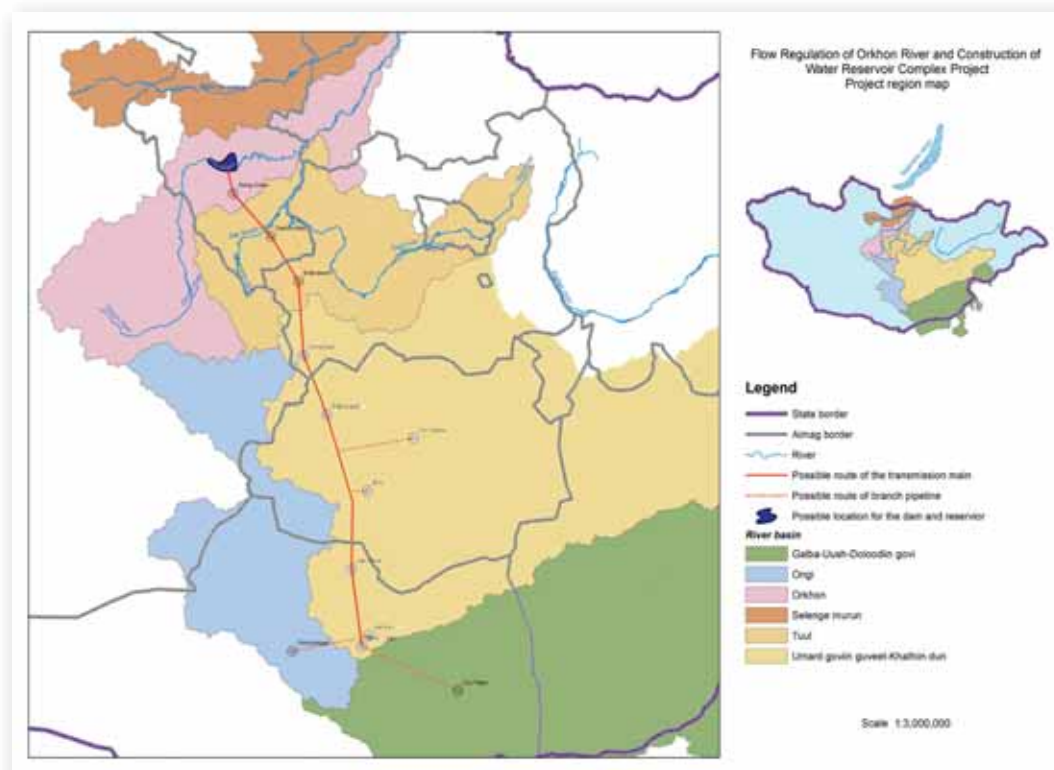


Figure 4: The proposed Orkhon-Gobi water diversion project
 Source:- Terms of Reference for Environmental and Social Impact Assessment on Flow Regulation of Orkhon River and Construction of Water Reservoir Complex Project (With permission)

a) Ecological consequences

The research findings of “Environmental Flow Assessment in Orkhon River (2012–2014) (EFA)” conclude that the river flow is highly vulnerable to extreme climate changes and weather patterns which impact the environmental flow of the river. If the Orkhon River is not able to maintain its environmental flow in the downstream area, the ecological integrity of the downstream ecosystems will be seriously threatened. **Table 3** shows the results of the water quality assessment performed at 18 sites along Orkhon River. According to the Mongolian National Standards (*3rd attachment to the Joint Directive of MNE and the Ministry of Health, No. 143/a/352 of 1997*), the whole main stem had an ecological status between “less polluted” and “polluted”. Especially the upstream of Orkhon River (in Tsenkher Soum, Arkhangai Aimag) demonstrated noticeable water pollution mainly due to mining activities such as untreated waste water discharge into the river flow (**picture 3 and 4**).



Picture 3: Untreated waste water discharge into a tributary of Orkhon River from a mining site in Tsenkher Soum



Picture 4: Contaminated water mixing into Orkhon River in Tsenkher Soum (upstream)

Moreover, considerable reduction of river flow could be observed at the Orkhon-Orkhon water monitoring site of the Orkhon River from 1978 to 2008 (Figure 5). This analysis counts the long term variability of environmental flow. This highlights the current vulnerability of the water quality and the limited dilution capacity of the river. Therefore, if the environmental flows of Orkhon River are not preserved, there might be serious ecological repercussions in the downstream areas.

Table 3. Water quality classification of the Orkhon River based on nutrient concentrations.

Sampling site	Km from source	Phosphate mg/L	Nitrate mg/L	Nitrite mg/L	Ammonium mg/L	Average category
Olziyt Teel	source	0.05	10.19	0.01	0.04	Less polluted
Ikh Teel	source	0.05	9.74	0.05	0.08	Polluted
Headwaters	source	0.04	7.97	0.02	0.03	Less polluted
Bat-Olziy	46	0.03	6.20	0.02	0.03	Less polluted
KharBalgas	113	0.04	6.20	0.01	0.03	Less polluted
Orkhon-Tamir	180	0.14	3.99	0.01	0.08	Less polluted
Tamir	183	0.07	7.53	0.02	0.08	Less polluted
Olziyt	223	0.79	7.53	0.01	0.39	Polluted
Shuvuut	408	0.14	0.44	0.01	0.05	Less polluted
Orkhon	414	0.08	7.09	0.05	0.06	Polluted
Orkhon-Khangal	581	0.10	9.74	0.02	0.04	Less polluted
Khangal	583	0.03	9.74	0.02	0.05	Less polluted
Tuul	600	0.32	8.41	0.03	0.20	Polluted
Orkhon-Tuul	604	0.08	4.43	0.06	0.05	Polluted
Khara	751	0.07	4.43	0.05	0.06	Polluted
Eroo	759	0.06	6.64	0.11	0.09	Polluted
Orkhon-Eroo	775	0.08	7.09	0.01	0.08	Less polluted

Cells are colored according to the categories defined by the Mongolian National Standards for Surface Water(3rd attachment to the Joint Directive of MNE and the Ministry of Health, No. 143/a/352 of 1997, accessed from (AATA,2008): Dark green = Very clean, Light green = Clean, Yellow = Less polluted, Orange = Polluted and Red = More polluted. Water sampling and measurements were performed in September 2012, within the framework of the “Environmental Flow Assessment of the Orkhon River” project.

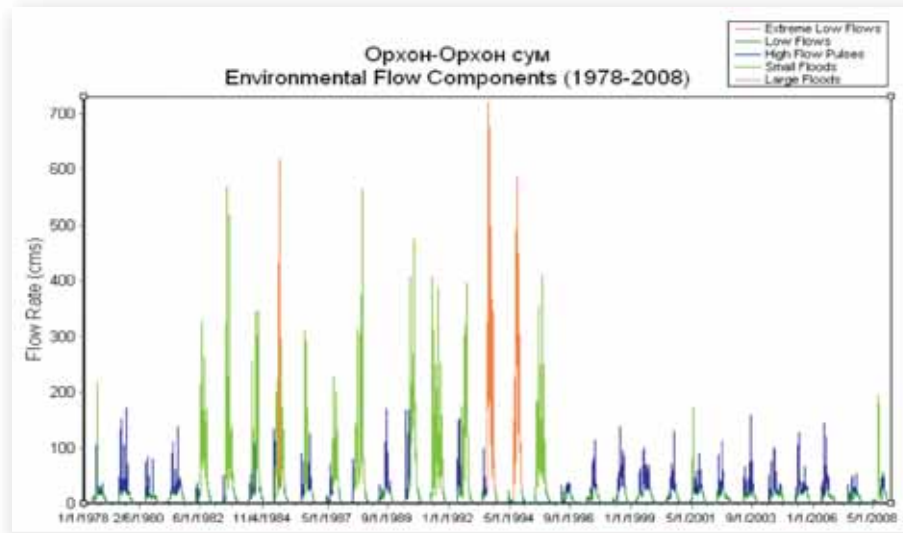


Figure 5. Long term variability of environmental flow components (different colors) at the Orkhon-Orkhon water monitoring site of the Orkhon River. Calculation is based on the daily water level measurement from 1978 to 2008. Source: final report of the “Environmental flow assessment of Orkhon River” project.

b) Social response

The proposed water transaction project in Orkhon-Gobi has been under pressure of rural communities, local governments and environmental lobby groups due to the water allocation issue in moderate climate conditions in the Orkhon-Selenge River Basin⁵ (*group discussion, Kharkhorin Soum 2012.08.16; Olziyt Soum 2012.08.17; Orkhon-Tuul Soum 2012.09.19/20*). Based on the EFA field research, upstream and downstream communities have socioeconomic anxieties about the Orkhon-Gobi water diversion project. **Table 4** coded the main concerns in interviews and focus group discussions (**Picture 5** and **6**). The interviews and group discussions with local representatives (Khural) and local people in Hujret, Bat-Olziy, Kharkhorin, Olziyt, Orkhon, Orkhon-Tuul and Shammeeer Soums demonstrate that water quality has noticeably deteriorated due to the mining plants in headwater areas. The local people use the term “ulaan”, meaning “red”, to explain their experiences with contaminated water in the Orkhon River. Also, river water is one source of drinking water in Olziyt Soum. Therefore, the water quality is a decisive factor. Particularly, herders encounter diseases with their animals and impacts on dairy and meat production. Depleting water quantity is another major apprehension due to the proposed water diversion project. The argument of local communities is supported by their observation of long term declining precipitation in the river basin area.

⁵ Orkhon River joins with Selenge River at the Sukhbaatar City in Mongolia and then crosses the Mongolian- Russian border as one main water source to Baikal Lake in Russia.

Table 4. Local responses concerning the Orkhon-Gobi Project and upstream mining industries
(Source: Authors' own compilation)

Soum	Responses (Coded)					
	Keys ¹					
	A	B	C	D	E	F
Hujret	✓	–	–	–	–	–
Bat-Olziy	✓	–	✓	✓	–	–
Kharkhorin	✓	✓	✓	–	–	–
Olziyt	✓	✓	–	✓	✓	–
Orkhon	✓	✓	✓	✓	–	–
Orkhon-Tuul	✓	✓	✓	✓	✓	✓
Shammeer	✓	✓	✓	✓	✓	✓

¹ Keys: A). Water quality deteriorates; B) Water quantity dropping; C). Impacts on livestock; D). Impact on farming; F). Impact water springs and wells; G). Flooding will be controlled



Picture 5: Group discussion with group of local people in Olziyt Soum



Picture 6: Two children explain their experiences by mapping water pollution in Orkhon River, Kharkhorin Soum

The farmers in Hujret, Olziyt and Orkhon-Tuul describe that the highly fluctuated river flow and low precipitation in the last 10 years influences negatively their agricultural production (**Picture 7** and **8**). The local communities and political representative from Olziyt, Orkhon, Orkhon-Tuul and Shammeeer Soums which are located in the downstream area from the proposed water diversion project assume that the highly fluctuating water quantity and vulnerability in relatively low river flow would not be enough to divert water in large amounts to the South Gobi region. Particularly, the impact on spring and water wells and controlling flooding (reducing supply of organic sediments) are other impacts that have local communities worried. Some civil society organizations lobby these local community concerns and ecological issues with governments. However, there is a lacuna between national or Aimag level policy-makers and local communities at Soum or Bhag level in consideration of their demands and experiences in water resource management. An active **policy-social dialogue** where local communities and policy-makers can engage would be a progressive approach to establish an inclusive grassroots water management system.



Picture 7: Livestock farmers in upstream of Orkhon River basin in Hujret Soum



Picture 8: Vegetable farmers at riparian areas of Orkhon River basin in Orkhon-Tuul Soum

c) External pressure: Russian concern over the project

The environmental issues correspond beyond or across the territorially bounded political-administrative scales (*Meadowcroft, 2002*). The demands, interests and concerns are to be counted even in national level policy implementations. Considering Orkhon-Selenge River as a transboundary river and key water source to the Baikal Lake, the world's largest fresh water lake, the Ministry of Natural Resources and Ecology in Russia has requested reconsidering the proposed Orkhon-Gobi water diversion project. Officially, the ministry sent a letter in 2013 to the World Bank to halt the funding and consultation for the project due to the ecological impact on Baikal Lake. The mutual and shared decision and depth and impartial environmental impact assessment are urged by the Russian ministry. According to their argument, the control of river flow and sedimentation would destroy the natural ecosystem of the Orkhon-Selenge River basin and Baikal Lake (*River without Boundaries, 2013*). This geopolitical pressure on the Orkhon-Gobi water diversion project would have a long term impact on Mongolian-Russia relationships. As the upstream country, Mongolia has a mutual responsibility to protect Orkhon-Selenge River Basin under the transboundary agreement between Mongolia and Russia, first enacted in 1974 and expanded in 1995 with responsibilities for a larger ecosystem to protect the Orkhon-Selenge River Basin (*Mun et al., 2008*).

The analysis of power dynamics in water resource management may allow visualization of the strategic movement of stakeholders in scale (re) configuration efforts. **Table 5** illustrates these key engagements of identified stakeholders (in the plural meaning), mainly in the process of scale (re)configuration in the possible stages of water resource management in Mongolia.

Table 5. Key engagements of identified stakeholders in the process of scale (re)configuration in the IWRM
(Source: Authors' own compilation)

Stakeholders¹ Engagement
Political Parties
<ul style="list-style-type: none"> • Mobilize and configure political ideologies • Geopolitical dynamics through the party manifesto • Influence in policy implementation and decision making (in and out government)
International organizations and donor agencies
(intergovernmental organizations, international collectives of different stakeholders and country-oriented funding programs)
<ul style="list-style-type: none"> • Design and manipulate the criteria, parameters and tools of the IWRM • Facilitating the implementation of the IWRM • Support for post-surveillance
Civil society organizations
<ul style="list-style-type: none"> • Impact in policy making or implementation • Mobilize individual interests • Lobbying the environmental issues
Epistemic community
<ul style="list-style-type: none"> • Research, assessments, recommendations • Policy framing • Agenda setting in the IWRM
Economic stakeholders / Conglomerates
<ul style="list-style-type: none"> • Lobbying for economic interests • Shaping and altering of environmental policies • Influences in policy agenda setting at international and national levels
<p>¹ The plural meaning of stakeholders may have imbalanced representation or under representation of the specific individual characteristics of stakeholders.</p>

6.6 Challenges in management: oscillation between scales

In terms of accessibility, manipulation of power and responsibilities, stakeholders have dissimilar preferences between hydrological scale and political-administrative scale in water resource management (Dore and Lebel, 2010). Responsibilities of water resource management in Mongolia are traditionally shared and operated among institutions, and franchised authorities at different levels (national, provincial, and local) in political-administrative scale (Basandorj and Singh, 2009). When observing the contemporary trends in Mongolia, the intersection of political-administrative scale and hydrological scale in water resource management may produce coalescence or incompatibility of powers and responsibilities of institutions in the political-administrative and water basin system. In terms of accountability, financing and reporting in water resource management, these projected intersections of governance institutions in two scales, political-administrative and hydrological, are illustrated in **Figure 6**. As the Water Law of 2012 mentioned, governors in Aimags, the capital city and Soums, Khoroos (districts), and Bhags as well as citizen representatives (Khurals) at each local government level will exercise the power to consider plans and programs proposed by WBCs (Article 11.1.2, Water Law 2012). Also, governors of Soums and Khoroos have been given the power to grant water utilization licenses in the region and the power to terminate industries that maltreat water sources (Article 13.1.1, 13.1.5 and 25.4, Water Law 2012). The new Budget Law of 2011 may have considerable effects on policy implementation competences at the local governance level.

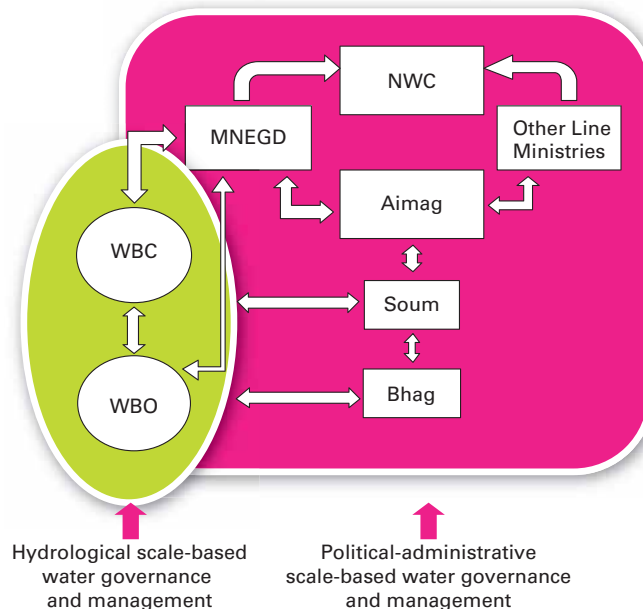


Figure 6. Functionalities of water resource management across scales and among different governance bodies (Source: Authors' own compilation)

The new changes are intended to empower the Soums and Bhags as well as Aimags. New water resource management is sensitive to the decentralization and devolution process in Mongolia. If the Constitution of Mongolia mentions the self-governing power of local government institutions, especially at the Soum and Bhag levels, there was little self-governing power due to lack of financial power, human and technical capacities and power and responsibilities (*Interview, Water Forum in Mongolia, 2012.10.02*). According to the new budget law of 2011, the local government decision-making and budgeting process will be stimulated. Moreover, the competence for planning, management and citizen participation in the budgeting process should be increased. In terms of financial decentralization, 60% of the General Local Development Fund will go to self-planning for local development at the Soum levels (*Lkhagvadorj, 2012 and Interview, MRCEFP 2012.09.10*). However, a UNDP report (2013) questions less power toward grass roots level local governance, Bhag and Khoroo. Furthermore, it could lead to the emergence of a dominant elite class in the civic engagement process by omitting clear rules on inclusive citizen participation in the budgeting or policy-making process (*Davaadulam, 2008; Davaadulam, 2013*).

Productive and sustainable water resource management would respond with an active civic engagement in water resource management. For that, the spatially large scale water basin such as the Orkhon, Selenge, Kherlen or the Tuul rivers would not positively allow active and voluntary participation of local communities. The continued participation of civil organizations or local representatives for volunteer engagement would be a provisional factor in existing WBCs. For instance, civil society engagement in Khar Lake/Khovd River and Buyant River basin management has already malfunctioned (*Interview, NUM, 2012.09.08*). Therefore, a combination of tributary-based water management units rather than a WBC and a WBO, would be productive as a new scale to empower civic engagement at local level (*Interview, Water Authority 2012.08.16*). This idea conceptualizes a multilayer model to manage water resources. The interview with citizen representatives reflected about a tributary based management system to actively engage in water resource management at a proximate local level (*Interview, Olziyt Soum 2012.09.18 and Bhag 3 in Orkhon-Tuul Soum 2012.09.19*) (**Picture 9** and **10**). Otherwise, these management bodies may be converted into a central government-oriented or Aimag-based governance and management unit (*Interview, Water Authority, 2012.09.18*). The active engagement of Soum and Bhag level political bodies may be strengthened by such a sub-basin management system. As previously discussed, the **policy-social dialogue** would be strengthened through a spatial-based and grassroots management body. This new demand on (re) configuration could be counted as a new entry in future policy formulation to pragmatically handle the local and tributary-based ecological, hydrological and socioeconomic issues.



Picture 9: Discussion with local representatives in Olziyt Soum



Picture 10: Discussion with local representatives in Bhag 3 of Orkhon-Tuul Soum

The institutional responsibilities on charging fees for water utilization is another policy area that may merge or contrast with new scale configuration of water management in water basins. In the water resource management process, water pricing is one of the main implementation themes to determine a rational basis for water utilization with respect to managing demands and distribution of water resources among stakeholders with different interests (*Basandorj and Singh, 2009*). There are several institutions which are legally responsible for the collection of water fees. Mainly local governments are responsible for allocating the water pricing and tariff levels in their administrative area. Apart from that, private agencies are able to charge water fees for utilization by residents and industries such as Ulaanbaatar’s Water and Sewage Company (USUG) and Public Utility Service Organizations (PUSOs) operating in the capital city and Aimag centers (*Sigel, 2012*). The stability of a scale in water resource management in Mongolia is being challenged or is altered with these inter-scalar relations of management bodies in political-administrative and hydrological scales.

7 Conclusion

The geopolitical analysis of stakeholder engagement in scale (re) configuration of water resource management in Mongolia could allow us to recognize how stakeholders engage or disengage in water resource management, and what the competing demands for accessing water resource are, with specific attention to the Orkhon River. Each stakeholder has different influence in the process of organizing knowledge, assessments, data interpretation, mapping, decision-making process, agenda setting, framing, policy implementation, institutionalization and lobbying the interests of water resource management in Mongolia. Stakeholder involvement in scale (re)configuration is shaped by the power dynamics constituted by political economic circumstances and sociopolitical systems. Furthermore, demanding and competing interests in access to water resources in Mongolia depends on economic and social necessities. Without compromising each interest with ecological conditions, sustainable water resource management is a challenging factor in Mongolia. The analysis on the proposed Orkhon-Gobi water diversion project reveals that ecological conditions are essential to be considered, as well as local community demands by establishing a **policy-social dialogue** in water resource management. Furthermore, keeping cooperation between Russia within the framework of “Transboundary Water Agreement to Protect Selenge River Basin” is an important factor to protect the shared ecosystem.

Because the main focus of this study is the Orkhon River basin with a general analysis of the Mongolian water governance system, a holistic picture of different stakeholder behavior in water resource management in Mongolia cannot be fully realized. The institutionalization of water basin- oriented water resource management has not yet been completed at country level. Therefore, a comprehensive analysis is a challenge. By considering this research limitation, further studies can be conducted in future to find inclusion and exclusion of stakeholders in scale (re) configuration in water resource management in Mongolia.

References

A–C

- **AATA International In. (2008).** Social and Environmental Impact Assessment. Big Bend Placer Gold Mining Project, Mongolia. Denver, Colorado, USA.
- **Agarwal, A., delos Angeles, M.S., S., Bhatia, R., Chéret, I., Davila-Poblete, S., Falkenmark, M., Gonzalez-Villarreal, F., Jonch-Clausen, T., Ait Kadi, M., Kindler, J., Rees, J., Roberts, P., Rogers, P., Solanes, M., and Wright, A. (2000).** Integrated Water Resources Management. Global Water Partnership/Technical Advisory Committee (GWP/TAC) Background Papers, NO. 4. Global Water Partnership, Stockholm, Sweden.
- **Altansukh, Ochir (2012).** Tuul River and Its Catchment Area Delineation from Satellite Image, *Computational Water, Energy, and Environmental Engineering*, 2012, 1(1). 9–23
- **Basandorj, D and Singh, Satyajit. (2009).** Rural Water Supply and Sanitation in Mongolia. United Nations Development Program UNDP and Government of Mongolia, Ulaanbaatar, Mongolia
- **Batimaa, P., Myagmarjav, B., Batnasan, N., Jadambaa, N., Khishigsuren, P. (2011).** Urban Water Vulnerability to Climate Change in Mongolia, Ministry of Nature, Environment and Tourism, Water Authority Mongolia
- **Batsukh, N., Dorjsuren, D., Batsaikhan, G. (2008).** The Water Resources, Use and Conservation in Mongolia (First national report), National Water Committee, Government of the Netherlands and the Ministry of Nature and Environment
- **Brenner, N. (2001).** The limits to scale? Methodological reflections on scalar structuration. *Progress in Human Geography*, 25(4). 591–614
- **Budds, Jessica and Hinojosa-Valencia, Leonith (2012).** Restructuring and rescaling water governance in mining contexts: the co-production of waterscapes in Peru. *Water Alternatives*, 5(1). 119–137
- **Creswell, J.W. and Clark, V. L. P. (2007).** Designing and Conducting Mixed Methods Research, California, London, New Delhi; Sage Publication

D–E

- **Davaadulam, Tsegmed (2008).** UNDP, Country Presentation: Mongolia History of Decentralization, Presentation in UNCDF and UNICEF in October 2008 in Bangkok – Local Service Delivery for the MDGs.
- **Davaadulam, Tsegmed (2013).** Institutional Analysis: Local Representative Bodies in Mongolia, UNDP Mongolia
- **Dore, John and Lebel, Louis (2010).** Deliberation and Scale in Mekong Region Water Governance, *Environmental Management*. 46. 60–80
- **Ekiert, Grzegorz (2003).** Patterns of postcommunist transfoamtion in central and eastern Europe, in: Ekiert, Grzegorz and Hanson, Stephen E.(Eds.), *Capitalism and Democracy in Central and Eastern Europe: Assessing the Legacy of Communist Rule*, Cambridge University Press, UK. pp. 89–119

G–H

- **Graefe, Olivier (2011).** River basins as new environmental regions? The depoliticization of water management, *Procedia Social and Behavioral Sciences*, 14–27
- **Grothe, Steffen (2009).** Integrated Water Resources Management and Institutional Change in Vietnam and Poland – A Comparative Analysis with Special Consideration of the River Basin Level, Ernst-Moritz-Arndt-Universität Greifswald, Available on dx.doi.org/10.1384/369/34
- **Grover, Velma I. and Cruickshank, Abigal (2012).** A brief interdictio to Integrated Water Resources Management. in: Grover, Velma I. and Krantzberg, Gail (Eds.), *Great Lakes: Lessons in Participatory Governance*, CRC press and Boca Raton: Taylor and Francis Group, pp.167–184
- **Görg, Christoph (2007).** Landscape governance: the “politics of scale” and the “natural” conditions of places, *Geoforum* 38. 954–966
- **Hesse-Biber, S. N. (2010).** Mixed methods research: Merging theory with practice. London: Guilford Press.
- **Horlemann, Lena and Dombrowsky, Ines (2011).** Institutionalising IWRM in developing and transition countries: the case of Mongolia, *Environment Earth Science*. 65(5).1547–1559
- **Horlemann, Lena, Görg, Christoph and Dombrowsky, Ines (2011).** The Institutionalization of IWRM as a Problem of scale- Insight from Mongolia, Helmholtz-Centre for Environmental Research (UFZ) Leipzig, Germany
- **Houdret, A., Dombrowsky, I. and Horlemann, L. (2013).** The institutionalization of River Basin Management as politics of scale–Insights from Mongolia. *Journal of Hydrology*. Available on <http://dx.doi.org/10.1016/j.jhydrol.2013.11.037>
- **Howitt, Richard (2003).** Nests, Webs and Constructs: contested concepts of scale in political geography. In: Agnew, John, Mitchell, Katharyne and Tuathail, Gearóid Ó. (Eds.): *A Companion to Political Geography*, Blackwell Publication, Oxford. pp. 138–157

L

- **Landman, Todd, Larizza, Marco and Mc Evoy, Claire (2005).** State of Democracy in Mongolia: A Desk Study. Human Right Centre, University of Essex, UK
- **Lebel, L. (2006).** The politics of scale in environmental assessment. In: Reid, W. V., Berkes, F., Wilbanks, T.J., Capistrano, D. (Eds.): *Bridging scales and knowledge systems: concepts and applications in ecosystem assessment*. Island Press, New York. pp. 37–57
- **Lebel, L., Garden, P. and Imamura, M. (2005).** The politics of scale, position, and place in the governance of water resources in the Mekong region. *Ecology and Society*. 10(2): 18 [online] Available on www.ecologyandsociety.org/vol10/iss2/art18
- **Lenz, Karl-Friedrich (2012).** Energy from the Mongolian Gobi Desert. California, USA.
- **Livingstone A, Erdenechimeg C and Oyunsuvd, A. (2009).** Needs assessment on institutional capacity for water governance in Mongolia. United Nations Development Program (UNDP) and Government of Mongolia, Ulaanbaatar
- **Lkhagvadorj, A. (2012).** Analysis on Mongolia’s Integrated Budget Law, Swiss Development Cooperation in Mongolia, Ulaanbaatar

M

- **Marston, Sallie A. (2000).** The social construction of scale. *Progress in Human Geography*, 24(2). 219–242
- **Meadowcroft, James (2002).** Politics and scale: some implications for environmental governance, *Landscape and Urban Planning*, 61(2–4). 169–179
- **McCann, E. (2003).** Framing space and time in the city: urban policy and the politics of spatial and temporal scale. *Journal of Urban Affairs*, 25(2). 159–178
- **McCarthy, James (2005).** Scale, Sovereignty, and Strategy in Environmental Governance. *Antipode*, 37 (4). 731–753.
- **Ministry of Nature, Environment and Green Development of Mongolia and Water Authority (2012).** Integrated Water Management National Assessment Report, volume I, Ministry of Nature, Environment and Green Development of Mongolia and Water Authority, Ulaanbaatar
- **Ministry of Nature, Environment and Green Development of Mongolia (2012).** Integrated Water Resources Management, National Assessment Report Volume II, Strengthening Integrated Water Resources Management in Mongolia, Ministry of Nature, Environment and Green Development of Mongolia, Ulaanbaatar
- **Ministry of Nature, Environment and Green Development of Mongolia (2012).** The Orkhon river basin integrated water management plan (Phase 1, 2013–2015; Phase 2, 2016–2021). Ulaanbaatar
- **Miranda L., Hordijk, M., Molina, R. K. T. (2011).** Water Governance Key Approaches: an Analytical Framework Literature Review, Megacities of the Future LiWa Project Peru-Germany.
- **Molle, F. (2009).** River-basin planning and management: The social life of a concept, *Geoforum*. 40. 484–494
- **Mollinga, P. P. (2008).** Water, politics and development: Framing a political sociology of water resources management. *Water Alternatives*. 1(1): 7–23
- **Mollinga, Peter P., Meinzen-Dick, Ruth S. and Merrey, Douglas J. (2007).** Politics, Plurality and Problem sheds: A Strategic Approach for Reform of Agricultural Water Resources Management *Development Policy Review*. 25 (6). 699–719
- **Moss, Timothy, and Newig, Jens (2010).** Multilevel Water Governance and Problems of Scale: Setting the Stage for a Broader Debate, *Environmental Management* 46.1–6
- **Mun, Y., Ko, H., Janchivdorj, L., Gomboev, B., Kang, S. I., Lee, C. H. (2008).** Integrated Water Management Model on the Selenge River Basin: Status Survey and Investigation (Phase I), Seoul, Korea

N–O

- **National Statistical Office of Mongolia (2013).** Mongolian Statistical Year Book 2013. Ulaanbaatar
- **Natsagdorj, L., Batimaa, P., Tumursukh, D., Ulziisaikhan B., Mijiddorj R. (2011).** Assessment of climate change and anthropogenic impacts into hydrological system of Onon, Kherlen and Khalkh River, Mongolia, World Wild Fund (WWF), Ulaanbaatar
- **O’Keeffe J. H. (2012).** Environmental Flow Allocation as a Practical Aspect of IWRM. In Philip J. Boon and Paul J. Raven (Eds.) *River Conservation and Management*, Wiley-Blackwell Publisher. Pp 43–55.
- **Oyu Tolgoi Mining Industry (2012).** Undai River Diversion Fact Sheet, Available on http://ot.mn/sites/default/files/documents/ESIA_Factsheet_Undai_River_Diversion_EN.pdf (Accessed 5th of September 2013)

P–S

- **Pahl-Wostl, Claudia (2007).** Transitions towards adaptive management of water facing climate and global change. *Water Recourse Management*. 21: 49–62
- **Radchenko, Sergey (2008).** “New Documents on Mongolia and the Cold War,” Cold War International History Project Bulletin. no. 16.
- **Saravanan, V.S., McDonald, Geoffrey T. and Mollinga, Peter P. (2008).** Critical Review of Integrated Water Resources Management: Moving Beyond Polarised Discourse, ZEF Working Paper Series 29, 38Center for Development Research. pp. 3–22
- **Shagdar, E. (2007).** Neo-liberal “shock therapy” policy during the Mongolian economic transition. Discussion Paper 0703e. Economic Research Institute for Northeast Asia(ERINA). Niigata, Japan. Pp. 1–15
- **Sigel, Katja (2012).** Urban water supply and sanitation in Mongolia: A description of the political, legal, and institutional framework. UFZ Germany.
- **Smith, Neil (1992).** Contours of a Spatialized Politics: Homeless Vehicles and the Production of Geographical Scale. *Social Text*, 33. 54–81
- **Swyngedouw, E. (2004).** a) Globalization or ‘glocalization’? Networks, territories and rescaling, *Cambridge Review of International Affairs*. 17(1). 25–48
- **Swyngedouw, E. (2004).** b) Scaled geographies—nature, place, and the politics of scale. In: Sheppard E, McMaster R (Eds.) Scale and geographic inquiry: nature, society, and method. Blackwell Publication,, Oxford. pp. 129–153
- **Swyngedouw, E. (1997).** ‘Neither Global nor Local: “Glocalisation” and the Politics of Scale’ in: Cox K. (Eds.) Spaces of Globalization: Reasserting the Power of the Local. Guilford/Longman Publication, New York and London. pp. 137–166

T

- **Tamilina, Larysa and Tamilina, Natalya. “When formal institutions fail in fostering economic growth: the case of post-communist countries.” (2012).** Paper presented at the 24th Annual Conference of the European Association for Evolutionary Political Economy (EAEPE), Krakow (Poland), October 18–21, 2012 Munich Personal RePEc Archive. Available on <http://mpa.ub.uni-muenchen.de/48352/> (Accessed 25th of August 2013)
- **Termeer, C. J. A. M., A. Dewulf and M. van Lieshout (2010).** Disentangling scale approaches in governance research: comparing monocentric, multilevel, and adaptive governance. *Ecology and Society* 15 (4): 29. [online] Available on www.ecologyandsociety.org/vol15/iss4/art29/
- **The coalition government platform (2012).** The policy plan of Government of Mongolian Coalition Government 2012. Available on www.mad-mongolia.com/wp-content/files_mf/governmentplatform20122016.pdf (Accessed 19th of February 2013)
- **Tortell, Philip, Borjigidkhan., Adiyasuren Ts. and Naidansuren, Erdenesaikhan (2008).** Institutional Structure for Environmental Management in Mongola, UNDP and Mongolian Government

U–W

- **United Nations Development Program (UNDP) (2011).** Mongolia Human Development Report 2011. UNDP Mongolia
- **United Nations- World Water Assessment Program (WWAP) (2012).** The United Nations World Water Development Report 4: Managing Water under Uncertainty and Risk. Paris, UNESCO
- **United Nations and Government of Mongolia (2011).** United Nations Development Assistance Framework 2012–2016 Mongolia, United Nation and Government of Mongolia, Ulaanbaatar
- **Venot, Jean-Philippe, Bharati, Luna. and Molle, François (2011).** Beyond water, beyond boundaries: spaces of water management in the Krishna river basin, South India. *The Geographical Journal*, 177(2), 160–170
- **Warner, Jeroen, Wester, Philippus and Bolding, Alex (2008).** Going with the flow: river basins as the natural units for water management?, *Water Policy*. 10(2). 121–138
- **Water Authority (2007).** Initial Report on integrated water resources Management. Water Authority, Ulaanbaatar
- **Water Authority(n.l) Strengthening Integrated Water Resources Management (IWRM) in Mongolia, project Component A (Capacity Building).** Available on <http://tinyurl.com/awg38p9> (Accessed 17th of March 2013)
- **Water Forum of Mongolia (2013).** The test result of comprehensive plan of Orkhon river basin water management. Ulaanbaatar, Mongolia. In Mongolian language, ОРХОН ГОЛЫН САВ ГАЗРЫН УСНЫ НЭГДСЭН МЕНЕЖМЕНТИЙН ТӨЛӨВЛӨӨНД ХИЙСЭН ШИНЖИЛГЭЭНИЙ ДҮН Гүйцэтгэгч бай-гууллага (Улаанбаатар 2013)
- **Withanachchi, Sisira S., Köpke, Sören, Withanachchi, Chandana R., Pathirana, Ruwan, Ploeger, Angelika. (2014).** “Water Resource Management in Dry Zonal Paddy Cultivation in Mahaweli River Basin, Sri Lanka: An Analysis of Spatial and Temporal Climate Change Impacts and Traditional Knowledge.” *Climate* 2(4). 329–354.
- **Withanachchi, S.S.** An Analysis of Politics of Scale in Water Governance and Management in Mongolia; IWRM-MoMo project (Integrated Water Resources Management in Central Asia: Model Region Mongolia, (unpublished).
- **World Bank (2014).** Mongolia – Mining Infrastructure Investment Support Project: procurement plan. Washington DC; World Bank Group. <http://documents.worldbank.org/curated/en/2014/04/19459770/mongolia-mining-infrastructure-investment-support-project-procurement-plan> (Accessed 8th of September 2014)
- **World Bank (2012).** Project Design Document for AusAID Funding to Strengthen Groundwater Management in Southern Mongolia (February 10, 2012).
- **World Wild Fund (WWF) (2011).** Integrated Water Resources Management-Plan for Khar Lake and Khod River Basin Integrated Water Resources Management . WWF, Ulaanbaatar
- **World Wild Fund (WWF) (2008).** Information Bulletin-Altai-Sayan Eco region Issue 4 April-June 2008.

Legislation and Policy Document

- **Parliament of Mongolia 1992.** The constitution of Mongolia. Parliament of Mongolia, Ulaanbaatar
- **Parliament of Mongolia 1995.** The Law on Water, Parliament of Mongolia, Ulaanbaatar
- **Parliament of Mongolia 2004.** Law of Mongolia on water. Parliament of Mongolia, Ulaanbaatar
- **Parliament of Mongolia 2011.** Budget Law of Mongolia of 2011, Parliament of Mongolia
- **Parliament of Mongolia 2012.** Mongolian Law on Water, Parliament of Mongolia Ulaanbaatar

Web pages

- **Mining Infrastructure Investment Support Project (MINIS) Orkhon Gobi meeting Tuesday. (14 August 2012).** Available on www.minis.mn/eng/news/events/121-medee (Accessed 25th of February 2013)
- **Mine Watch Official web site.** Available on <http://en.minewatch.mn/issues/water/> (Accessed 15th of March 2013)
- **Oyu Tolgoi Mining Industry, Official Website.** Available on <http://ot.mn/en/about-us> (Accessed 2nd of March 2013)
- **River without Boundaries, Russia urges the World Bank to stop funding projects threatening Lake Baikal, 9 April 2013,** www.transrivers.org/2013/951/ (Accessed on 8th September 2014)
- **World Wild Fund (WWF) Mongolia, 2009.** Water basins of Mongolia , National GIS Mapping, Available on http://gis.wwf.mn/Mapdata/images/riverbasin_mng.jpg (Accessed on 15th December 2012)

News Paper / Online News papers

- **Byambadorj, B. (2012, October 5).** S. Oyun: "I'm sorry; if you don't build a road you will not transport that coal". UBPOST, Ulaanbaatar Available on <http://ubpost.mongolnews.mn/?p=1340> (Accessed 4th of September 2013)

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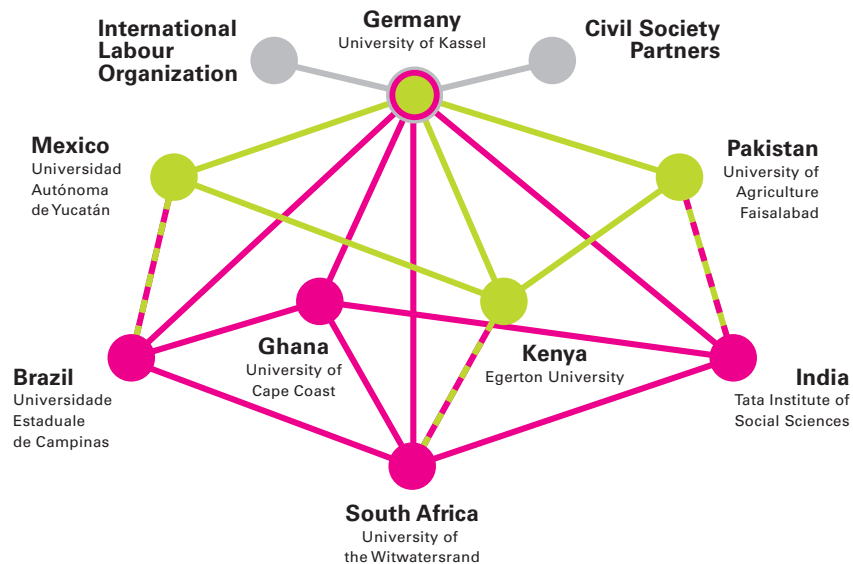
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