Socially navigating through the Urmia Lake debate

Framing analysis of a shrinking salt lake in north-western Iran

M.Sc. Thesis by Melanne Rouw

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Water Resources Management Group

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Master thesis Irrigation and Water Management submitted in partial fulfillment of the degree of Master of Science in International Land and Water Management at Wageningen University, the Netherlands

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Photo 1: Discussion with farmers in the Akhund Gheshlag village (source: personal photo, 2016)

Foreword

You are not the bride,
you need to be blue,
otherwise I am gonna die..

(Poem about Urmia lake, man in mosque in Tabriz city, 2016).

Starting my research in Iran, which is in the first place not seen as a country with a positive image in the world. Often people asked me why I could not go somewhere else doing my research. My answer on this was most of the time more practical by trying to convince people that it is save to go there. Behind this more practical answer, my enthusiasm and deeply touch for the country kept me going.

During my study 'International Land and Water Management' I challenged myself to link the social and technical aspects of complicated water issues. This research gave me the opportunity to meet this challenge; entering the Iranian water world full of technical engineers and at the same time conducting a social research.

What often inspired me during my fieldwork in Iran were the technical insights regarding water problems combined with the philosophical ideas and expressions entangled in the society. A new way of looking to life and water issues. I felt inspired and at the same time overwhelmed by this new way of approaching life.

Without the support of the people around me, in Iran as well as in The Netherlands, this research was not possible. For this reason, I like to give special thanks to several people:

A great perseverance was needed to overcome the struggles for conducting my research in Iran. For this a great thanks to my supervisor Mahdi Zarghami, who helped me to arrange my visa and other arrangements for being able to conduct my research.

A special thanks to my supervisor Jeroen Vos, your inspiring academic insights and optimistic support encouraged me during my research.

I like to give a warmth thanks to my dear friend Behnam Zatalyan, your faith in me and my research kept me motivated till the end.

Also a special thanks to Daphne van Dam, a friend who was always ready to listen to my struggles and encouraged me to improve my scientific skills.

Lastly, I like to thank my family who gave me a warm environment and fully supported me along the way of my research.

Abbreviations

ULRP	Urmia Lake Restoration Program
UNDP	United Nations Development Program
JICA	Japan International Cooperation Agency
CIWP	Conservation of Iranian Wetlands Project
IPCM	Integrated Participatory Crop Management
NGO	Non-governmental organisation

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1. Introduction

A lot of countries experience problematic water issues nowadays; from problems with scarcity of water to abundance of water. Compared to 30 years ago the amount of articles about water related issues in newspapers and (scientific) magazines increased (Chartres & Varma, 2010). Different views on water problems and how to deal with these problems exist and are shared. The following quotes show for example how the water situation in the Middle-East is seen from different points of view:

> "Water Wars in the Middle-East: A Looming Threat" (Amery, 2002, p. 313).

> "The true lesson of the Arab-Israeli experience seems not to be of water as exacerbator of conflict but rather, as the people in the region move from war to peace and the desire for sovereignty gives way to principles of joint management, of water as inducer to cooperation" (Wolf, 2000, p.120).

> "Water problems are not problems alone, but are in large measure products of the relative ability of different states and societies to address their economic and social problems, water problems included" (Selby, 2005, p. 333).

These different ways of looking at the water problems can influence further actions and policy making in the Middle-East (Selby, 2005). This research dives into different perceptions that are shaping reality, by focusing on a specific water problem in Iran: the shrinking of Urmia lake.

1.1 Problem statement

Urmia Lake is the largest lake of Iran and one of the largest hyper saline lakes in the world (Eimanifar & Mohebbi, 2007). Urmia Lake water basin with a population of 6 million people has been an important source of life and fertility for a long time; from farmers who irrigate their fields with water of rivers and groundwater, to the very unique shrimp specie called Artemia that lived in the lake and provided food for a wide range of migrating birds, including flamingos and pelicans (Zarghami, Ku, Ying, Shabab & Islam, 2015).

However, nowadays Urmia Lake basin is under threat. Different groups in the society and the environment are suffering or are expected to suffer in the (near) future. The shrinking of Urmia Lake results in salt dust storms that affect health conditions of people living around the lake and harm the agricultural land that can be cultivated. At the same time, the ecosystem of the Urmia Lake region is at risk. For example, the profitable Artemia shrimp specie population did not survive the increasing salinity levels of the lake (Zarghami et al., 2015). It is predicted that the problem of Urmia Lake will bring between 4 to 14 million people, living in the radius of 500 km from Urmia lake, at risk (Garousi, Najafi, Samadi, Rasouli, & Khanaliloo, 2013; Interview, U2). Thousands of people have already left the area, searching for a new place to live (Shadkam, Ludwig, van Vliet, Pastor, & Kabat, 2016).

There are different perceptions on how to see and deal with the problem of Urmia lake. These perceptions influence how the situation of Urmia Lake has developed and will develop further.

1.2 Research objectives and research questions

While a lot of technical research, both from Iranian and International studies, about Urmia Lake already exists (Shadkam et al., 2016; Hassanzadeh et al., 2012; ULRP, 2015), research from a social point of view is limited (ULRP, 2015). For example, research on how the problem of Urmia Lake is perceived by the people themselves and how this is communicated to the outside world has hardly been done. Although a lot of scientists are aware of this knowledge gap and try to search for ways to bridge it, the knowledge on how to execute social research is still missing (ULRP, 2015). Therefore, the research objective of this research is to present a better understanding of the problem of Urmia Lake from a social perspective.

This research aims to understand the Urmia Lake problem from different perspectives, by identifying different frames and their dynamics. Subsequently, the following question leads this research:

How is the problem of Urmia Lake socially constructed?

The first step to answer this main research question is to provide a contextual background to give body to this research. The sub-research question that ties in with this aim is:

1. ***What is the 'historical, ecological, hydrological, geographical, political, social and cultural' context in which the problem of Urmia Lake exist?***

The second step that will follow is to identify the different stakeholders that have a stake in the Urmia Lake debate:

2. ***Who are the stakeholders in the Urmia Lake debate****?*

The concept of framing is introduced in the second chapter to understand how the different stakeholders perceive the problem of the Urmia lake. Framing can help to understand the social construction of Urmia lake. Different frames about the Urmia Lake problem will be identified and presented. The specific method that is used to distinguish the frames in the Urmia Lake debate is 'frame package analysis'. Before the frames will be clarified in this research, the main space for policy making and interactions of frames regarding the Urmia Lake issue, will be explained:

3. ***What is the main arena in which policies develop for Lake Urmia?***

4. ***How is the problem of Urmia Lake framed?***

    - ***Which framing and reasoning devices do the frames contain?***

The final step to answer the main research question is to look at how the frames about Urmia Lake exist in society. This research will address frame dynamics by looking at two different kinds of frame interactions: 1) interactions of frames within the policy arena 2) interactions of frames with ideas of certain groups in society. By having a better understanding of the different

frames and their dynamics in the Urmia Lake debate, common grounds and/or further (conflicting) points of negotiation can be discussed.

5. What are the frame dynamics within and outside the policy arena?

- ***What is the dominant frame in the policy arena?***
- ***How is the policy making of Urmia Lake affected by the frame dynamics within the policy arena?***
- ***With which ideas, of certain groups in society, do the frames resonate?***

In short, the above mentioned sub- questions will give an answer to the main research question and aim to present to a better understanding of the problem of Urmia Lake from a social perspective.

2. Analytical framework

To analyse the problem of Urmia lake, different theoretical conceptualizations are used from the social science tradition. This theoretical underpinning helps to understand and guides through the different chapters of this research.

2.1 Framing

"It is not an environmental phenomenon in itself that is important, but the way in which society makes sense of this phenomenon" (Hajer & Versteeg, 2005, p. 176).

Social constructive and interpretative environmental policy research focuses on how the society makes sense of a certain (environmental) problem. According to interpretative research, the shrinking of Urmia Lake does not only receive attention, because it is an environmental phenomenon in itself. It also receives attention and concern because people frame 'reality' in a certain way (Hajer & Versteeg, 2005).
"To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and /or treatment recommendation for the item described" (Entman, 1993, p. 52). Frames can be seen as meaning structures, which comprise how people perceive reality and how this perceived reality is communicated to others (spoken, written or portrayed) (Candel, Breeman, Stiller, & Termeer, 2014; Hulshof & Vos, 2016). Framing is like putting a certain pair of glasses on, from which the world can be interpreted.
By intentionally or unintentionally selecting and emphasizing some aspects of a reality, framing can be seen as a powerful tool to define and delimit the problem and in this way define the direction for solutions and/or paths for actions. Framing is not only about selecting some aspects; it is also about defining 'the order of these aspects' (Hulshof & Vos, 2016). Furthermore, the process of where these frames are coming from can be interesting to analyse, however in this research the focus will be more on the frames itself and their dynamics.

Because the concept of framing is widely used by different disciplines, like psychology, communication, sociology, there are different theories, conceptualizations and methods for analysing framing. Two main ontological schools of framing can be distinguished: scholars who focus on an interactional approach of framing and scholars who focus on a more cognitive approach of framing (Dewulf et al., 2009). The difference between these approaches is: "according to the cognitive approach, meaning is located 'between the ears' of each individual and ultimately depends on their private understandings and interpretations of information communicated and processed. In contrast, in interactional framing theory, meaning is located 'between the noses' of people and ultimately depends on their reactions to or supplementations of each other's communication" (Dewulf et al., 2009, p. 163,164). The cognitive approach focuses on the cognitive representations in the individual mind and how they are presented to the outside world. Most of the time the methods that are used for analysing the cognitive frames, are by doing experiments with people and analysing texts. However, the interactional approach looks more to the co-construction of frames and how frames are strategically used in interactional situations. Research methods that are used with an interactional approach are more qualitative and interpretative methods (Dewulf et al., 2009). This research draws more upon an interactional approach of framing and use qualitative and interpretative methods to better understand which frames exist in the Urmia Lake debate.

Exploring and analysing the different frames in the case of the Urmia lake, will be done by using the specific approach/method called 'frame package analysis'. With this approach different elements of a frame can be explored and distinguished. In this approach, the two main components of a 'frame package' are: 'framing devices' and 'reasoning devices' (Van Gorp, as cited in Candel, Breeman, Stiller, & Termeer, 2014). Framing devices consist of 'manifest elements in a message that function as demonstrable indicators of the frame' (Van Gorp as cited in Candel et al., 2014, p. 49). "These elements can be specific words, catchphrases, or images" (Van Gorp as cited in Candel et al., 2014, p. 49). The kind of framing devices that will be analysed in this research are: concepts (that are frequently used by describing the issue) like for example productivity, sustainability etc.; catchphrases (word combinations with a normative overtone) like 'immediate and continual action'; and metaphors (comparisons to make the argument stronger) like 'sustainability is the key' (Van Gorp as cited in Candel et al., 2014; Hulshof & Vos, 2016). Framing devices are most of the time directly visible in for example (headings of) newspaper articles or policy papers. Instead, the other component to analyse frame packages, reasoning devices, is often more hidden. To find these reasoning devices research need to be done to the background in which expressions about a certain issue are given. Reasoning devices are: "explicit and implicit statements that deal with justifications, causes, and consequences in a temporal order. These devices indicate what is conceived as the problem- the diagnosis- and which solutions are possible- the prognosis" (Van Gorp as cited in Candel et al., 2014, p. 49). This framing approach displays the different components of the frames that exist. The different components of the frames will be used in this research to describe the frames that socially construct the problem of Urmia lake.

2.2 Arena of framing

The arena concept is used as a metaphor for a social space wherein interactions take place between different stakeholders and their 'social worlds' pertaining a certain phenomenon. (Strauss & Maines, 1991; Strauss,1978). In this research the concept of arena is seen as a (symbolic) location where stakeholders come together and present different frames on Urmia Lake to each other. These different frames in the arena; can meet and clash with each other, are reformulated and form a basis for further negotiations. Concerning the case of Urmia Lake different kind of arenas exist in which frames are presented and interacting. To analyse an arena different questions can be asked like: who can and who cannot enter the arena; who takes decisions in the arena; who uses what kind of resources in the arena; how did the arena come into being (Strauss & Maines, 1991).

2.3 Frame dynamics and resonance

As described above, interactions between frames take place in an arena. Besides the interactions of frames within a certain arena, also interactions of frames outside the arena can take place. For example, interactions of frames with ideas of certain groups of people in society. To better understand the frame interactions with 'the outside', the concept of resonance is used. By 'resonance' this research refers to; 'the conjunction of frames with ideas of groups of people in society, such that some set of reasoning and framing devices (or just one device) of the frames are congruent with certain ideas in society' (Snow, Rochford, Worden, & Benford, 1986). Although, the outcomes of these frame resonance processes are not described in this

research, some example of resonance interactions are given. In short, both types of interactions of frames (within and outside the arena) are defined as 'frame dynamics' in this research.

3. Methodology

In this chapter the different research methodologies will be described, that are used for data collection and further input for this research. These methodologies are tools to scientifically underpin my research.

Before diving into the specific research methods, I like to share one of the quotes that inspired and helped me in conducting this research: "Immersing yourself in a culture and learning to remove yourself every day from that immersion so you can intellectualize what you've seen and heard, put it into perspective, and write about it convincingly" (Bernard, 2011, p. 258). As a scientist I accepted the challenge to step everyday again in the reality of this research. But more important, I tried to step out of it in the end of the day (see quote above). In this research, with its range of ideas and interpretations of reality, it is important to keep this quote in mind.

3.1 Sources of data

In this research, qualitative data to analyse the problem of Urmia Lake in Iran were gathered during three months of field work and in several places in Iran; Tehran, Tabriz and villages around the eastern side of Urmia lake. The capital city Tehran was chosen for gathering data, because the main office responsible for the case of Urmia Lake is located in Tehran. Also the city of Tabriz and some villages, both located at the eastern side of the lake, were selected for this research. The reason for this, is because these places on the eastern side could be more easy reached by me and my translating team.

Moreover, scientific articles, policy papers and related websites were used in this research to better understand the Urmia Lake case.

3.2 Research methodologies

This research consists of different kind of research methodologies; participative observation, field observations, snowball sampling, semi-structured interviews and the frame package analysis. The data gathered through these different methodologies are further analysed with concepts of the above mentioned elaborated conceptual framework.

Snowball sampling

The method of snowball sampling is used to find the interviewees (categorized within the different stakeholders) of this research (Hart & Hox, 2005). With snowball sampling, one encounters and finds new interviewees by having interviews and participating in meetings. It is like a snowball effect; you roll from one interview into the other and in this way multiply your network. For example, participating in one of the Urmia Lake meetings in Tabriz University, gave me the opportunity to get in touch with a NGO active for Urmia lake. This NGO member told me that also local NGO's exist. In this way, the snowball sampling helped me to enlarge my network.

Semi-structured interviews

The interview method that is used in this research is one of semi-structured interviews (see photo 2). This method was used to identify and categorize the different stakeholders and their frames. To identify and categorize the different stakeholders, also other sources were used: notes of meetings, scientific articles, policy papers and other online sources like the ULRP website and ministry websites.

A list of determined research themes and objectives has been prepared for the semi-structured interviews. During the interview the people interviewed had the opportunity to answer those questions they would think are important. This kind of interviewing can be seen more as a structured conversation (Hart & Hox., 2005). In addition, the research themes of the interviews are based on the 'frame package' components described in the conceptual framework. This research method is used to identify and describe the frames that exist about Urmia lake. The semi-structured interviews consisted of a combination of questions about facts and values, about the topic more in general or through questions about specific elements of the Urmia Lake case.

Because of a language barrier, the semi-structured interviews were most of the time conducted by using a translator, being a student from one of the Universities in Tabriz. Moreover, one of the NGO members in Tabriz advised me to form a 'translating team' for conducting my interviews with farmers and local people in the villages. This was needed to gain trust of the people and at the same time to deal with gender issues. One of the gender issues raised was that a men had to join our team, because then we would not get bothered by other men. Also an older person had to join our translating team, because it was argued that in Iran especially older people are taken more serious. While I led the interviews myself, my translating team helped me to arrange the interviews in the villages. Furthermore, during holding the semi-structured interviews in the villages, I encountered that especially discussions between the farmers before the interview started, were interesting for identifying the different frames. For this reason, I decided to give space to these discussions, by inviting the people that were interested to be part of an open discussion. Most of these open discussions were recorded to translate them together with my translator.

In total 28 semi-structured interviews were conducted and three open group discussions were hold, from which some of them were recorded and later translated to English (see annex 1).

Photo 2: Semi- structured interview with a farmer in a village surrounding Urmia Lake (source: personal photo, 2016)

Field observations

One of the important research methods that is used during this research is making field notes (Taylor, Bogdan, & DeVault, 2015). Using data from semi-structured interviews is not enough to sketch the frames that exist. Field observations were made during my field trips to Urmia Lake to just see, feel and write down what is going on there. Together with an expert on Artemia for example I visited the lake several times to get a feeling of the area in which the lake is located. Furthermore, field observations were made while conducting interviews, group discussion and during stakeholder meetings.

Frame package analysis

In the conceptual framework the 'frame package' analysis is already explained. With the above described methods, the matrix below is filled and used for further analysis. These frames matrixes form the basis for describing and analysing the different frames that exist about Urmia Lake (see chapter six).

Tabel 1: empty frame matrix (source: Candel et al., 2014)

	Reasoning devices					Framing devices		
Name of frame	Definition of Lake Urmia	Problem definition	Solution/perspective for action	Non-solution	Moral basis	Key concepts	catchphrases	Metaphors

Participatory observation

The participatory observation method in this research is used to give extra insight in the frames that are socially constructed. There are different forms of participatory observation: full participation (interacting with the people) and participation just as an observer (almost no interaction will take place) (Atkinson & Hammersley, 1994). In this research most of the time 'participation just as an observer' is used, because of the language barrier. For example, participating in meetings of the Urmia Lake Restoration program (ULRP); observing who is invited and who not and how the interactions are between the different participants. In addition, I participated in one of the events organized by the ULRP to discuss about Lake Urmia: 'Lessons from Lake Urmia' (see annex 2). I used the record of this event for translating, in order to analyse the frames and their dynamics.

4. Background

Nowadays Iran, with 2500 years of glorious memories of the Persian Empire, is facing many challenges in the Middle-East; from man-made to natural disasters, from ISIS (Islamic State in Iraq and Syria) to floating sands, from civil wars to drying up of lakes (Briant, 2002; Michel, Pandya, Hasnain, Sticklor, & Panuganti, 2012; Schenk, 2015).

Iran covering 1.6 million km^2 of land and almost 80 million people, is one of the biggest and most densely populated countries in the region (Larijani, 2005). It is a relative young population with among two-third under the age of 30 (Lewis, 2015). There is noticeable variation in the country from geographic and climate point of view. Geographically, the Iranian Plateau, covering 90% of Iran, consists of mountains and highlands (50%), deserts (25%) and arable land (less than 25%) (Madani, 2014). Moreover, Iran experiences huge climate variabilities in rainfall and temperature. From an annual average precipitation of 2000 mm in northern and western parts of the country to 120 mm in the central and eastern provinces of Iran. The temperature extremes can differ from -20 °C in the north-west of Iran to 50 °C in the south (Abbaspour, Faramarzi, Ghasemi & Yang, 2009). The two main mountain ranges, Zagros and Alborz, play a key role in the climate pattern and most of the people live in the northern and western part of the country, with 70% of the water resources (Modarres & da Silva, 2007; Madani, 2014).

For thousands of years the ancient Persians have proven to be able to survive in a semi-arid area. They came up with innovative ideas for the water sector (Foltz, 2002; Madani, 2014). One of these famous innovations, is an ancient water supply system called qanat system- an underground tunnel system for extracting and transferring groundwater. Madani (2014) argues that while Iranian people can be still proud of their innovations in the water sector, a water crisis is looming at the moment in Iran. Iran is facing many water management challenges; growing water demand, decreasing groundwater levels, drying up of lakes and rivers, conflicts over transboundary aquifers, water contamination etc. One of these water challenges is the drying up of Urmia Lake (see figure 1) (Madani, 2014).

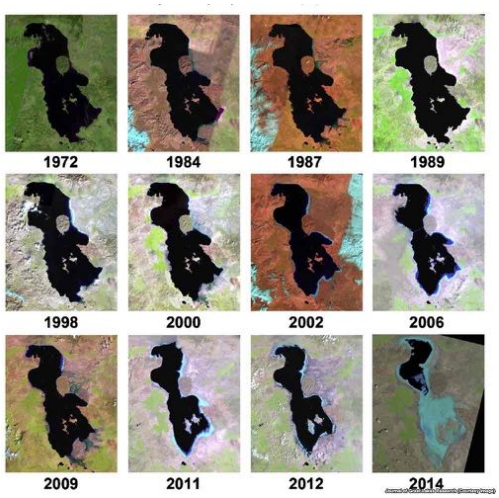

Figure 1: Shrinking Urmia Lake during time (source: Mirchi, Madani & Aghakouchak, 2015)

4.1 The critical situation of Urmia Lake

Urmia Lake (also called Daryaca-ye Ormiyeh) is located in Northwest Iran, in the Azerbaijan region near the border with Turkey and Iraq. Since 1995, the area of Urmia Lake decreased extensively: one- fourth of the surface area of the lake still exists (1500 km^2); and the water level had declined with more than seven metres (Shadkam, Ludwig, van Vliet, Pastor & Kabat, 2016). Various possible reasons have been given for this reduction of the lake: increase of agricultural land, water overuse in the agricultural sector, dam construction and climate change (Hoseinpour, Fakheri & Naghili, 2010). This decreasing water level resulted in a sharp increase of the salinity level of the lake: from 170 g/l to 400 g/l (Zarghami et al., 2015). In case of further drying up, the lake will turn into a salt desert with disastrous environmental, ecological, social, political, health and economic consequences. For example, salt dust storms with chemicals and pesticides (deposited in the basin of the lake), can reach areas as far away as 300 km from the lake, with potential devastating consequences for the health of people, animal and plant life, including the cultivation of agricultural land (Azarnivand, Hashemi-Madani & Banihabib, 2015; Hoseinpour et al., 2014). Also the eco-system of Urmia lake, with its unique and economically valuable species like Artemia, (can) get destroyed (Hoseipour et al., 2014).

The disappearing of the lake also has implications for the tourist sector. Urmia Lake was a popular place for spending holiday time. Most of the Iranian people have at least one picture in their photo album about spending time near the lake (own observations). However, nowadays the hotels and apartment built around the lake are abandoned and the boats lay idle on a dried-up lake (Field trip Urmia lake, 2016, Interview, $S1_3$). All over the country people are aware of the critical situation and are deeply concerned about the situation of Urmia Lake (own observations).

4.2 Urmia Lake basin characteristics

The Urmia Lake basin covers an area of 51,876 km^2 and is shared by three different provinces West-Azerbaijan (51% of basin area), East-Azerbaijan (39%) and Kurdistan (10%) (see figure 2) (Faramarzi, 2012; Lotfi, 2012).

Inflow and outflow

Urmia Lake basin is a closed basin, in which precipitation, rivers and runoff cause the main inflows while evaporation is the only outflow (Abbaspour, Javid, Mirbagheri, Givi & Moghimi, 2012). With a 9.2% decrease over the last 40 years, the annual average precipitation in the Urmia Lake is 341 mm (Delju, Ceylan. Piguet & Rebetez, 2013). The average annual inflow of the lake is 2400 $\cdot 10^6$ m^3 water. Different rivers are providing water to the lake; 17 permanent rivers and 12 seasonal rivers (Shadkam et al., 2016). The main surface water flows, that are providing water to the lake, are entering the lake from the southern and western sides, like Zarinneh Rud (river) and Simineh Rud (river) (Lotfi, 2012). Moreover, Urmia Lake is a shallow lake, which means that it is sensitive to evaporation (Shadkam et al., 2016). Nowadays, the lake needs to receive 3100 $\cdot 10^6$ m^3 water to compensate for evaporation (Zarghami et al., 2015).

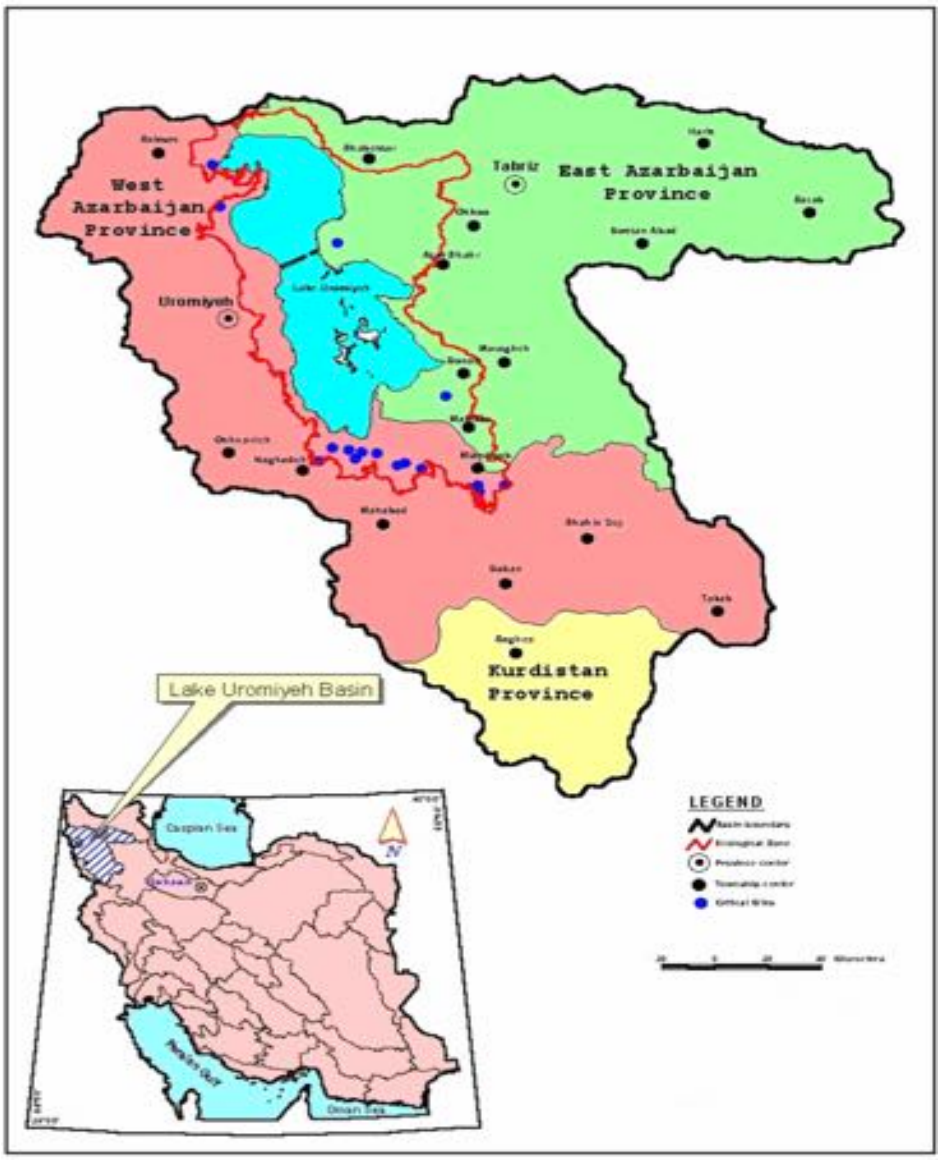

Figure 2: Urmia Lake basin map (source: Faramarzi, 2012)

Drought

In the period of 1999-2001 a severe drought hit Iran (Tabari, Nikbakht & Talaee, 2013). It resulted in an enormous decrease of water level in the Urmia lake. But also after this period Urmia Lake continued to dry up (Oloumi Zad, 2012).

Causeway

In the period of 1979-1992, a 15.4 km causeway was constructed, on the part of the lake with the smallest width (see figure 3), with the aim to connect the provinces on the eastern side of the lake with those in the west. This causeway divides the lake in a northern and southern part. Although there is an opening of 1.25 km, water exchange between the northern and southern part is restricted. This restriction influences the water flow and salinity level of the lake and has a negative impact on the Artemia population (Zeinodinni, Bakhtiari & Ehteshami, 2015).

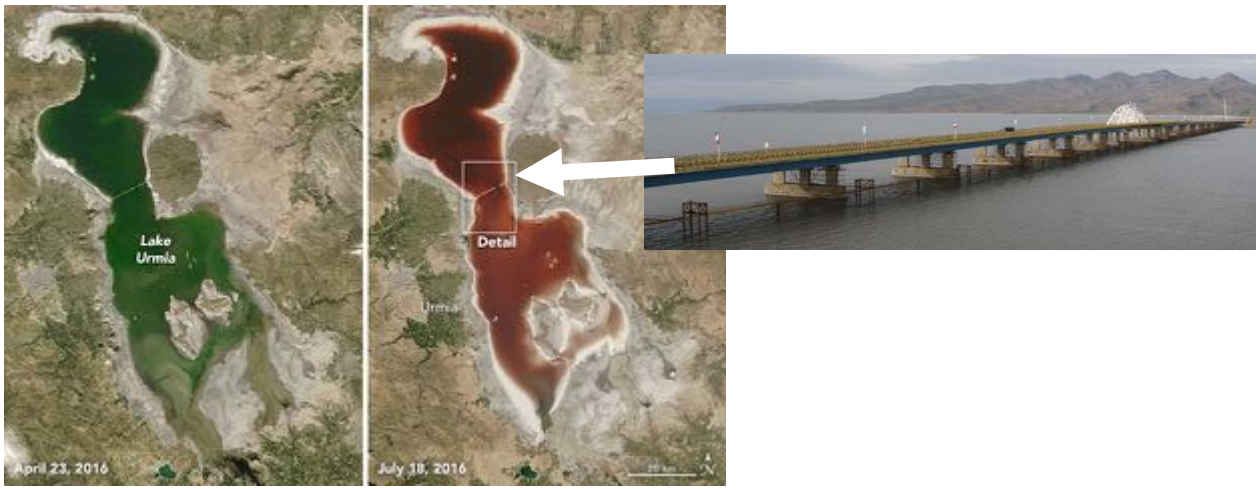

Figure 3: Nasa visible earth: Red Urmia Lake (source: NASA Earth Observatory & Iran Marine industrial co.)

Agriculture

The agriculture sector is one of the most important sectors in Iran, including in the Urmia Lake basin and has expanded during the last decades (see table 2). The agricultural sector uses more than 90% of the available water resources. Small family farms are prominent around Urmia Lake and the agricultural practices are defined as 'traditional'. The main crops cultivated in the Urmia Lake basin are: onion, beetle root, alfalfa, grapes, apple and apricot (see table 3) (Faramarzi, 2012).

Table 2: The expansion of agricultural land in the last two decades in the West Azerbijan, East Azerbaijan and Kurdistan region (source: Faramarzi, 2012)

	Region total agricultural land/ha	Irrigated land/ha	Irrigated land in basin/ha
1979	417,000	158,000	150,000
1990	765,000	306,000	N/A
2006	879,000	415,000	400,000

Table 3: Current cropping pattern in Urmia Lake basin (source: Isanezhad, 2015)

Cultivation Info.	Province	Agricultural Crops				Horticultural Crops				Total
		Onion	Beetle Root	Alfalfa	Total	Grapes	Apple	Apricot	Total	
Land under Cultivation (ha)	East Azerbaijan	6074	496	87652	94222	18280	31910	11154	61344	155566
	West Azerbaijan	1436	38000	75009	114445	18403	54443	4145	76991	191436
	Total	7510	38496	162661	208667	36683	86353	15299	138335	347002
Net Water Need	Mean of the two Province (m^3/ha)	6300	6500	7430	-	5330	6960	4890	-	-
	Total of Irrigation Need (million m^3)	47.313	250.224	1208.571	1506.108	195.520	601.017	74.812	871.349	2377.457

Irrigation

With a semi-arid and arid climate, Iran is dependent on irrigated agriculture. While both rainfed and irrigated agriculture are practised in the Urmia Lake basin, the irrigated agricultural land increased significantly (see table 4). The main and secondary systems of the irrigation system are most of the time modern, while the tertiary systems are often traditional, with open canals constructed by the farmers themselves (Faramarzi, 2012).

The price of water for irrigation is very low. One of the reasons for this is the available subsidies that are part of national agricultural policy. Also the low energy price makes it cheaper for farmers to pump up groundwater (Zarghami et al., 2015). A lot of illegal wells (estimated around 40 000) are used in the Urmia Lake basin. These illegal wells prevent the aquifers, which are leading to the main rivers that are ending up in Urmia lake, from recharging (Stone, 2015).

Table 4: East Azerbaijan and west Azerbaijan agricultural land, period 2007-2009 (source: Faramarzi, 2012)

Year	Irrigated land/ha	Rainfed land/ha	Total land/ha
2007	682,834	1,128,046	1,810,880
2008	1,221,177	1,221,177	2,442,354
2009	1,633,719	1,221,177	2,854,896

4.3 Social- cultural and political situation

Population growth

Over the last decades Iran faced a booming population growth, partly as result of population policies promoted by the government, especially during and after the Iran-Iraq war. Because of climate, geographic and economic differences in the country, this population growth is unevenly distributed. These patterns are putting pressure on the available water resources. In addition, the average amount of water that Iranian people use, is almost double that one used in the West (Larijani, 2005).

Minorities

Iran is home to different minority groups, one of the largest is the 'Azerbaijani minority' (also called Azeri Turks). They make up almost a third of the population in the northern provinces (like East and West-Azerbaijan) of Iran. Among this minority there is a strong nationalistic feeling and even a tendency to separate from Iran (Souleimanov, Pikal & Kraus, 2013). Besides the Azeri Turks, there is another minority group living in the Urmia Lake basin, the Kurdish people who live in the Kordhestan province (Henareh Khalyani, Mayer & Norman, 2014). Because of the fact that these provinces do border Turkey and Iraq, this gives an extra political dimension to most of the issues that are raised in that region. The crisis of Urmia Lake has not been an exception, which can be further read with examples in chapter 6.

Construction time

In 1979 the Islamic Revolution took place in Iran. Before the revolutionary government could fulfil its promises, such as a better standard of living for the poor people in the country side and villages, like access to electricity and clean and drinkable water, they got surprised by the invasion of Iraq. The devastating war that followed took 8 years (1980-1988), many people died and many infrastructural facilities got seriously damaged (Alnasrawi, 1986; Parsa, 1989). When the war ended and with the election of Akbar Hashemi Rafsanjani, people were eager to re-build their country. During the presidency period of Hashemi from 1989-1997, the so-called 'sazandegi' (construction) time, a lot of major infrastructural projects, such as dam construction, were initiated (Khalaj, 2015).

Self-sufficiency

Since the Islamic Revolution the relation of Iran with the West has experienced various political turbulences and 'the wall of mistrust has got higher and higher'. One of these conflictual situations is the economic sanctions that were imposed on Iran to isolate the country and limit their access to the global market. In order to deal with this situation, Iran searched for ways to be less dependent on the West (Maloney, 2010). An example of this independency move is the self-sufficiency in food production (Moshirzadeh, 2007). Almost every year the self-sufficiency of wheat production is celebrated in Iran (Iran marks wheat, 2016). However, this self-sufficiency in food production puts pressure on the natural resources like water resources of the country (Heslot, 2014; Moshirzadeh, 2007).

Political orientations

Experiencing the Revolution and eight years of war, the political interest of the Revolutionary regime resonating on the nationalistic and religious feeling of the people and the conflict that the Iranian government has with the world (mostly the nuclear program and the sanctions) has (inevitably) made political topics part of Iranian daily life. Based on the conversations during my research, this political orientation was noticeable. Having a discussion with Iranian people, most of the time ended up in a political discussion (own observations).

Besides this political orientation, Iran can be seen as a 'slogan society'. A lot of slogans are used by political leaders in the media. Slogans in which for example the people are blamed for the lack of rain for lakes and rivers because of the sins they committed (Lotfollah Safi Golpaygani, 2010). Moreover, big cities like Tehran are full of slogans on billboards, about how people need to behave and they herald people who died in the war with Iraq. Most of the slogans are related to religious rules or refer to situations in the past (Foltz, 2002).

5. Different stakes in the Urmia Lake debate

In this chapter a short elaboration is given on the different stakes in the Urmia Lake debate. At different levels, 'national, regional and local level' stakeholders are involved. This chapter ends with summing up the different stakes and their interrelations in a table (see table 5).

Most of the information gathered for the stakeholder overview is based on semi-structured interviews held in this research, and governmental websites. It need to be said that not all stakeholders, mentioned in this chapter, could be interviewed in this research.

National level

ULRP -national office

The Urmia Lake Restoration Program (ULRP) is the main organization and program responsible for the restoration of Urmia Lake. This organization was established in 2013, by the at that time recently elected President Hassan Rouhani. The idea of establishing this program was to bring different stakeholders together under one umbrella organization/program called ULRP. The function of the national office of the ULRP, located in Tehran, is tackling the different dimensions of the Urmia Lake problem through policy making and deciding upon the different projects and initiatives. In addition, this organization gives to the different stakeholders involved (Interview, U2; U1). Approximately 35 people are working full-time for the ULRP and about 100 people part-time. The restoration program is owned and fully financially supported by the government. The budget they receive for Urmia Lake is 607 million euro per year, from which almost 50% is spend through governmental organizations like the Ministry of Energy (Interview, U5).

Ministry of Energy

The Ministry of Energy has an important stake in the Urmia Lake case, because they decide upon the amount of water that can be supplied and transferred for 'domestic, agricultural, public and industrial' purposes, and this way also the water that can end up in Urmia lake. Furthermore, this ministry plays an important role in policy making and formulating laws for protecting and controlling groundwater and surface water sources around Urmia Lake (Urmia Lake Restoration Program, 2015; Lotfi, 2012). The Ministry of Energy is sub-divided in the 'Regional Water Authorities' and 'Wastewater Organisations' at regional level (Interview, R1). In addition, the Ministry of Energy is one of the main ministries of the government and the annual budget of this ministry is multiple of some other ministries (Urmia Lake Restoration Program, 2015).

Ministry of Agriculture

The Ministry of Agriculture plays an important role in the Urmia Lake issue, by formulating and deciding upon the development programs for agricultural lands, rangelands, natural pasturelands in the Urmia Lake basin (Lotfi, 2012). Besides this, the Agricultural Ministry is doing research to modern agricultural and irrigation practices and to sustainable cropping patterns for Urmia Lake basin. Furthermore, bank credit facilities for agricultural development in Urmia Lake basin are considered by this ministry (Urmia Lake Restoration Program, 2015). At regional level 2 kind of organisations form part of this ministry: agricultural organisation(s) and the natural resources organisation(s) (Interview, NO1).

Department of Environment

The stake of the Department of Environment is taking care of the ecology of the Urmia Lake basin through policy making and introducing new environmental regulations and laws. One of the main interests of this department is protecting and creating a safe environment for wildlife and the growth of species like for example Artemia. Moreover, they take care of the sweet wetlands around the lake that function as a back-up for the dried up parts of Urmia Lake (Urmia Lake Restoration Program, 2015). Each province has its own office of the Environmental Department. Compared to the Ministry of Energy and the Ministry of Agriculture, the Department of Environment has less power in decision making of the Urmia Lake problem (Madani, 2014; Interview $S2_2$,).

UNDP and JICA

Another stakeholder at national level is the United Nations Development Program (UNDP- Iran). Policy making and initiating projects for Urmia Lake are the tasks of the UNDP. Many wetlands in Iran are under threat at the moment. For this reason, the UNDP started in 2005 with the first phase of the 'Conservation of Iranian Wetlands Project' (CIWP) to protect and conserve important wetlands in Iran and one of the them is Urmia Lake wetland (Conservation of Iranian Wetlands Project, 2013). One of the new phases of this wetland project is the introduction of 'Integrated Participatory Crop Management' (IPCM) with techniques for water saving and sustainable agriculture. This new component of the project was financed by the Japan International Cooperation Agency (JICA) and executed in 41 villages nearby Urmia Lake (Conservation of Iranian Wetlands Project, 2014; UNDP-Iran, 2017).

Regional level

Regional offices of ULRP

Besides the national office of the ULRP, three regional offices were established in cities near Lake Urmia: East Azerbaijan Regional Office, West Azerbaijan Regional Office and Kurdistan Regional Office. These regional offices execute the tasks for Urmia Lake imposed by the national office of the ULRP. The regional offices are in charge of managing the projects of Urmia Lake on the ground, by directing for example NGO's (non-governments organisations) and local NGO's. They also run information and public awareness campaigns in cities and villages. These regional offices are connected and working together with the two main universities around the lake; Urmia University and Tabriz University (Interview, U2, U4).

Regional Water Authorities

In the Urmia Lake basin the following regional water authorities exist: East Azerbaijan Water Authority, West Azerbaijan Water Authority and Kurdistan Water Authority. The regional water authorities receive orders from the ULRP for executing tasks for Urmia Lake. One of the main tasks of these authorities is controlling water infrastructure like dams, irrigation systems and reservoirs. A lot of big dams are under control of the regional water authorities. They decide upon the amount of water that can be released from the dams. For example, the East-Azerbaijan Water Authority has the responsibility over the following dams around Urmia Lake: Nahand dam, Alavian dam and Ghalachay dam (Interview, R1). Furthermore, the regional water authorities try to stop the use of illegal wells in the Urmia Lake basin, by closing and installing

smart meters on wells. Other tasks of the regional water authorities are transferring treated wastewater from cities and from other water sources to Urmia Lake (Interview, R1).

Natural Resource Organization

The Natural Resource Organization also called 'Forests, Range and Watershed management organisation' is part of the Agricultural Ministry. Every year this organization has to come up with an action plan for Urmia Lake that need to be approved by the ULRP. The Natural Resource Organization organises planting activities around the lake to prevent the salt of the lake spreading to the villages or cities. Their focus is on alleviating the consequences of the shrinking lake (Interview, N01; Urmia Lake Restoration Program, 2015).

Agricultural organization(s)

Also the agricultural organisations, part of the Agricultural Ministry, have an important stake in the Urmia Lake case. They have the responsibility over the water distribution at local level by controlling the smaller dams and cannels. Moreover, their task is to decide about farming practices at local level (Interview, NO1, A1).

Yekom

Yekom Consulting Engineers Company is a private engineering consultancy company involved in a lot of national projects. This company has experiences in the fields of irrigation, water and environment (Interview, M1). Yekom is appointed by the ULRP to fulfil the task of reducing irrigation water use with 40% in the Urmia Lake basin (Interview, U2).

NGO(s)

In the Urmia Lake basin there are 28 non-governmental organizations (NGO's) focusing on and dealing with environmental issues. Out of these 28 NGO's, seven specifically focus on Urmia Lake and three out of these seven are located in Tabriz and interviewed in this research (Interview, N1).

Hamiarane zist sabz hamyaraneh: this NGO is since 14 years active Urmia Lake. They organize activities in schools to make young people aware of the situation of Urmia Lake and at the same time more generally about their environmental behaviour. According to this NGO: "it is better to start as young as possible" (Interview, N3). This NGO is also active at local level, by trying to build a relationship with the farmers and local people.

Rof tegarane Tabiat: informing and encouraging people in how they can help Urmia Lake in their daily activities is the main goal of this NGO. This NGO gives environmental classes in how to use water in an environmental friendly way. They organize for example specific classes for housewives to learn them how to save water at home during their daily practices. Moreover, this NGO goes to the villages surrounding the lake to make a relationship with the local people and try to learn about their culture and lifestyle (Interview, N1).

Sabz Andishan: initially, the main focus of this NGO was not Urmia Lake, but since a year it is. This NGO tries to make people aware of disastrous environmental situation in the country. At the same time, they want to convince people that there is hope to re-live Urmia Lake. This NGO

believes that most of the data that the ULRP is spreading, cannot be trusted and for this reason they try to find 'right data' (Interview, N2).

Universities

The role of the academic world in the Urmia Lake case is important. Different universities are involved (Urmia University, Tabriz University and Sharif University of Technology), from which can be said that the role of Sharif University of Technology is leading. Besides doing research and being involved in policy making, also social groups are established in which people of universities are (politically) active for Urmia lake (Interview, $S1_1$, $S2_1$, M1).

Local level

Farmers and local people

Another important group of stakeholders are the farmers and local people living in the Urmia Lake basin. The agricultural sector is an important source of income for them. From the 6 million people living in the Urmia Lake basin, 1 million people is engaged with and dependent on the income of agriculture (Interview, U2). Moreover, Local people directly experience the consequences of the shrinking lake; health problems, crops are damaged, wells are filled with salty water and farmers have to clean their (fruit) trees of the salt several times a year (Interview, N3, F1/N4, N5, DF1, DF2, F3, F4, DF3).

The focus of the ULRP is on local people in the Urmia Lake basin. The Regional offices of the ULRP in cooperation with NGO's are visiting the villages surrounding the lake to talk with farmers about buying their water rights and job opportunities outside the agricultural sector (Interview, U4).

Miraab

In Iran, the area around one river is called a region and every region has their own miraab(s). A miraab (ruler of water) is a person that fulfils a specific function for water management in a certain area. In the Urmia Lake basin, you have for example a miraab who is listening to the complaints of the farmers and focuses on solving problems between the farmers, or a miraab who is scheduling and regulating the provision of water to the farmers and opens the different gates of the irrigation systems (Interview DF3, F2). At the same time these miraab(s) are sometimes invited at higher governance levels, like the Regional office of the ULRP, Agricultural organization or The Regional Water Authority, to present their ideas on what is happening at local level (Interview, DF3).

Local NGO

Also several local NGO's like, 'The community of Environment and Natural resources protection of Maragheh', are active for Urmia Lake. This local NGO organizes for example different kind of activities and workshops to make people aware and explain them the reasons and consequences of the shrinking lake. Moreover, this NGO advices farmers to cultivate less water intensive crops (Interview N5, N4).

Table 5: Stakeholder overview

Level	Stakeholders	Interest and stake in Urmia Lake case	Influence on (decision making) Urmia Lake case	Relation with other stakeholders
National	ULRP- national office	Main responsibility for Urmia Lake, policy making, tackling different dimensions of the problem	Managing, directing and deciding over the different projects and initiatives	The ULRP national office gives orders to and works together with: ministry of energy, agricultural ministry, department of environment, regional ULRP offices, universities, UNDP, JICA, regional water authorities, company Yekom, regional water authorities, natural resource organisations non-governmental organisations, agricultural organisations
	Ministry of Energy	Deciding upon water supply and transfer, protecting and controlling groundwater and surface water sources	Deciding about how much water is going to the lake, controlling the different water sources that are ending up in Urmia Lake	Working together with Regional Water Authorities and ULRP
	Ministry of Agriculture	Formulating and implementing development programs for agricultural lands, rangelands, natural pasturelands, doing research, establishing bank credit facilities for agricultural development	Policy making	Working together with agricultural organisations at regional and local level Related to ULRP
	Department of Environment	Responsible for the ecology of Urmia Lake basin	Imposing new environmental regulations	Working together with Regional Departments of Environment and ULRP

	UNDP (United Nations Development Program)	Protecting Urmia Lake wetland, policy making	Policy making	Working together with JICA and Departments of Environment and follows the orders of ULRP
	JICA (Japan International Cooperation Agency)	Financing and executing IPCM	International influence	Working together with UNDP and Department of Environment
Regional	ULRP (regional offices):	Managing projects of ULRP on the ground, organising information and public awareness campaigns	Deciding on and executing ULRP plans at regional level	Working together with the national office of the ULRP, Urmia University, Tabriz University and NGO's
	Regional Water Authorities: • East Azerbaijan Water Authority • West Azerbaijan Water Authority • Kurdistan Water Authority	Controlling water infrastructure, trying to stop and control the illegal wells, transferring treated wastewater from cities to the lake, transferring water from other water sources to the lake	Deciding about the amount of water that can go to Urmia Lake, regulating illegal wells	Part of Ministry of Energy, receiving orders from ULRP for executing tasks for Urmia Lake
	Natural Resource Organisation(s)	Organising planting activities around the lake	Alleviating the consequences of the shrinking lake	Part of Agricultural Ministry, working together with ULRP
	Agricultural Organisation(s)	Responsible for the water distribution of small dams and canals	Deciding about water allocation farmers, deciding about local farming practices	Part of Agricultural Ministry, working together with Regional ULRP
	Regional Department of Environment • East Azerbaijan • West Azerbaijan • Kurdistan	Taking care of ecology of the Urmia Lake basin, executing environmental impact assessments, creating environmental regulations	Less power in decision making than Ministry of Energy and Ministry of Agriculture	Part of Department of Environment, Blamed by other stakeholders, working together with ULRP
	Yekom company	Reducing irrigation water use with 40% in the Urmia Lake basin	Reducing the amount of water that is used	Fulfilling the tasks of ULRP

	NGO's: • Hamyaraneh zist sabz • Rof tegarane Tabiat • Sabz Andishan	• Organizing awareness activities at schools, going local • Informing and encouraging people in how they can help Urmia Lake in their daily activities, going local • Searching for 'right data'	• Influencing the young people • Changing behaviour • Criticizing to ULRP	In contact with housewives in cities, local people, Regional ULRP, people in cities
	Universities: Tabriz University, Urmia University and Sharif University of Technology	Sharif University of Technology is leading the ULRP, doing research, policy making, starting social groups	Having a leading role, having a critical look to the Urmia Lake case	In contact with NGO's and ULRP Regional office
Local	Local NGO's	Creating awareness, advising farmers to cultivate less water intensive crops	Local awareness and giving training	Relating to other NGO's (in cities), in contact with local people
	Miraab(s)	Fulfilling specific tasks for water management in the basin; scheduling and regulating the provision of water, solving conflicts between farmers	Controlling the amount of water that is used at local level	In contact with farmers
	Farmers/local people	Using water of the basin for their livelihood, dealing with dust storms problems that causes health problems and damages their agricultural lands	Almost no influence on decision making	Sometimes they are invited at higher levels, in contact with NGO's

6. Framing the problem of Urmia Lake

Before the identified frames will be described in this chapter, it is important to know where this framing is taking place. Therefore, this chapter starts with the describing the policy arena wherein stakeholders with their frames meet and interact. Furthermore, this chapter will end with a section about the frame dynamics both inside and outside the policy arena.

6.1 Arena of framing

Almost each and everybody in Iran is concerned and has an opinion about Urmia lake, from taxi drivers in Tehran to farmers living in villages surrounding the lake (own observations). These ideas are shared and negotiated in different arenas. For example, exhibitions are organised where artist come together to express their ideas about Urmia Lake. Also different social media groups are established wherein people define the problem and possible solutions for Urmia lake (Interview, M1; own observations).

However, this research focuses on the ULRP, the arena wherein policy and the leading decisions are made. In 2013, the ULRP was established by president Hassan Rouhani, as a space where stakeholders of the Urmia Lake case can come together, in order to centralize the decision and policy making about Urmia Lake (Interview, U2). One of the first activities President Hassan Rouhani started his governmental period with, was constituting a national team for the problem of Urmia Lake called 'Urmia Lake Restoration Program' (ULRP). First Vice President Dr. Jahangiri was chosen as the head of this national team and Dr. Isa Kalantari, was appointed as the head of the executive secretary of this national team. Dr. Kalantari established a work force, leaded by the Sharif University of Technology in Tehran. In that same year, Sharif University of Technology worked for 115 days on the Urmia Lake case, which resulted in 27 main proposals. These proposals were further approved by the national team and developed in 77 project proposals (nowadays 88) by the ministries. The outcome of these proposals is called 'Road Map' for the coming 10 years (Interview, U2, $S1_1$, $U1_{1,2}$,). This program is seen as something special, because it is "the first experience in the country in which different parties sit together to agree on a roadmap" (Interview, U2).

Nowadays, most of the important decisions about Urmia Lake are taken within the scope of this ULRP program. For example, if somebody with a new idea for the lake wants to put this into practice, it needs to be approved by the ULRP. At the same time, the ULRP delegates tasks and gives orders to the different organizations and ministries involved. The main activities of the ULRP are governed by committees in which different stakeholders come together to give voice to their ideas. For example, the research committee, consists of nine research teams with different research topics about Urmia lake. If somebody comes up with a new topic on Urmia lake, it will be subdivided into one of these nine research teams (Interview, U2). Besides these committees, different congresses and events are organized to discuss about Urmia Lake (Interview, U2, M1).

However, some people are perceptive about who needs to lead this restoration program for Urmia lake. For example, some stakeholders in Tabriz and Urmia city argue that it is not possible to govern and decide about Urmia Lake from that far (Sharif University of Technology in Tehran) (Interview, N2, $S1_3$). The following quote of a scientist from Urmia University

demonstrates this; “they just visit the lake, but have no idea what is going on. We know the lake much better, we have years of experiences. Sharif University of Technology does even not have a faculty of agriculture and environmental science, they just earn out of this project” (Interview, $S1_3$). At the same time, people in the villages argue that they have the right to decide about the lake instead of the people in Tabriz and Urmia city, because they directly feel the consequences of the shrinking lake (Interview, N1).

The ULRP is seen and accepted, by most of the stakeholders, as the main arena in which the Urmia Lake issue can be discussed and action need to be taken. One of the reasons that this arena is acknowledged is because it is led by the highest ranking University in Iran (based on the QS World University Rankings): Sharif University of Technology (ULRP, 2015; Interview, E1). This in contrast to other projects in the country, that are most of the time controlled and lead by the government. According to one of the interviewees “this is a step in the good direction” (Interview E1, 2016). At the same time by accepting a university as ‘leading’, the boundaries of this arena will be set by scientific standards. In this way it excludes other stakeholders of this arena. For example, it can be said that stakeholders with initiatives and ideas about how to save Urmia lake, that are not scientifically proven, are not accepted in this arena. The following quote, given by an interviewee who is working for the East- Azerbaijan Regional Water Authority, demonstrates this: “everybody tries to come up with nice ideas, but they are not all experts. The ULRP has 500 scientific experts and they are the only ones that have useful ideas” (Interview, R1).

In short, the main policy arena in which interactions concerning the problem of Urmia Lake take place is the ULRP. This (symbolic) location is shaped by four main aspects; it invites a lot of stakeholders to participate and can come together in this arena, it defines the main policies and decisions, it delegates the tasks, it organizes key events in which social interactions take place and it is led by a university. The next section will elaborate on the frames that steer these interactions.

6.2 Frames

This section will present the different socially constructed realities of Lake Urmia; the agricultural frame, the natural frame and the political frame. After the frames are described, summary tables with the main framing and reasoning devices of the different frames are given.

6.2.1 Agricultural Frame

The agricultural frame revolves around the idea that the agricultural sector, with its 'unsustainable' and 'traditional' agricultural and irrigation practices, is the main cause of the shrinking lake. Different reasoning and framing devices are used to create this frame.

Although climate change is mentioned by the agricultural frame as one of the reasons of the shrinking lake, the enormous amount of water used in the agricultural sector is seen as the main destructive factor for Urmia lake. A lot of interviewees mention the use of 90% of Iran's water resources by the agricultural sector (Interview, N1, U1, C1, M1, P1). One of the interviewees explained why the agricultural sector expanded so much in the last decades, by giving the following reasoning device: "After the war with Iraq, Iran searched for ways to recover and to further develop. Agriculture was easy to develop and for this reason a huge expansion of the agricultural sector took place" (Interview, N1). In order to deal with this problem of enormous water use in the agricultural sector, the following suggestion is made: "we need to develop industries around Urmia lake, because it uses less water and can create new job opportunities for the people around the lake. We don't need to cultivate everything ourselves, products and crops can also be imported. If we develop industries water will be saved" (Interview, C1). Many interviewed farmers are open for an alternative job (Interview, F3, F4, DF3). "I have to support my two children, so if I have the opportunity to receive a job in one of the industries I will go for it" (Interview, F3). One of the NGO members continues on this argument, by giving the following catchphrase and reasoning device: "being farmer is a hard job, so they are open for new opportunities outside the agricultural sector" (Interview, N1).

Another proposed solution to the enormous water consumption in the agricultural sector, is to stop farming in some areas and compensate farmers for this (Interview, A1, DF3). A member of the Agricultural Ministry mentions some initiatives undertaken to stop farming. In the area of Zarineh Rood (river in the Kurdistan province) for example, where 50 000 ha of farmland need to stop with farming and in exchange farmers will receive money for every hectare they give up (Interview, A1).

According to the agricultural frame the main focus need to be on the local people and the farmers; to teach them how to behave and make them aware of the disastrous situation. "Local people have a critical role in solving the problem and mostly agricultural consumers they should take part" (Interview, R1). The following quote for example shows what the farmers need to understand: "we need to inform the farmers about the 'tragedy of the commons' and to teach them that there is a limit on their extractions" (Interview, $S2_1$). At the same time, several scientists argue that it is difficult to work with (old) farmers in the field, because they are not listening (Interview, U1, U3, S2). To deal with this problem, the following solution is proposed: "we need charismatic people in the villages that can take action and can convince farmers" (Interview $S2_1$).

The last few years the high water demanding crops have been preferred over the low water demanding crops (see table 3). This is seen by the agricultural frame as a cause of the enormous water use in the agricultural sector (Interview, A1, P1, U4, F1, N5). For this reason, one of the solutions proposed is to convince farmers to change their cropping pattern (Interview, F2, P1, U1, M1, N5). “We, as local NGO, ask farmers in the region of Maragheh to change their crops, for example from onion, canola and apples to crops like saffron” (Interview, N5). The flyer that can be found below for example, informs the farmers how they can make a good income, by cultivating crops like Damask Rose, Barberry, Russian Olive, which are less water demanding and salt resistant, while they are helping Urmia lake (see figure 4).
Furthermore, several farmers were discussing, during one of the interviews, about the letter that was spread in the villages to gather signatures to stop farming onion (Interview, DF3). Although farmers are open to this solution of changing crops, they ask for information and (financial) support for implementing this idea. The following reasoning devices are given: “we don’t know the procedure of planting saffron”, “it will take 5 years a pistachio tree becomes fruitful—in these five years what do we need to do?” (Interview, DF2). Furthermore, farmers are complaining about the fact that authorities are coming to the villages to present their ideas about new cropping patterns, but it stays with these meetings, there is no follow up (Interview, F4, DF2, DF3). “People come to our village to organise meetings and give a speech in the mosque and after this meeting we never see them back anymore” (Interview, F4).

Figure 4: The flyer encourages farmers to change their cropping pattern to less water consuming crops (source: this flyer is given to me in Gara Chupug village)

According to the agricultural frame, irrigation practices around Urmia Lake are seen as ‘traditional’ and ‘unsustainable’, which means overusing and wasting the water resources of Urmia Lake basin. For this reason, the goal is set to reduce the irrigation water use with 40% in the Urmia Lake basin (Shadkam et al., 2016, Interview, C1). To make this possible, the engineering company Yekom is appointed to execute this task (Interview, C1).
One of the suggested solutions to reduce the irrigation water use, is to convince the farmers to switch to drip irrigation. The following catchphrases are used to strengthen this proposed solution: ‘drip is the correct irrigation system’ (Interview, M1) ‘drip is the way to go’ (Interview, P1). Most of the farmers like to switch to this new irrigation system, however they ask for instructions on how to implement this technology and for financial support from the government. By giving the following reasoning device, one of the farmers judges other people

who don't go for this solution: "With drip you can have suitable crops and if you don't use drip you abuse the wells because you use more water" (Interview, DF1).

The agricultural frame sees the illegal wells as problematic, because too much water is used and the aquifers that end up in rivers and that are leading to Urmia Lake are not re-filled anymore. To deal with this problem, this frame suggests as solution to close and fill-up the wells. The following reasoning device is given by the Regional Water Authority: "we go to local areas and if we see illegal wells, we fill them" (Interview, R1).

Most of the farmers argue that they are aware of the precarious situation of Urmia Lake and know that it is better not to (over)use the water of the wells, but there is no other option. The following reasoning device demonstrates this: "in the past we did not have to use the wells—we took water from the rivers, however now they hold the water of the rivers behind the dams so we have to use the water from wells" (Interview, DF1). The Regional Water Authority reacts on this argument by giving the following reasoning device: "even if we release all the water behind the dams it is not enough to save the lake--this releasing cannot be the only solution" (Interview, R1). Moreover, most of the farmers are open to tell that they use illegal wells and at the same time they are afraid of the fact that their well will also be filled (Interview, DF2, F3, F4, DF3, F2).

Table 5: summary table framing devices agricultural frame

Framing devices	Concepts	Catchphrases	Metaphors
	Not sustainable irrigation system, decreasing water consumption, unsustainable agriculture, Traditional irrigation, Water mismanagement	Drip is the way to go, Drip is correct irrigation system, they just speak- no action, working with old farmers is difficult	Farming is just like gambling

Table 6: summary table reasoning devices agricultural frame

Reasoning devices	Problem definition	Solution	Non-solution	Moral basis
	Overusing water in farming practices, illegal wells, huge expansion of agriculture—not sustainable, irrigation area, salt storms, changing crops is not possible, dams are restricting the water to flow to LU, crops get destroyed by salt, 90% of water is used in agriculture, cultivating high water demanding crops	Developing industries, People need to own the problem of LU, let farmers stop farming and give compensation, change cropping pattern, search for alternative jobs for farmers, filling illegal wells, drip irrigation, we need to teach the farmers		Local people have a critical role in solving the problem, authorities come here; they see the problem but don't do anything, farmers like to stop farming-it's a hard job

6.2.2 Natural frame

The natural frame is primarily concerned with human interventions and behaviour towards nature.

The causeway, constructed in the middle of Urmia lake, is seen by the natural frame as a destructive structure. One of the farmers gives the following reasoning device: “Because of this causeway, the status of rotating water is changing, which causes more evaporation of the lake. This increasing evaporation makes that there is less water available in the lake” (Interview, SF). A local NGO member and other farmers continue addressing the issue by mentioning the springs underneath the lake: “Because of constructing the causeway the springs underneath the lake are filled with concrete and cannot provide the lake with water anymore” (Interview, DF3). Especially people living in the villages around Urmia Lake argue that the causeway is damaging and causing disorder in the nature of the lake (Interview, DF2, DF3, ST, F4).

Furthermore, creating artificial rain in ‘One Lake’ in Turkey with the result of having less rain for Urmia lake, is given as an example by the natural frame to demonstrate that putting human hands on nature is devastating for nature. “By creating artificial clouds in Turkey, rain cannot reach Urmia Lake in Iran anymore” (Interview, F2).

Dams are seen as man-made structures that play a harmful role in the natural pattern of Urmia Lake as well. The following reasoning device is given: “if they construct dams they use tons of concrete and this concrete covered and filled all the gaps in the ground that do not let the water penetrate to the ground and finally to the lake” (Interview, DF1). Most of the interviewed farmers argue that the water behind the many dams needs to be released in order to save Urmia lake. According to the East-Azerbaijan Regional Water Authority, “dams are seen as something bad nowadays, however people forget that this water is used to feed them” (Interview, R1). Not only dams and the causeway, but also the constructed holiday houses around the lake, which consumed a lot of water with their ‘pools for fun’, are seen as destructive for Urmia Lake (Interview, N1, N5).

The underlying rationale of this natural frame is to stay as close as possible to natural processes. Several interviewees are explaining this underlying rationale by the fact that in the Islamic country of Iran, where religion is playing an important role in daily activities and decisions, natural process are seen as phenomenon which are coming from and linked to God. For this reason, it is argued that people are more critical to human interventions in nature like constructing the causeway, dams and creating artificial rain (Interview, ST, N3, N1).

Two interviewed scientists came up with the following solution for Lake Urmia; phased restoration--dividing the lake in different parts and phases and safe it step by step. “In this way we can at least safe part of the lake, instead of losing the whole lake. Nowadays we lose a lot of water and money, by just releasing the water (from dams) in the south part of the lake, where a huge salt fan is located” (Interview, $S1_{1,2,3}$). Other interviewees, like a farmer and a local NGO member, are seeing this as a non-solution by giving the following catchphrase and reasoning device; “The eco-system is one unit’—so by dividing the lake in different parts there will be a disaster” (Interview, N2, N5, F4).

The environmental disaster of the Aral Sea is often used as a metaphor for the crisis of Urmia lake. In the case of the Aral Sea thousands of people had to be displaced and faced disastrous health problems. People are afraid of similar consequences to Urmia lake. A lot of interviewees state that the case of Urmia Lake will be even worse: more people will be in danger and have to encounter the devastating consequences (Interview, F1, F2, N2, DF1, DF2).

The natural frame revolves around the idea that we 'as human beings' need to treat the nature well and take care of it. The following catchphrase is given: 'nature is our human duty' (Interview, N2). According to this natural frame, climate change is playing a role in the problem of Urmia Lake, however it cannot be an excuse for not taking action (Interview, N1, N3). Especially NGO's (as well at local and regional level) take this duty serious, by organising environmental programmes and activities. The solution proposed by the natural frame is taking responsibility for Urmia Lake by behaving environmental friendly in daily activities. "Urmia Lake cannot be saved if we do not change our own daily water consuming practices" (Interview, N1). The following catchphrase is reinforcing this idea: "the lifestyle of Iranian people needs to be changed" (Interview, N3). An environmental NGO's in Tabriz, called Rof tegarane Tabiat, proposed the idea to focus on and inform housewives on how to make their daily activities more environmental friendly (Interview, N1, N3, ST).

Table 7: summary table framing devices natural frame

Framing devices	Concepts	Catchphrases	Metaphors
	Causeway, salt fan, lifestyle, disaster, human behaviour, disorder in the lake, 'One Lake' in Turkey, dams, daily water consuming practices	Changing lifestyle of people, it is our human duty to do something, the eco-system is one unit	LU case is a disaster, LU is huge failure for environmental management, LU will be the same as Aral sea

Table 8: summary table reasoning devices natural frame

Reasoning devices	Problem definition	Solution	Non-solution	Moral basis
	Because of causeway spring under LU are filled, creating artificial rain in Turkey, causeway—changing rotating water, dam construction, constructed holiday houses, less rain	The lifestyle of people need to be changed—behaving environmental friendly, changing water consuming practices of women, releasing water from dams, staying close to natural processes	Phased restoration—dividing the lake in different parts will make a disaster, its nonetheless to spend a lot of money to send water to the lake and at the same time it evaporates	Dam construction in the past, artificial rain of Turkey

6.2.3 Political frame

The political frame revolves around the storyline in which the problem of Urmia Lake is linked to the political situation of the country.

If people talk about Urmia lake, most of the time they refer back to a period, in which the Iranian president Mahmoud Ahmadinejad was governing the country (2005-2013). This period is seen by the political frame as a time in which the country was suffering of 'mismanagement' and a lot of environmental projects were suspended.
In 2013 Hassan Rouhani was elected and he took the responsibility for Urmia lake. Rouhani not only took the responsibility, he also promised to save the lake. Some interviewees argue that it is because of this promise, that a lot of people in East and West- Azerbaijan (2 provinces on the east and west side of the lake) elected him as president (Interview, S3, M1, $S1_1$). At the same time several interviewees give the following reasoning device: "if Urmia Lake cannot be saved, it will be seen as a great failure for Rouhani" (Interview, $U1_2$, $S1_1$, U3). To strengthen this political line of argument, one of the interviewees argues; "I am happy with Rouhani as president and I want to fight for him, so now Urmia Lake is seen as a failure of Rouhani I have to do something. I wrote a letter to the government, with all the arguments about Urmia Lake that opponents of Rouhani can use against him in the next elections" (Interview, S1).

One of the questions this political frame asks itself is why there is so much attention given to Urmia Lake in the country, although a lot of lakes and water resources in Iran are drying up at the moment. Different explanations are given by the political frame to answer this question. First of all, it is argued that the scope of disaster of the failure of the restoration program is enormous. For example, one and half million people of Tabriz city need to be displaced because of the salt storms. There is even a risk that the threat reaches Tehran, the capital of the country with twelve million people (Interview, Df2, $S1_2$).
Another issue that has been addressed is the geographical and cultural situation of the region in which Urmia Lake is located. "Urmia Lake is lying close to the border with Turkey and this brings political sensitivity in decisions that need to be made. In the area of Urmia lake, the Turk-Azeri minority is living, and dissatisfaction among this minority group can influence the territorial integrity of the country. For this reason, Iranian governments try to keep this minority calm and satisfied by paying more attention to Lake Urmia" (Interview, M1). This quote shows the frames' focus on the political situation of the country in trying to understand the Urmia Lake case.

One of the main concerns of the political frame is the fact that farming is the main source of income for the majority of the people living in the region. Problems with food security and migration will arise when farmers need to reduce the amount of water they can use or even stop farming. According to this frame, the consequences of these policies need to be taken into account (Interview, C1, U3, N1).

Furthermore, the underlying fear of this political frame is that the structure of ULRP or even the whole focus on Urmia Lake will disappear with new elections next year (Interview, $U1_2$, M1). "The current government chooses to pay a lot of attention to Urmia lake, however, with new elections it can be that there will not be that much money for Urmia anymore because the focus will be on economic problems for example" (Interview, M1).

As already said before, several scientists propose the solution to divide the lake in different parts and save the lake phase by phase (see natural frame). However, according to some of the scientists this is seen as a non-solution; “dividing the lake in different parts is seen by the local people and farmers as though the government could not solve the problem” (Interview, S2). This reasoning device demonstrates the political frames’ focus on the political consequences of making a certain decision for Urmia lake.

(Anti-)reaction on the political frame

While political entanglement is existing in the Iranian society, it is not always experienced as something positive. The following catchphrases is showing this; “don’t make Urmia Lake political, that will be a big mistake” (Interview, $U1_2$). In addition, President Hassan Rouhani is saying that it is not good to make Urmia Lake a political issue, as reaction on the different governmental groups that are blaming Rouhani for the situation of Urmia Lake (Interview, E1). However, people argue that Rouhani already made Urmia Lake political; “the decision to choose Isa Kalantari, former minister of agriculture, as head of the executive secretary of the ULRP, is seen as a step in the direction of making Urmia Lake political” (Interview, $S1_3$).

Furthermore, the Restoration Program is morally judged as a political show case. The following catchphrase demonstrates this: “work of the ULRP is just propaganda; look we transfer water to the lake” (Interview, C1).

Table 9: summary table framing devices political frame

Framing devices	Concepts	Catchphrases	Metaphors
	Mismanagement in past, political sensitivity, separation, phased restoration	We just have a short time, no limit for budget Urmia lake, making LU political is big mistake	LU has become a political issue, LU failure of Rouhani, LU volleyball league, LU is a really big lake

Table 10: summary table reasoning devices political frame

Reasoning devices	Problem definition	Solution	Non-solution	Moral basis
	Making LU political issue—big mistake, If LU cannot be saved-- will be seen great failure for Rouhani, Choosing former agricultural minister as head of ULRP, New elections	Warning the government by writing a letter	Phased restoration-- locals around the lake would think that the government could not restore the lake	In time of Ahmadinejad a lot of things went wrong, Rouhani promised to safe the LU, LU in an area with minorities—why do you think there is that much attention for LU?, Work of ULRP is just propaganda

6.3 Frame dynamics

Frames are far from static; they are constantly moving and mobilizing each other and society (Hulshof & Vos, 2016). This section will analyse how the frames interact by looking at two different types of dynamics. The first type of dynamic describes the interactions of frames within the policy arena, while the second explains frame interactions with ideas of people outside the policy arena. While not all frame dynamics can be explained by the gathered data in this research, some examples based on my own experiences and observations are given.

6.3.1 Frame interactions inside the arena

In a particular period of time a specific frame is dominant in a certain arena (Foucault, 1970; Gramsci, 2001). By looking at the current targets of the ULRP, the main focus is on the agricultural sector (ULRP, 2015). The ULRP set a target to reduce the water consumption in the agricultural sector of the Urmia Lake basin with 40% in the coming 10 years. Moreover, most of the action plans and projects of the ULRP are supported by the agricultural frame, like increasing the irrigation efficiency, educating and informing farmers, regulating wells with installing smart meters and changing cropping patterns (Urmia Lake Restoration Program, 2015). The dominance of this agricultural frame is not only reflected in action plans and targets, but also noticeable in the interviews held during this research and events organised by the ULRP. In the 'Lessons from Lake Urmia-event', in which I participated and observed, the main frame that was used was the agricultural frame. Almost 90% of the time, stakeholders were speaking with 'agricultural frame glasses on' (ULRP, 2015). The political and the natural frame are less represented in the targets and actions plans, as well as in the interviews. Based on these findings, the dominant frame in the policy arena of Urmia Lake is the agricultural frame.

Although the agricultural frame is leading in the ULRP arena, the different frames are not static and mutually exclusive. Reasoning and framing devices of the two other frames that are identified in this research, are interacting and entangling with the agricultural frame and each other in the Urmia Lake debate. For instance, one actor can use parts of reasoning and framing devices from different frames at the same time. For example, the head of ULRP gives the solution to encourage farmers to change their cropping patterns and even to stop farming in some areas, while at the same time he shows his concerns from a political frame that Urmia Lake can experience political security problems such as food security and migration (of jobless people) (ULRP, 2015).

Another example of frame entanglement is how the interaction of frames can lead to reformulation of certain policies in the arena. According to the agricultural frame, the amount of renewable water that is used nowadays need to be reduced to 30%, by for example stopping farming in some areas. Although the political frame agrees with this idea, they push the agricultural frame to take into account the consequences of such a policy on the life of people living in the region and to change to a more moderate target (ULRP, 2015). During the 'Lessons from Lake Urmia-event', the following statement makes this clear: "while we would like to reach the standards of countries (like Spain and India) with sustainable water use in the agriculture sector by using 30% of renewable water use, in Iran we want to set this standard at 45% in order to put not that much pressure on the people living in this region of Lake Urmia" (ULRP, 2015). This quote demonstrates how the interaction of the agricultural and political frame in the arena has led to target changes from 30% to 45% in renewable water use.

6.3.2. Frame interactions with 'the outside'

Besides the framing dynamics within the policy arena, this section ends with describing some dynamics of the frames with ideas of certain groups of people outside this arena. For this, the concept of resonance is used: 'the conjunction of frames with ideas of certain groups in society, such that some set of reasoning and framing devices (or just one device) of the frames are congruent with ideas of certain groups in society' (Snow et al., 1986). Two examples of this type of dynamic will follow.

Many Iranian people are tired of slogans and 'political stories' in their country, they believe it is time for tangible and concrete solutions (Interview, E1; Merufinia et al., 2014). Nowadays, especially technical and practical solutions are embraced and accepted in Iran (own observations). An example of a more tangible approach to use Urmia water more efficient is the solution proposed by the agricultural frame, 'to encourage people to use drip irrigation'. This proposed solution is resonating well with the idea of a certain group in society that thinks that everything can and should be solved technically.

Secondly, as described in the background chapter, the economic sanctions enforced by the West since the Revolution in 1979 are putting (economic) pressure on the country resulting in a need to be more independent. This independency can be for example identified in the self-sufficiency in food production (Moshirzadeh, 2007; Maloney, 2010). The political frame resonates with this idea of self-sufficiency in food production, as it is believed that the agricultural sector should not be suddenly halted producing their food products.

7. Conclusion

This research is looking at and analysing the problem of Urmia Lake from a social constructivist approach. The main research question that is answered is: How is the problem of Urmia Lake socially constructed? To support this main research question different sub-questions are answered. As a result, several conclusions can be made:

First of all, it can be concluded that the ULRP is the main arena, wherein policies are developed and frames meet and interact with each other.

Concluding from this research, three frames are identified:

- The main frame in the ULRP arena is the agricultural frame. According to this frame the main reason for the shrinking lake is the agricultural sector, with its 'traditional' and 'unsustainable' agricultural and irrigation approaches. Different solutions are proposed by this frame; making farmers more aware of the crisis that is threatening the region, taking benefit of new technologies such as drip irrigation, changing cropping patterns in which less water is used, regulating the use of (illegal) wells and promoting jobs in industries to decrease the dependency of the region on agriculture.
- Another frame that is playing an important role in the Urmia Lake debate is the natural frame. The natural frame is concerned about human interactions with inherent environmental characteristics of Lake Urmia; constructing the causeway in the lake, creating artificial rain in Turkey and constructing dams. According to this frame 'nature is our human duty'; people need to behave environmental friendly in their daily life in order to help Urmia lake.
- The third important frame that is identified is the political frame. The geopolitical importance of the location of Urmia Lake is emphasized by this frame. This frame is concerned about issues like migration and food security as a result of the shrinking lake. Moreover, this frame stresses on how the Urmia Lake debate is influenced by politics. How the different presidential periods have affected the Urmia Lake issue. At the same time, it can be concluded that there is a strong (anti)-reaction on this political frame, insisting to separate the Urmia Lake case from politics.

Furthermore, it can be concluded that frames are not static. This research identifies and presents different frame dynamics (inside as well as outside the policy arena) in the Urmia Lake debate, from which the following can be concluded. Firstly, the dominant frame in the policy arena is the agricultural frame. Secondly, one actor can use a mixture (of parts) of different frames. Thirdly, the interaction of different frames results in the reformulation of goals within the policy arena. Last but not least, it can be concluded that frames resonate with ideas of certain groups in society. The agricultural frame resonates well with technical ideas of a group in the society. It can also be concluded that the political frame resonates with the idea of a certain group in society which says that Iran need to be self-sufficient in food production.

8. Discussion and recommendations

In this chapter some discussion points are given concerning the context, research approach, research methodology and the stakeholder overview. Most of these discussion points end with a recommendation for further research.

Context

This research shows that the Urmia Lake problem can be interpreted from different glasses; agricultural, natural and political. These interpretations, called frames in this research, interact with each other resulting in different interesting outcomes. Comparing this research with other studies about Urmia lake, it can be concluded that till now mainly technical research is conducted (ULRP, 2015). Therefore, this research contributes to opening up a research field in which new ideas and knowledge can be discussed and developed. This conclusion is based on literature review, the 'Lessons from Lake Urmia'-event and my own experiences in the field from which I like to share some of them here. During an interview with the head of the social committee of the ULRP, I asked a question about how he became involved in the social studies about Urmia lake. The following answer was given: "To be honest I am a civil engineer and I have never done something with social studies, however because of my enormous network in and outside Sharif University they chose me to be the head of the social committee" (Interview, U3). This answer was interesting for me and made me curious about how they see social science within the ULRP. Another example I like to share is that special moment of my thesis presentation in Tabriz University. My supervisor invited a lot of people to come and listen to my presentation. After this presentation I received a lot of questions about which 'technical model' I used for my research. Although I explained that I did not use a specific model for my research, people in the audience continued asking me about modelling.

Putting the Urmia Lake case in a broader perspective of water problems experienced in Iran, it is interesting to see how Urmia Lake is at the centre of attention. Different types of events, such as seminars and conferences are being held, social media campaigns are set up, celebrities are sending messages in the social media to trigger people and some of the best universities of the country are involved in the Urmia Lake debate (own observations). Moreover, it can be said that Urmia Lake has become a national symbol for the current water crisis and environmental problems experienced in Iran (Madani & Hakim, 2016). To better understand how this symbolic value/meaning came about, other (sub)-arenas and framing resonance dynamics, need to be analysed. Furthermore, some people argue that the case of Urmia lake, with all the attention and national symbolic value it receives, can help to make people more aware of their behaviour to the environment. According to NGO's for example, most of the people in Iran do not realize how they can behave environmental friendly, instead they point to the government to solve the environmental problems (Interview, N1, N3).

Research approach

In this research a framing approach is used to better understand the problem of Urmia lake. I realise that also other concepts and theories related to for example, farming and irrigation practices, governance and decision making processes and power relations, could have been used resulting in possible alternative explanations for the Urmia Lake problem. However, I have chosen for a framing approach, as I believe that this will shine new light for social research for

Urmia lake. Through this concept I was able to identify different frames and frame dynamics. The importance of identifying these different frames lies in the fact that frames contain ideas that will affect (or have already affected) the stakeholders and the development of the situation of the lake; they shape our actions in for example policy making and project implementation (Lewicki et al., 2003).

In chapter six some examples of framing dynamics are given, however much more dynamics can be explored. It would be interesting to do further research into these dynamics in order to better understand how the problem of Urmia Lake develops and will further develop. For example, analysing the outcomes of (resonating) dynamics of frames. One of the outcomes can be that a higher degree of resonance can result in a powerful frame or the creation of an anti-frame (Snow, 1986). In this research for example an anti-reaction started to develop on the political frame, which can further evolve in a powerful anti-frame. These outcomes can give meaningful insights in how problems are socially constructed.

Research methodology

From a methodological point of view, there are some problems with framing analysis. It is difficult to measure an abstract concept like framing in a valid methodological way. As Mayer (2001) states it; “framing has proved to be an elusive concept to measure” (Maher, 2001, p.83). Matthes and Kohring (2008) criticize the different methods that are used to code and identify the frames. One of the problems is that frames are often extracted from the data in a more or less random way. As a result, frames are very much influenced by the researcher’s perspective. Another problem is for example that as soon as the researcher has identified some frames it is hard to be open to find new frames. With the consequence, that possible new frames will be coded and categorized according to the frames that were already identified (Matthes & Kohring, 2008). Honestly said, I was not aware of these methodological challenges at the moment of starting my research. However, during my research it was challenge number one. ‘I struggled a lot with finding a way to identify the different frames’. With this concern and at the same time challenge in mind I realised that it is important to carefully search for a method that at least acknowledges these methodological problems. During my search for a specific tool for framing analysis, I observed that they are limited. In the end I choose the frame-package analysing method of Van Gorp (2007) because this method took some of the methodological concerns into account. While I constantly reflected on the validity of this method, I experienced it as a useful method for structuring my interviews and in the end identifying the frames.

Most of the semi-interviews were conducted in the local language (Farsi and Azeri language) and had to be translated to English. I realise that this research bias can influence the results of this research, especially when a framing analysis is done. Because for a framing analysis it is important that the exact sentences are translated to be able to use it for doing analysis.

Concerning the geographical location of conducting the semi-structured interviews, it needs to be mentioned that because of practical reasons, most of the interviews were held in Tehran, Tabriz and in the villages on the eastern side of Urmia lake. While the focus of my research was on the eastern side, it would be interesting to look and do interviews in the western and southern side of the lake as well. Cultural or physical differences like wind direction, access to

water resources like rivers and soil structure, could have considerable impact on how the problem of Urmia Lake is framed.

Stakeholder overview

This research gives an overview of the different stakeholders involved in the Urmia Lake case. While the different stakeholders are mentioned in (scientific) literature and policy papers and are tried to be included in the ULRP program, a clear overview of the stakes is missing. This research contributes to this knowledge gap, by providing a table with all the stakeholders, their stakes and interrelations.

Although, this research gives an overview, it has yet not been analysed how these different stakes are relating and interacting with each other. Based on my own observations during this research I see a tendency to non-cooperative behaviour of the stakeholders in the ULRP arena. The different authorities are acting independently, there is almost no interaction and cooperation. This non-cooperation is for example coming back in how the different provinces around Urmia Lake deal with water management of the lake. The 3 provinces around Urmia Lake have their own rules and regulations regarding the lake and this makes it often complicated to communicate and make policies for Urmia lake. For instance, the price of water or the punishment of using too much differs between the provinces (Observations and Interview R1, $S2_1$, A1, DF3). Moreover, it can be said that this disintegration is further enhanced by president Ahmadinejad, when he changed the structure of the water system, by changing the boundaries from watershed boundaries to provincial boundaries. This change caused conflicting competitive situations between the provinces (Madani, 2014).

Moreover, during the 'Lessons from Lake Urmia-event', in which I participated, 'governance' was an important topic of discussion (ULRP, 2015). According to my opinion, 'good' governance starts with a deep understanding of all the stakeholders involved and their interrelations. For this reason, I recommend to execute an extensive stakeholder analysis, in which these interrelations will be demonstrated and mapped. Insights in these stakes and inter-relations will give a better understanding of how Urmia Lake is governed and managed. This research can be seen as a starting point for this deeper understanding.

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Annex 1: Semi- structured interviews, group discussions and meetings

Name	Code	Function	Date of interview	Location
Anonymous	N1	member of NGO 'Rof Tegarane Tabiat'	23-1-2016	Tabriz
Anonymous	$S1_1$	Scientists Urmia University	17-11-2015	Tehran
Anonymous	$S1_2$	Scientists Urmia University	22-12-2015	Tehran
Anonymous	$S1_3$	Scientists Urmia University	17-01-2016	Lake Urmia
Mohamad Vesal	$U1_1$	ULRP –economic committee	15-11-2015	Tehran
Mohamad Vesal	$U1_2$	ULRP –economic committee	16-11-2015	Tehran
Anonymous	C1	Working for company Mahab Ghodss	18-11-2015	Tehran
Amin Rouzbahani	U2	ULRP – main office	20-11-2015	Tehran
Mahdi Zarghami	$S2_1$	Professor of Tabriz University	28-11-2015	Tehran
Anonymous	U3	ULRP- head social committee	22-12-2015	Tehran
Anonymous	M1	ULRP- meeting in Tehran	22-12-2015	Tehran
Anonymous	S3	Graduated from Tabriz University	17-01-2016	Tabriz
Presentation and meeting in Tabriz	P1	Meeting about UL with professors, member ULRP regional office, students, NGO member	18-01-2016	Tabriz
Anonymous	ST1	Student	19-01-2016	Tabriz
Anonymous	N2	member NGO 'Sabz Andishan'	20-01-2016	Tabriz

Anonymous	U4	ULRP- regional office Tabriz	20-01-2016	Tabriz
Anonymous	ST2	Student & NGO member	….	Tabriz
Anonymous	N3	NGO member of 'Hamiarane zist sabz hamyaraneh'	25-01-2016	Tabriz
Anonymous	F1, N4	Farmer in Maragheh and NGO member of 'The community of environment and Natural resources protection of Maragheh"	25-01-2016	Maragheh (small city around UL)
Anonymous	N5	Head of local NGO: 'The community of environment and Natural resources protection of Maragheh	25-01-2016	Maragheh (small city around UL)
Anonymous	S4	Geological scientist	25-01-2016	Maragheh (small city around UL)
Anonymous	N6	NGO member 'hamyaraneh zist sabz'	26-01-2016	Tabriz
Mahdi Zarghami	$S2_2$	ULRP – main office	27-01-2016	Tabriz
Anonymous	R1	Working for Regional Water Authority	28-01-2016	Tabriz
Anonymous	NO1	Working for Natural resource organization	30-01-2016	Tabriz
Anonymous	F2	Farmer (in village 30 km from lake)	3-2-2016	Village around Lake
Anonymous	DF1	3 Farmers in Razian village (2 km from lake)	3-2-2016	Razian village
Anonymous	DF2	Discussion of 15 farmers in Akhund Gheshlag village	3-3-2016	Akhund Gheshlag village

Anonymous	F3	Farmer in Akhund Gheshlag village	3-3-2016	Akhund Gheshlag village
Anonymous	F4	Truck driver and farmer in Akhund Gheshlag village	3-3-2016	Akhund Gheshlag village
Anonymous	DF3	Discussion of 4 farmers in Gara Chupug village	3-3-2016	Gara Chupug village
Anonymous	A1	Now working for Agricultural ministry East-Azerbaijan In the past: - working for cooperative of villages around Malekan - working for centre for agricultural services	7-2-2016	Tabriz
Anonymous	E1	Engineer	12-2-2016	Tehran
Anonymous	U5	ULRP – International office	13-2-2016	Tehran

Annex 2: flyer of event organised by ULRP – ‘Lessons from Lake Urmia’