Social Aspects of Water Supply Management in Jordan

Potential for Participation of Rural Communities and Implications for Process Design

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SLE

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Preface

Preface – Deutsche Gesellschaft für Internationale Zusammenarbeit

Jordan is struggling with a severe water crisis. Largely comprising desert and semi-arid steppe, it is one of the world's most water-scarce countries. Surface water resources have already been dramatically depleted, and as a result, water supply heavily relies on the over-exploitation of precious groundwater resources. Climate change is resulting in rising temperatures as well as irregular precipitation patterns, putting further strain on the resources. At the same time, demand for water is rising. Not only is the Jordanian population growing – the country is also accommodating more than 660,000 refugees who fled from the ongoing crisis in neighbouring Syria. These developments place a heavy burden on water resources, infrastructure, and the operating ability of water utilities. Water security in Jordan is at risk.

Being aware of what is at stake, Jordan is tackling these challenges and striving to reach long-term sustainability in the water sector. German development cooperation actively supports these efforts and contributes to securing the future water supply of the country. Given the complexity of Jordan's water problems, German development cooperation works with a comprehensive approach, tackling the issues from different angles. The German implementing agencies aim at the more efficient and sustainable management of Jordan's scarce water resources and contributions to securing the country's future water supply. GIZ's five key areas of cooperation are water sector governance and participation, water supply and sanitation, energy for water, water and agriculture, and sectoral vocational training. In this context, the empowerment of the population can contribute to a sustainable and balanced water distribution meeting the needs of the people. Public participation allows water users to voice their hopes and concerns, fostering a constructive dialogue with government officials and thus helping to prevent conflict over the scarce resources.

Since around 85 per cent of Syrian refugees live alongside Jordanians in host communities, these communities are especially vulnerable to the water crisis. Their infrastructure is often outdated and unfit for the growing population. Against this backdrop, the GIZ project "Supporting Participatory Resource Management to Stabilize the Situation in Host Communities (PRM)" combines the rehabilitation of the water supply network with participatory measures in Northern

Jordan. The objective is to ensure that the inhabitants of selected communities not only receive sufficient water but also take an active part in improving communal water supplies. During regularly held stakeholder meetings, community members – both Jordanians and Syrians – come together with representatives of the responsible water utility as well as other sector institutions and discuss all water-related issues.

The main focus of the work of GIZ in the context of this project is on setting priorities and realising ideas to improve water security in a complex and rapidly changing environment. Project implementation rarely allows for an in-depth academic analysis of the situation on the ground. In this light, a special collaboration took place in 2016 between Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Humboldt Universität zu Berlin and the German-Jordanian University. Over the years, GIZ has cooperated with established scientists on numerous occasions. In this case, we teamed up with a group of young researchers. Over the course of several months, students from both universities set off to investigate the potential of participation in resolving water-related communal challenges. They interviewed representatives of the selected communities to study current water management practices and analyse people's views and expectations regarding public participation. The students' research focused on a better understanding of the water situation and the social dynamic in the communities. At the same time, the objective was to reveal grievances and expectations of the people, demonstrating both the need and the opportunity for new approaches to water management.

This report details the research team's findings and interpretation. It provides a theoretical background on the concept of public participation, gives insight into water management in the three villages, and presents recommendations for public participation measures in these communities. Since the fieldwork was conducted in the early stages of the project implementation, its results point out different ways in which the project could be developed. At GIZ, we share the view on many of the issues raised in the report and agree, for example, that stakeholders are able to participate successfully only if they are sufficiently informed about the underlying issues, their causes, and possible solutions. For this reason, we make sure to provide the participants in the dialogues with the required information on the topics they themselves chose, such as water losses or water quality, and offer them training on participatory decision making and conflict resolution techniques. On other aspects, our opinions differ from the students' recommendations – for instance regarding the inclusion of women in the dialogues. Instead of offering separate meetings only for women in addition to the mixed rounds, our approach

deliberately focuses on facilitating the inclusion of women in the regular stakeholder meetings, so that they may play a central rather than marginal role in developing solutions to water issues that affect their communities. So far, our approach is proving successful and women are actively engaging in discussion rounds.

In our understanding, the consideration of all stakeholder opinions is key to developing and implementing measures that will benefit a community as a whole in the long-run. The research on the three villages has thus been a valuable source of information for the project. With the stakeholder dialogues now underway, it is useful to learn about the perspectives gathered in the early stages and to compare chances and limitations as they develop during project implementation. Since the continuous exchange of opinions is central to participatory resource management, more insights into the topic are sure to emerge in the future – we look forward to learning more about them.

Amman, June 2017

Daniel Busche
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Preface – Humboldt-Universität zu Berlin and German Jordanian University

This publication is the result of interdisciplinary science-practice collaboration of Humboldt-Universität zu Berlin (HU) in Germany, German Jordanian University (GJU) in Jordan and the water portfolio of the German development agency *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) in Jordan. Students of MSc programmes in GJU's Schools of Natural Resource Engineering and Management as well as Business Administration, and HU's MSc Programmes in rural development, integrated natural resource management and other disciplines, originating from countries all over the world, implemented a research project under supervision of scientists from HU and GJU. Together they endeavoured to fulfil a research task commissioned by the GIZ project "Supporting Participatory Resource Management to Stabilize the Situation in Host Communities" that sought to implement public participation in water management of Jordanian refugee-hosting villages, as a pilot for possible upscaling elsewhere in the region.

Student learning through doing research is by no means an invention of modern times. About two centuries ago Wilhelm von Humboldt postulated that university students were not mere learners but did their own research, and the professor's task was to lead their research. In this way students should develop autonomy and maturity through own reasoning. Today this is called research-based learning and is being re-discovered at universities as a competence-oriented learning activity and to counter-balance the prevailing focus on ex-cathedra lecturing of disciplinary knowledge to students. Faced with global challenges of environmental, economic and social sustainability, university graduates must have a broad vision of their field, be able to analyse complex problems and balance the interests of numerous stakeholders therein. They must be able to work in a team as well as to take knowledge from different disciplines and from practice into account so as to find suitable solutions. Even more importantly, it is becoming more obvious that graduates need to be prepared for life-long learning. In a sector where knowledge once taught quickly becomes obsolete, aptitude and motivation to constantly acquire new know-how constitutes the central skill university teachers can convey to their students.

Joint learning is a key feature in transdisciplinary research projects, where practitioners and researchers of different disciplines collaborate in analysing and solving real-world problems. It is recognised that learning progress among academics and practical stakeholders is a project result of its own, as people make sense of research findings within their own context of application and reflection.

Therefore participatory approaches and user orientation are core characteristics of any transdisciplinary research.

Transdisciplinary Student Team Research projects at Humboldt-Universität zu Berlin link research, teaching, and extension – the three main tasks universities are assigned in society. These projects have dual purposes: a) Development of students' professional competencies in methodological-analytical, knowledge-related and social dimensions, and b) generating knowledge for and with participating actors of practice.

This publication constitutes the final output of such a Transdisciplinary Student Team Research project. Science-practice and intercultural communication, collaboration of the different partner and funding organisations, the interdisciplinary research task as well as empirical research in rural areas of Jordan all posed specific challenges. Typical for transdisciplinary projects, learning therefore occurred among all participants regarding both the research problem as well as the participatory culture and collaboration. Although this meant additional efforts on all sides, we see the added value of this project, among others, in the enormous professional and personal growth of participating students which has opened their minds and hearts for engaging with society, much as Wilhelm von Humboldt desired in his time. And for many of them, it has opened doors and pathways for their professional development in a way lectures alone would not have been able to do.

Berlin and Amman, June 2017

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Executive summary

Jordan ranks as one of the world's water-poorest countries. The influx of refugees from Syria into Jordan since 2011 is placing a heavy burden on its already strained water resources. This brings existing deficiencies in water supply to the forefront, leading to frequent supply bottlenecks and dissatisfaction among the population, particularly in rural areas.

Although the absolute quantity of water supplied cannot easily be increased by the responsible state company, it is possible to improve water infrastructure and water management practices so as to increase the satisfaction of water users. As part of the project "Supporting Participatory Resource Management to Stabilize the Situation in Host Communities (PRM)", the German development agency *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) promotes public participation as a way to improve communication between different water user groups and the responsible water utility and to raise the legitimacy and quality of decisions in the provision of drinking water.

This study is a contribution to GIZ's design of a facilitated participatory process leading to improved water supply management in selected pilot communities. The three refugee-hosting communities of Samar, Foa'arah, and Kharaj, the pilot host communities, are located in the Irbid Governorate in North-western Jordan, and suffer particularly from deficits in water supply. Main objectives of this study are an understanding of stakeholders' current practices and experiences in water management as well as contributing to GIZ's public participation concept as an approach to increase the quality of water provision for water users. A special focus is on vulnerable groups such as women, people with special needs, refugees.

The tailor-made analytical framework has a process perspective based on Esser's adaptation of Coleman's Macro-Micro-Model, integrating elements of Institutional Economics, Social Capital and public participation theories. It depicts the relationship between the current water management situation and its potential improvement through participatory processes. Based on this framework, 73 guideline-based semi-structured interviews were conducted with inhabitants of the host communities – including also refugees, families of disabled people, male and female religious authorities and advisors, mayors and members of associations – as well as employees of Yarmouk Water Company (YWC), the responsible water utility. Furthermore transect walks through the villages were performed. Data was analysed using qualitative content analysis. Particular attention is given

to understanding perceptions on water supply and demand as well as its management, as well as people's willingness and capacity to participate in water management, and constraints faced.

Results showed that the water supply situation in the three host communities is considered unsatisfactory by all stakeholder groups. However, the perceptions of the reasons differ. All recognise physical water scarcity and poor condition of water supply infrastructure. However, the personnel of the YWC focus on technical problems (e.g. lack of equipment and technical personnel, high costs of infrastructure maintenance, etc.). The villagers meanwhile emphasize the water consumption and infrastructure management behaviour of other community members, such as installing of powerful water pumps, illegal connection to pipe network, illegal operation of valves, etc., besides technical and managerial shortcomings. Refugees often depend on their landlords for water supply. Although water supply is seen as problematic, unemployment and financial difficulties are perceived by them as the more fundamental challenges.

Perception of water management functioning differs among stakeholders and depends on a variety of physical and social factors. The physical factors ensure better water supply to those who possess water reservoirs, those located close to the main pipe and those at lower topographical level. The social factors mostly relate to the social capital (capacities generated through social relationships) of an individual or family. Strong family ties are central in community life and in dealing with problems, including those related to water. High social capital increases access to financial resources necessary to construct a rainwater reservoir and to information on water supply or opportunities to improve it. Further, it improves a family's connection to the personnel of the YWC, as Jordanians use personal relationships to employees of the water company for pressing their issues. This might contribute to quicker processing of the water-related complaints and urge the valve operators to act in the interest of those they know in a village. Finally, social capital prevents collective action by villagers against those fellow citizens who violate the rules by tapping water illegally or causing unequal water distribution within the village.

Overall, the functioning of water management in the three communities is enabled by formal and informal institutions (rules and regulations) developed to cope with numerous problems. Two interrelated clusters of water management institutions can be distinguished:

a) Institutions regulating water supply and management towards the communities. These determine frequency and reliability of water supply, as well as quantity and quality of water delivered centrally. Besides national-level water policies, these institutions include both formal rules set by the YWC which organize the daily routines of the YWC personnel, and informal rules regulating staff communication with water users and also some of their activities.

b) Institutions regulating water distribution and use within the communities and families: the social norms which coordinate relationships among inhabitants and their effects on water distribution, in particular inequalities in supply to different households.

Formal rules regulating water management are often not implemented, or cannot be implemented. Thus, informal rules gain importance. They have been identified to regulate relationships not only between water providers and water consumers, but also among water consumers. One example is that YWC personnel share their telephone numbers with clients to be accessible and able to react faster to the problems related to water supply, although an official company hotline exists.

Experience with public participation is minimal. Stakeholders have different types and degrees of social capital which may or may not support their participation in water management. A general involvement in social networks, e.g. large *family clans* or active associations, is conducive for participation in this context. Formal or informal platforms of exchange, e.g. *diwans* (family meeting places), school meetings, mosques, Facebook groups or regular meetings in private houses, are central for any group of people to form a common understanding of the problem and possibly elaborate a joint position towards it. Some of the refugees, women and otherwise marginalised residents are much less equipped with this form of social capital. In consequence, they are not constituted as a group, do not have a common understanding and position and no representative of their particular interests. The importance of social capital is a challenge to the mobilization of these people and their potential participation in water management.

Another form of social capital – relationships based on cronyism – may be seen as an informal kind of participation. However it is likely to hinder more formal participation methods to be effective, in particular if the latter threaten the reciprocity of relationships in fields central to people's livelihoods.

Other factors influencing public participation are access to information, availability of transport to reach the meetings, readiness of participants to invest their time in a time-consuming participation process, openness of participants, their

readiness to discuss difficult issues, to hear and respect the position of other participants, and consider various interests when reaching decisions.

As regards stated perceptions of participation, personnel of the water utility do not perceive their clients as partners in water management, but interest has been expressed to engage in communication with women in particular in order to understand their perspective on water management problems. There is a general openness for dialogue, although they do not expect residents to make useful contributions to improving water management apart from conserving water in the household. Likewise, many residents are interested in improving water supplies and in participation, but are not so confident about the success of the process. Given the complicated patterns of potential gains and losses among village residents, the communities cannot be considered homogenous in their interests, particularly as people have developed coping mechanisms for water supply problems. The residents most interested in change are not always the most influential ones. Furthermore, disadvantaged people have an interest in avoiding conflict in the village.

Overall, any intervention in the socio-technical water management system – and a participatory process as such is considered an intervention – would lead to shifts in the social reward structure of stakeholders: from a systemic point of view the present arrangement makes sense for some, if not for most actors:

- it is predictable for those within the system and thus reduces complexity;
- it gives various benefits to stakeholders; and
- as a sub-system of Jordanian society it stabilises the social system as a whole.

It follows that there is an interest in maintaining the existing system, even if it is not considered efficient by stakeholders. Hence, there are forces and mechanisms within the system that try to maintain the existing patterns. Consequently, change may be perceived as a threat – there is something to lose for various stakeholders: predictability of the system, material benefits (money/income, water access), social status (prestige, reciprocity within relationships), formal authority, or informal power. In order to anticipate resistance to change it is helpful to be aware of what different stakeholder might not want to lose, in particular if they face difficulties to compensate for this loss.

Two arenas of potential participatory processes for the improvement of water management have been identified:

a) Institutions regulating water supply and management towards the communities, i.e. the relationship between the water utility (YWC) and all water users;

b) Institutions regulating water distribution and use within the communities and families, i.e. social norms that fail to alleviate water supply inequalities caused by low water pressure. Community members have a role and hence may contribute to solutions in both arenas.

Determining the purpose of participation for each type of stakeholder is necessary as a first step. Increasing the level of participation of community members – including vulnerable groups – is implied in the definition of the project outcome. Youth is suggested here to be considered as a stakeholder type, as their perspective and stake proved to be different from that of older people. Moreover, poor residents with houses on hilltops and/or at the end of distribution pipes have a particular stake. Our analysis indicates that differences in social capital lead to different degrees of vulnerability towards water scarcity and different capacities to participate. This has implications for their potential level of participation and for the suitability of participation measures.

Essentially two learning processes need to be designed and managed with a reflective attitude: Learning by all stakeholders about the problem and its solutions, as well as learning about developing a participatory culture. Several levers for facilitating participation have been identified: Besides the composition of participants and their levels of participation these are the topics and objectives of the process, the timing and pace of involvement and events, the settings, the methods and techniques employed, as well as the quality of facilitation and communication.

With regard to the problem-solving process, we imply that satisfaction may be increased even if changes in water infrastructure or management are limited. This may happen as a result of joint learning and exchange throughout the participation process, which has the potential to take the edge off existing conflicts of interest. Any participation process may concentrate on the relationship between YWC and water users, but there may also be room for improvement in intra-community water distribution. Both would need external facilitation and a specifically designed process, involving an analysis by the inhabitants of the distribution problems and their causes. This should start a joint learning process (on the subject and on each other's perspectives), which may catalyse social and technological change compatible with the existing socio-technical system.

However, the strong emotions shaping the perceptions of at least some of the stakeholders might make learning very difficult. A transition to a learning culture needs to be facilitated, e.g. through creation (at least in the beginning) of sepa-

rate spaces for different interest groups to avoid a frustrating confrontation of opinions commonly experienced.

Building trust in the participation process is essential, given the mixed experience of people with previous projects. Creating small successes is an intriguing way of doing so. Choosing a relatively small, but pressing problem to which a visible solution can be found creates confidence for tackling more complex problems. The uncertainty over water delivery schedules could be an example. External and impartial facilitation is required for the process as a whole, as well as moderation for specific methods and events. Furthermore, a reflective approach is pivotal to success. Fine tuning participation is only possible if facilitators and project managers carefully observe the effects of each step and the dynamics within the system and its environment.

After the public participation process has been organised and common decisions taken on water management, the degree of improvement in water management will further depend on the rules formulated during the public participation process – in how far these rules address the multiplicity of water-related interests, if they are supported by meaningful sanctioning mechanisms, and if they are implemented by the actors.

We conclude that strategies for public participation need to be compatible with the existing social structures at first. However, more fundamental changes of the system are only be possible if stakeholders worked on and modified the system's meaning (purpose) and the logic of its valuation. New rules emerge from changed values, and new values need institutional support to be effective.

الملخص

يعتبر دن واحدا من أفقر دول العالم في موارد المياه. وقد ضاعف تدفق ا جئين من سوريا إلى دن منذ عام 2011 بحيث على موارد المياه الشحيحة أصلا وهذا يبرز أوجه القصور القائمة في تزويد المياه إلى الواجهة، مسببا احتقانات تتكرر في دادات وضيق لدى السكان و سيما في المناطق الريفية.

وعلى الرغم من عدم كفاية زيادة الكمية المتوفرة بقبول مسؤولة مقبل الشركة المسؤولة عن تزويد المياه، ا أنه يمكن تحسين البنية التحتية وممارسات إدارة المياه من أجل زيادة رضا مستخدمي المياه. وتقوم الوكالة ية للتنمية الدولية (GIZ) بتعزيز المشاركة التي تعتبر وسيلة لتحسين التواصل بين مختلف مجموعات مستخدمي المياه ومزوديها ورفع شرعية ونوعية القرارات في توفير مياه الشرب وذلك كجزء من مشروع دعم ا دارة التشاركية للموارد من أجل تحقيق استقرار ا وضاع في المجتمعات المضيفة جئين (PRM).

وساهمت **هذه الدراسة** في تصميم الوكالة ية (GIZ) للعملية التشاركية التي تؤدي إلى تحسين إدارة تزويد المياه في المجتمعات المتجاورة. وتقع المجتمعات ث المضيفة جئين في سمر وعرة والخراج في محافظة إربد شمال غرب ا ردن، وهي تعاني بشكل خاص من العجز في تزويد المياه. و **الرئيسي ة** لهذه الدراسة هي فهم لممارسات والتجارب الحالية صحاب المصلحة في مجال إدارة المياه، وكذلك المساهمة في مفهوم GIZ لمشاركة العامة كنهج لتحسين نوعية تزويد المياه لمستخدمين. ويتم التركيز بشكل خاص على الفئات المهمشة مثل النساء اص ذوي حتياجات الخاصة وا جئين.

إن **التحليل** مصمم خصيصا بحسب وجهة نظر عملية وقوم على تكييف *إطار للنموذج المتكامل* الكلي والجزئي، الذي يجمع عناصر قابلة للتطبيق المؤسسي ورأس المال تماعي ونظريات المشاركة العامة. وهو يصور الع بين الوضع الحالي دارة المياه والتغيير المحتمل باستخدام العمليات التشاركية. وبناءا على هذا تم إجراء 73 **مقابلة شبه منظمة** على أساس المبدأ التوجيهي مع سكان المجتمعات المضيفة ذكوراً وإناثاً حسب مقيمين وأيضا ا جئين وأسر ذوي حتياجات الخاصة، لأئمة المساجد ورؤساء البلديات وأعضاء الجمعيات - وكذلك العاملين في شركة مياه اليرموك، وهي الشركة المسؤولة عن تزويد المياه. إضافة على تلك التي اجريت مع أصحاب المصلحة المحليين في القرى من **المشي**. وتم تحليل البيانات باستخدام **التحليل النوعي للمحتويات**، مع اعطاء اهتمام خاص لفهم التصورات حول تزويد المياه والطلب عليها وكذلك إدارتها، وكذلك استعداد الناس وقدرتهم على المشاركة في إدارة المياه، أو القيود التي تحول دون ذلك.

أظهرت **النتائج** أن **وضع تزويد المياه** في المجتمعات المضيفة الث يعتبر غير مرضي لجميع الفئات من أصحاب المصلحة مع اختلاف ا سباب. ويعترف الجميع بوجود ندرة في المياه وضعف في البنية التحتية. ومع ذلك، يركز موظفو شركة مياه اليرموك على المشاكل الفنية في تزويد المياه (مثل نقص المعدات والموظفين والتقنيين وارتفاع تكاليف صيانة البنية التحتية الخ) بينما يؤكد السكان المحليين على سلوكيات استخدام المياه وإدارة البنية التحتية من قبل أفراد المجتمع، مثل تركيب مضخات المياه القوية والربط غير المشروع بشبكة المياه والتوزيع غير العادل للمياه من قبل المجلس، وما إلى ذلك. إضافة لبعض أوجه القصور الفنية وا دارية. ويعتمد ا جئون غالبا على المالكين في قرارات في

تزويدهم بالمياه. ورغم أن تزويد المياه يعتبر مشكلة فإن معظمهم يعتبرون البطالة والصعوبات المالية هي التحديات الأساسية.

يختلف تصور أصحاب المصالح لحوكمة إدارة المياه بناءً على مجموعة متنوعة من العوامل المادية والاجتماعية. فالعوامل المادية تتضمن تزويد أفضل للمياه لمن لديهم خزانات مياه والذين يسكنون بالقرب من الخط الرئيسي أو في المناطق المنخفضة. وتتعلق العوامل الاجتماعية غالباً برأس المال الاجتماعي والقدرات المتولدة من خلال الاجتماعية للفرد أو قدرته على الروابط غير الرسمية والقوية هي محور في الحياة المجتمعية وفي حل المشاكل بما في ذلك المشاكل المتصلة بالمياه. ويؤدي ارتفاع رأس المال الاجتماعي إلى زيادة فرص الحصول على الموارد المالية اللازمة لبناء خزان مياه أو الوصول للمعلومات عن تزويد المياه أو فرص تحسينها. وكذلك يحسن ذلك من قدرة التأثير على موظفي شركة مياه اليرموك حيث تستخدم العلاقات الشخصية مع موظفي شركة المياه لحل قضايا المياه. ويساهم ذلك أيضاً في سرعة معالجة الشكاوي المتعلقة بالمياه وحث موزعي المياه على العمل لصالح معارفهم من أهل القرية. وأخيراً يمنع رأس المال الاجتماعي العمل الجماعي من قبل المجتمع المحلي ضد المواطنين الذين ينتهكون القواعد ويستغلون المياه بشكل غير قانوني الأمر الذي يتسبب في عدم المساواة في توزيع المياه داخل المجتمع.

بصفة عامة فإن إدارة المياه في المجتمعات المحلية تتشكل من خلال المؤسسات الرسمية وغير الرسمية (القواعد والأعراف) التي وضعت لمعالجة العديد من المشاكل ويمكن التمييز بين **مجموعتين مترابطتين من مؤسسات إدارة المياه**:

أ) المؤسسات التي تنظم تزويد المياه وإدارتها نحو المجتمعات المحلية: وهذه تحدد عوامل تكرار وموثوقية تزويد المياه وكذلك كمية ونوعية المياه الموزعة مركزياً. وإلى جانب سياسات المياه على المستوى الوطني تشمل هذه المؤسسات من القواعد الرسمية التي وضعتها شركة مياه اليرموك التي تنظم الروتين اليومي لموظفي الشركة، والقواعد غير الرسمية التي تنظم الاتصالات بين الموظفين مع مستخدمي المياه، وكذلك بعض أنشطتهم.

ب) المؤسسات التي تنظم توزيع المياه واستخدامها داخل المجتمعات المحلية مثل: الأعراف الاجتماعية التي تنسق العلاقات بين السكان وتأثيرها على توزيع المياه وخاصة عدم المساواة في إيصال المياه المختلفة.

ويتم تنفيذ ومكن تنفيذ كثير من القواعد الرسمية التي تنظم إدارة المياه. ولكن تكتسب القواعد غير الرسمية أهمية فقد تحدد طبيعة التعامل بين مزود المياه (شركة مياه اليرموك) وبين مستهلكي المياه، من أمثلة ذلك أن يتبادل موظفي الشركة أرقام هواتفهم مع العملاء ليتمكنوا من الوصول إليهم واستجابة لشكاويهم بشكل أسرع لحل المشاكل المتعلقة بتزويد المياه رغم وجود خط ساخن للشركة بشكل رسمي.

انحصرت **المشاركة العامة** في حدها الأدنى بين أصحاب المصلحة لديهم أنواع ودرجات مختلفة من رأس المال الاجتماعي والذي قد يدعم أو يدعم مشاركتهم في إدارة المياه فإن انخراطهم في الشبكات الاجتماعية عموماً، مثل العشائر والجمعيات الخيرية أو الجمعيات النسائية تؤدي للمشاركة في هذا السياق. تعد منصات للتبادل الرسمية أو غير الرسمية مثل الدواوين (أماكن اجتماعات العائلة) والاجتماعات المدرسية والمساجد ومجموعات الفيسبوك أو اجتماعات النساء المنتظمة في المنازل

الخاصة هي أمرا محوريا في مجموعة من الناس تشترك في مشكلة وربما تكون لديهم مواقف مشتركة نحوها. وبعض الآخرين والناس غير مهتمين بالمشاكل المشتركة ولكن يؤثر بها هذا الشكل من أشكال رأس المال الاجتماعي. ونتيجة لذلك، قد يكون مجموعة ويكون لديهم مواقف مشتركة ويهتمون بمصالحهم الخاصة. ويشكل أهمية رأس المال الاجتماعي تحديد الحشد هؤلاء الناس واحتمال اشتراكهم في إدارة المياه.

ويمكن اعتبار شكل آخر من أشكال رأس المال الاجتماعي وهي العلاقات القائمة على المحسوبية - كوسيلة غير رسمية للمشاركة لكن من المرجح أن يعيق هذا الشكل فعالية المزيد من الأساليب للمشاركة الرسمية، وخاصة إذا كانت هذه المشاركة تحدد المعاملة بالمثل في علاقات الوساطة في مجالات مركزية من معيشة الناس.

ومن العوامل الرئيسية التي تؤثر على المشاركة العامة الوصول إلى المعلومات وتوفر وسائل النقل للمشاركة في الاجتماعات، واستعداد المشاركين لاستثمار وقتهم في عملية مشاركة تستغرق وقتا طويلا، وانفتاح المشاركين، واستعدادهم لمناقشة المسائل الصعبة، وسماع واحترام مواقف المشاركين الآخرين والنظر للمصالح المختلفة عند اتخاذ قرارات مشتركة.

وفيما يتعلق **بتصورات المشاركة** في البرامج الحالية في مجال توزيع المياه يتصورون حتى الآن أنهم يكونون عملاء مشاركين في عملية إدارة المياه، رغم الإعراب عن اهتمامهم بالتواصل مع الناس بشكل خاص لفهم وجهة نظرهم حول مشاكل إدارة المياه. من الممكن انفتاح على الحوار رغم عدم توقع أي قدر من السكان في إسهامات مفيدة لتحسين إدارة المياه عدا عن توفير المياه في المنزل. وأيضا من جانب العديد من السكان فإن الاهتمام بتحسين توزيع المياه والمشاركة لا يكون لديهم الثقة بنجاح العملية محليا. ومن المنظور إلى الأنماط الحالية والمعوقات لاكتساب الخبرات والمعرفة للمجتمعات المحلية، يمكن اعتبارها نتاجا متجانسة بمصالحها، خاصة وأن الناس وجدوا آليات للتغلب على مشاكل توزيع المياه. حيث أن الأفراد المهتمين بالتغيير ليسوا دائما الأقوى نفوذا. وكذلك فإن أصحاب المصالح المحرومين ليس لديهم مصلحة في تجنب إحداث نزاع في القرية.

وعموما، سيؤدي أي **تدخل في نظام إدارة اجتماعية فنية للمياه** - يعتبر عملية تشاركية فإنها تحتوي على الاستفادة في بنية المردود لأصحاب المصالح: ومن وجهة نظر نظامية فإن الطريقة الحالية للعمل موجودة لها أهمية بالنسبة للبعض ولكن لمعظم الجهات الفاعلة:

- فهي يمكن أن تؤدي بالنسبة لمن هم داخل المنظومة، وبالتالي فهي تقلل من التهديد
- وهي تقدم فوائد مختلفة لأصحاب المصالح
- وهي لكل نظام فرعي في المجتمع تنافس على العمل على استقرار النظام الاجتماعي ككل.

وبالتالي فإن هناك مصلحة في الحفاظ على النظام القائم حتى وإن لم يعتبره أصحاب المصالح قاطعا، نظرا لأن هناك **قوى وآليات داخل المنظومة** تحاول الحفاظ على الأنماط الحالية. وبالتالي يتم النظر إلى التغيير بأنه يشكل تهديدا - هناك شيء يخسره مختلف أصحاب المصالح بالقدرة على التكيف للنظام، والانتفاع المادي (المال / الدخل، والوصول إلى الماء) والوضع الاجتماعي (المكانة والواسطة للمعاملة بالمثل) للسلطة الرسمية أو نفوذ غير رسمي ولكي يتحقق التحقق أو التقليل من الفوائد

بيان ما يرغب أصحاب المصلحة تحقيقه وخاصة إذا كانوا يواجهون صعوبات في تعويض هذه الخسارة.

وقد تم تحديد **مستويين من العملية التشاركية المختلفة** في تحسين إدارة المياه:

أ) المؤسسات التي تنظم توزيع المياه وإدارتها وتوصيلها إلى المجتمعات المحلية، أي العلاقة بين شركة مياه اليرموك وجميع مستخدمي المياه.

ب) المؤسسات التي تنظم توزيع واستخدام المياه داخل المجتمعات المحلية، أي الأعراف الاجتماعية التي تكشف في التخفيف من عدم المساواة في توزيع المياه الناجمة عن انخفاض ضغط المياه. وأعضاء المجتمع دور وبالتالي يسهمون في إيجاد حلول في المجالين.

ومن الضروري كخطوة أولى تحديد **الغرض من مشاركة** كل فئة من أصحاب المصلحة. وزيادة **مستوى مشاركة** أفراد المجتمع بمن فيهم الفئات المهمشة - وهو متضمن في تعريف نتائج المشروع. ويقترح فاريين أن ظلال شبابيك فئة مختلفة من أصحاب المصلحة حيث تثبت أن وجهة نظرهم وإسهامهم يختلف عن إسهام كبار السن. وكذلك الحال بالنسبة للفقراء الذين يعيشون في منازل على قمم التلال و/أو في نهاية خطوط التوزيع لهم مصلحة خاصة. ويشير الحلين أن الاختلافات في رأس المال الاجتماعي تؤدي إلى **درجات مختلفة من الضعف** تجاه ندرة المياه وقدرتهم على المشاركة. وهذا له تأثير على مستوى المشاركة المحتملة وعلى تخطيط برامج المشاركة المناسبة.

ويلزم الضروري **تصميم وإدارة عمليتين من التعلم** تتجه نحو تمكين جميع أصحاب المصلحة عن المشكلة وحلولها، وكذلك التعرف على تطوير ثقافة المشاركة. وقد تم تحديد عدة أذرع لتسهيل المشاركة بالإضافة إلى جانب تحديد المشاركين ومستويات مشاركتهم تكون هذه هي موضوعات وأهداف العملية، وتوقيت وتيرة المشاركة و… داث وأوضاعها وأساليب وتقنيات المستخدمة وكذلك جودة ال… ت والاتصالات.

وبالنسبة **لعملية حل المشكلة** فإن التشيري بأنه يمكن زيادة الوضع حتى لو كانت التغييرات في البنية التحتية للمياه أو … دارة محدودة. وهذا قد يحدث لتحقيق التعلم والتبادل أثناء جميع مراحل عملية المشاركة، والتي قد تنطوي على إمكانية إغفال التعارض الموجود في المصالح. وقد تتركز أي عملية مشاركة على العلاقة بين شركة مياه اليرموك ومستخدمي المياه، وأيضا قد يكون هناك مجال للتحسين في توزيع المياه داخل المجتمعات المحلية. وسيحتاج … هما إلى تيسير خارجي وعملية مصممة خصيصا تشمل … من قبل السكان الذين لديهم مشاكل التوزيع وأسبابها. ويجب أن يبدأ ذلك بعملية تعلم مشتركة (حول الموضوع وحول منظور كل منهم)، مما قد يحفز التغيير الاجتماعي والتكنولوجي المتوافق مع النظام الاجتماعي التقني القائم.

لكن المشاعر القوية الملاحظة حاليا والتي تشكل تصورات بعض أصحاب المصلحة على الأقل، قد تجعل التعلم صعبا للغاية. ويلزم تيسير **التحول إلى ثقافة التعلم** من خلال إنشاء مساحات منفصلة لمختلف مجموعات المصالح (على الأقل في البداية) لتجنب المواجهة المحتملة التي تحدث عادة بين الأطراف المختلفة.

بناء القدرات في عملية المشاركة أمر ضروري، نظرا للتجارب السابقة للمشاريع المختلطة من الناس. إن خلق نجاح اتصال غير ... هو طريقة مثيرة للاهتمام. لذلك فالتحديات المشاركة غير قياسية ولكنها لم يتم حتى يمكن إيجاد حل مرضي لها. خلق الثقة للتعامل مع المشاكل كثيرة جدا. مثال على ذلك يمكن أن يكون عدم اليقين بشأن الجداول الزمنية وتوصيل المياه. ولا زالت ... خارجية ونزيهة للعملية برمتها، وكذلك ... في ... حدوث الأحداث المعينة. وكذلك فإن **النهج المرن** هو أمر ضروري لنجاح ضبط ... المشاركة بطريقة مسؤولة الذين يكون ممكنا إ ... إذا ... الوسطاء ومديري المشاريع بحيادية تشارك خطوة تتخذ والنوايا داخل الهيئة.

وبعد تنظيم عملية المشاركة العامة واتخاذ قرارات مشتركة بشأن إدارة المياه فإن درجة التحسن في إدارة المياه تعتمد كذلك على القواعد المصممة أثناء عملية المشاركة العامة - إلى أي مدى تعالج هذه القواعد المصالح التي تم تحديدها فيما يتعلق بالمياه، وما إذا كانت مدعومة بآليات تنفيذية مجدية ومدى تمام تنفيذها في النهاية من قبل مختلف الجهات الفاعلة.

نخلص إلى أن استراتيجيات المشاركة العامة يجب أن تكون متوافقة مع الهياكل ... تماعية القائمة في البلدية. غير أنه ... يمكن إجراء تغييرات أساسية في النظام ما لم يعمل أصحاب المصلحة ويقوموا بتعديل معنى النظام الغرض منه (ومنطقه وقيمه). تنشأ القواعد الجديدة من القيم المتغيرة، وتحتاج القيم الجديدة إلى دعم مؤسسي لكي تكون فعالة.

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Abbreviations

A	Answer
CPR	Common Pool Resource
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (German Federal Ministry for Economic Cooperation and Development)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GJU	German Jordanian University
HU	Humboldt-Universität zu Berlin
IAP2	International Association for Public Participation
JVA	Jordan Valley Authority
MWI	(Jordanian) Ministry of Water and Irrigation
Q	Question
UNDP	United Nations Development Program
UNHCR	United Nations High Commissioner for Refugees
WAJ	Water Authority of Jordan
YWC	Yarmouk Water Company

1 Introduction

Jordan ranks as the world's second poorest country in terms of water resources and has been struggling for years to find new ways to tackle the chronic shortage of water and the steady decline in its quantity and quality. The annual water supply per capita in the country is far below the absolute water scarcity level of 500 m^3/capita (Ministry of Water and Irrigation, Jordan, 2016). In 2013 it amounted to 154 m^3/capita (ibid, 2013), whereas resources are assumed to be more than 100m^3/p/a in the country's National Water Strategy 2016-25 (ibid, 2016). According to the Jordanian citizens, infrastructures are old and defective, and water supply predictability is low. Aquifers are drying up and the accessible water is not always suitable for human consumption.

After the massive influx of refugees fleeing the Syrian crisis since 2011, the sudden population increase has accelerated resource depletion and has led to an urgent need for new water management plans (e.g. Sullivan, 2013; Global Risk Insights, 2013; Ministry of Water and Irrigation, Jordan, 2016).

The three refugee-hosting communities of Samar, Foa'arah, and Kharaj, located in the Irbid Governorate, further referred to as the host communities, suffer from deficits in water supply. Both Jordanians and refugees voice complaints through various channels, including demonstrations after Friday prayers. This situation has contributed to social conflicts between Jordanians and Syrians.

Although the absolute quantity cannot easily be increased by the water utility, it may be possible to improve water infrastructure and water management practices so as to increase the satisfaction of water users. Against this backdrop, the German development agency *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) has addressed water availability in Samar, Foa'arah, and Kharaj within the scope of the project "Supporting Participatory Resource Management to Stabilize the Situation in Host Communities" (PRM). Funded under the German Federal Ministry for Economic Cooperation and Development (BMZ) Special Initiative "Tackling the root causes of displacement, reintegrating refugees", the project combines the rehabilitation of the water supply infrastructure in the three communities with a participatory approach. In frequent Stakeholder Dialogue events, both Jordanian community members and Syrian refugees come together with representatives of the responsible water utility, relevant governmental institutions, and civil society representatives to discuss options for improving water supplies in their communities. In order to ensure alignment with the needs of the community, the discussion results are directly reflected in the prioritisation and

implementation of construction measures for the renewal of the supply infrastructure. Special attention is being paid to the supply of vulnerable groups – among them refugees, people with disabilities, and elderly people. The intention is not only to strengthen the public participation of groups which thus far have been largely excluded from political decision making processes, but also to increase acceptance and integration of Syrian refugees within the host communities.

The aim of this research is to contribute to GIZ's design of a facilitated participatory process leading to improved water supply management solutions in selected pilot communities within the project described above. This design should integrate needs, interests and ideas of different population groups – both regarding the final solutions and the process of their elaboration. Particular focus has been on the participation of vulnerable groups, as defined by GIZ. In order to develop a detailed and high-quality concept for the participation process to be started within the project, it is necessary to have a good understanding not only of the regional water management situation, but also of the capacities and propensity of different stakeholders to participate in its improvement.

Overall, the present study aims to answer the following two research questions:

- How is water management organized in and for the three Jordanian refugee-hosting communities?
- What is the potential for public participation as an approach to increase the satisfaction of all water users?

Accordingly, the following research objectives were set for this study:

1. Generating insights into water supply and consumption patterns of different population groups as well as past experience with and perceptions of water management in the three host communities of Samar, Foa'arah, and Kharaj; this also includes possible changes in aspects related to water management since the arrival of the refugees;
2. Understanding social structures and relations in the three communities and their possible impact on public participation, differentiating between population groups;
3. Identifying stakeholders' willingness to participate in the process of planning the improvement of future water supply, factors affecting the willingness to participate, the stakeholders' actual participation capacities, and needs for capacity building;

4. Finding suitable forms of public participation in water management under consideration of possible limitations on their implementation based on the preconditions for public participation found in the three communities.

In the analysis of the communities, three aspects are considered: the social relations, the perception of water supply and distribution, as well as the experiences with public participation. Within the social relations dynamics, family ties, the role of religion, and power relations are investigated. Analysis of the water supply aspect includes the predictability of water supply, the perception of changes in the water supply and their reasons, the satisfaction with water supply, as well as existing local practices to cope with water scarcity and ideas for improvement. The technical examination of water supplies, performed in a separate GIZ study, is beyond the scope of this study. The analysis of perceptions of public participation focuses on information flow, the existing formal or informal participation platforms, social and personal skills for participation and attitude towards public involvement. These aspects are in turn related to personal and positional motivation of different stakeholders.

In line with GIZ objectives, the particular focus in this study has been made on the needs of vulnerable groups which, referring to GIZ, include women, refugees and people with special needs. The refugees' potential for participation is determined by their perception of other community members, the latter's perception of the refugees, and integration of refugees into community life. Other stakeholders include religious and non-religious authorities and community organisations. Regarding refugees, special attention is given to the potential of their involvement and participation in water management, as they are becoming an integral part of a community. Furthermore, the responsible water company (with employees on management and operational levels) and government organisations are considered stakeholders in water management.

The report is structured in accordance with the main research steps. Chapter 2 provides background information on Jordanian water resources, authorities and organisations involved in water management, the refugee influx in Jordan, and the cultural context. Chapter 3 illustrates the theoretical framework of this study which is based on the Institutional Approach to participation, Social Capital Theory and Common Pool Resource Theory. The conceptual framework depicted in Chapter 4 is a representation of assumptions and hypotheses regarding water management and public participation in the study area. Chapter 5 provides details on the methods of data collection and analysis used in this study. Chapter 6 summarizes research findings for each of the three host communities and the Yar-

mouk Water Company. The discussion in Chapter 7 provides the analysis of these findings across the villages and stakeholders. In Chapter 8 general conclusions are drawn to answer the initial two research questions. Furthermore, recommendations are provided for the design of a participatory water management process for the host communities, given the potential of their successful implementation.

2 Water situation in Jordan, local water management and its context

2.1 Water situation in Jordan

Jordan the world's second water-poorest country with an estimated water supply of 154 litres/capita/day (Ministry of Water and Irrigation, Jordan, 2013). With less than 100 m^3 of renewable water resources per capita (Ministry of Water and Irrigation, Jordan, 2016), Jordan is below the 500m^3/capita level marking absolute water scarcity (White, 2012). King Abdullah II describes the water situation in his country as follows:

> *"Our water situation forms a strategic challenge that cannot be ignored. We have to balance between drinking water needs and industrial and irrigation water requirements. Drinking water remains the most essential and the highest priority issue" (Ministry of Water and Irrigation, Jordan, 2016).*

Groundwater is the main source of freshwater in Jordan, accounting for 589 million m^3 or 70% of water supply (ibid.). The surface waters contribute 259 million m^3 or 30% (ibid.). Only some 15% of wastewater is being reused, mostly for irrigation (ibid.).

The natural aspects of water scarcity in Jordan are determined by limited surface and groundwater resources, as well as low levels of precipitation. This natural water scarcity is further worsened by man-made demographic, economic and environmental factors. With a birth rate of 27 per 1000 people in 2014 (World Bank, 2015), the population of Jordan is expected to double by 2050 (Ministry of Water and Irrigation, Jordan, 2016), leading to a water demand that will be 26% over current water availability (ibid.). Among the economic factors, the water-use share of 50% for irrigated agriculture (Ministry of Water and Irrigation, Jordan, 2016) is to be considered. Deterioration of water quality in groundwater and surface sources decreases physical and economic availability of drinking water and has negative effects on people's health.

The demographic, economic and environmental trends mentioned above are further intensified by external factors, such as the civil war in the neighbouring Syria. Since this began in 2011, 657,203 Syrian refugees have been hosted by Jordan. The smaller share of the refugees live in Al-Zaatari and Al- Azraq refugee camps; 85% are settled primarily in urban areas and are classified as extremely vulnerable. Thus, Jordan faces an additional challenge of providing refugees with water and decreasing the potential for conflicts over the already scarce resource.

2.2 Water governance in Jordan

National Water Strategy 2016-2025 is Jordan's central document setting water management objectives and the ways they can be achieved. Its implementation is coordinated by the Ministry of Water and Irrigation (MWI). The strategy sets forth a series of objectives for water demand, water supply, institutional reform, water in irrigation, wastewater management, and alternative water resources.

MWI is the main public authority governing water management in Jordan. It works at the country level and is responsible for managing infrastructure, wastewater, and water supply (Ministry of Water and Irrigation, Jordan, 2016). Tasks such as setting water quotas or stimulating the use of water-efficient crops fall under the auspices of the MWI. The Ministry of Planning and International Cooperation performs long-term non-sectoral strategic planning in Jordan and acts as the key account manager for international donors. The Ministry of Agriculture addresses the needs of Jordan's farmers, who use considerable amounts of Jordan's water resources.

The MWI has two organisations subordinate to it which represent the pillars of Jordan's national water management: the Water Authority of Jordan (WAJ) and the Jordan Valley Authority (JVA). The JVA is responsible for development in the Jordan Rift Valley (Ministry of Water and Irrigation, Jordan, 2010). Its services are oriented towards the agricultural sector and provision of irrigation water for farmers and include, amongst other things the installation of irrigation units, the sale and lease of agricultural land, and issuing construction licenses (Jordan Valley Authority, 2010b).

The Water Authority of Jordan is responsible for water and sewage infrastructure in four sectors: operations, financial, institutional, and customers (Water Authority of Jordan, 2010). The mission of the Water Authority of Jordan is to:

> *"provide all of its service recipients in the Hashemite Kingdom of Jordan with drinking water according to Jordanian quality standards at optimized cost, manage available water resources efficiently, protect them from pollution, distribute water fairly, search for new sources, apply legislations to prevent waste and misuse, provide sanitation services, re-use treated water effectively in accordance with approved specifications and focus on earning the trust of its customers and its employees." (Water Authority of Jordan, 2016[1]).*

1 Retrieved 12 December 2016 from www.waj.gov.jo.

Most of these tasks are delegated to the WAJ Utilities: the Aqaba Water Company, the Yarmouk Water Company, and the Miyahuna Water Company, who manage water resources within the governorates under their jurisdiction. Specifically, they organize water abstraction, water purification, water supply, collection of wastewater, charge water users for the services provided, process the complaints of water users, connect new users to water supply infrastructure, control illegal connections to water pipelines and impose sanctions, maintain water supply infrastructure etc.

2.3 Cultural context

The Jordanian society is no stranger to refugees and hosting large numbers of people within the country, starting from the displacement of Palestinians in 1948 and 1967 , the arrival of 57,140 Iraqis after 1991 (UNHCR, 2015), and up to the present influx of Syrian refugees into the region.

The society in Jordan can be described as both socially and religiously conservative, in which the family plays a central role for values and beliefs. The hierarchy in the Jordanian society is reflected within the family, where the eldest male is the decision maker. This hierarchy extends to the level of tribes and is supported by strong identity of pride, honour and nobility. The family structure and the extended family ties remain relatively strong, which can be observed in the establishment of family *Diwans* for informal family meetings and ceremonies. The *Diwan* is a place communally owned by the members of the family where they can meet to self-organize, hold weddings and funerals.

The majority of the population are Muslim, 6% are Christians, and 1% of the population have other religions. The Islam emphasis on charity, justice and social cohesion has strengthened the tribal values, social solidarity (*Takaful Ijtima'i*) and mutual assistance (El-Said and Harrigan, 2008) already embedded within the Arab traditions. An important form of social networks existing in Jordan is *wasta*, which literally means the use of informal channels, mostly based on kinship ties, to obtain any kind of service (Ronsin, 2010). Although *wasta* is perceived by many as a sign of inequality, it seems to be a crucial mechanism in Jordanian society used to self-organize, manage communities internally, and establish connections to higher authorities.

3 Theoretical background

Participation tools are widely considered beneficial improvements to environmental projects (Luyet et al., 2012). In the specific topic of water management in the Arab regions, the United Nations Development Programme (UNDP) states that stakeholder participation and empowerment are key elements of good water governance. According to the UNDP:

> *"water governance comprises the mechanisms, processes and institutions that allow all stakeholders, including citizens and interest groups, to articulate priorities, exercise legal rights, meet obligations and mediate differences" (UNDP, 2013: 72).*

Some authors suggest that public participation is able to create overall benefits for the community (Reed, 2008) such as increasing public trust in civil society, as more stakeholders are included in decisions directly affecting them. It may also foster social learning and participants' capacity to use their knowledge, which may be beneficial for interventions at the local level and among target groups. Furthermore, public participation gives the sense of ownership over the decision-making process and its outcomes, promoting more effective community decision-making and better acceptance of a new policy. General advantages (as well as risks and costs) of public participation are further elaborated on in sections 3.3 and 3.6.

In this report public participation is understood as

> *"a measure of the overall legitimacy of the policy process. A policy which has involved a wider range of parties is assumed to operate with a greater level of consent" (Rydin and Pennington, 2000: 154).*

However, we consider participation to be neither a "one-size-fits-all" solution, nor a tool whose application – even in its most thorough form – may solve all problems in Jordanian water management. To develop useful recommendations, we need to understand water management in Jordan as a system where actors interrelate and their actions are embedded in an environmental, historical, socio-cultural, economic and political context. This implies that (1) not all water management aspects may be improved through participation, and (2) different stakeholders frame problems, their causes and reasons in different ways.

This chapter provides an overview of the main theories and approaches on the basis of which data collection and analysis wasere designed and carried out. The following section 3.1 presents the institutional economics approach which is used for a general understanding of the way water is managed. Section 3.2 discusses

possible levels of public participation based on Arnstein's Ladder of Citizen Participation. Section 3.3 provides an overview of conditions for and models of public participation that can be linked to different levels of participation. Section 3.4 addresses the specificity of including vulnerable groups in the public participation process. Section 3.5 considers the elaborations of the Social Capital Theory and discusses its contribution to the success of public participation process. Finally, Section 3.6 reviews the literature regarding factors preventing or limiting public participation which need to be taken into account when designing the process.

3.1 The institutional economics approach to public participation in water management

Scholars in the field of institutional economics claim that institutions have a central role in resource management, thus underlining the importance of institutional analysis for understanding the problems at hand, their causes and potential solutions.

Institutions are generally understood as sets of rules which indicate what an individual can, must or may do, or not do, supported by collective action (Commons, 1931). To perform their role in regularizing human behaviour, institutions should not only indicate the desired behaviour of a target group, but must also specify sanctions in the case of non-compliance. Three types of sanctions are usually distinguished:

> *"the moral sanction that those who are deemed worthwhile will disapprove; the economic sanction of bankruptcy or poverty; and the physical sanction of force" (Ramstad, 1990: 58-59).*

According to the type and the source of sanctions, the following classes of institutions are distinguished: legal rules, also referred to as formal institutions, and social norms and conventions, also referred to as informal institutions. Legal rules are laid down by a legitimate authoritative agent who is entrusted legal power to take and enforce decisions on behalf of a group. In most cases, this agent is associated with the state but heads of a family or a tribe also represent authoritative agents with the power to lay down rules operational within the respective societal group. Social norms and conventions refer to the rules which have developed incrementally, and whose implementation is voluntary. These informal institutions do not involve official enforcement by any third party. Their breach involves a punishment in terms of one's feeling of guilt or marginalization from the community. Correlation between legal rules and social norms and conventions has been

observed. On the one hand, the implementation of legal rules is more effective and smooth if these rules take into account social norms and conventions. On the other hand, over time continuously enforced legal rules are internalised by individuals and become norms and conventions.

The institutional approach to the problem of public participation in water management implies that:

- The institutional framework regulating water management and public participation needs to be understood. This includes studying (1) the legal rules assigning water management tasks and responsibilities to different actors, (2) the social norms and conventions regarding water use, and (3) the legal rules, social norms and conventions which enable or hinder public participation in water management;
- For the purpose of initiating change, new rules need to be crafted which determine who must, can or may participate in water management, how, in which role and under which conditions.

This study explores specifically those norms and conventions which regulate water use in the three host communities, and those which either facilitate or hinder public participation in water management. The next step in the institutional analysis is development of recommendations on the design of rules and conditions which ensure effective participation of all actors, and particularly the vulnerable groups, in water management.

3.2 The ladder of public participation

Implementing public participation in real-world situations often poses challenges. Several factors, such as cultural, political and historical context, contribute to the success or failure of public participation. Luyet et al. (2012) suggest structuring the process in the following stages: (1) identifying stakeholders, (2) characterising them, and (3) assigning them specific degree of participation. After that, the techniques fostering public participation are (4) chosen and (5) implemented.

The degrees of stakeholder involvement in the decision-making process are well represented by the Ladder of Citizens' Participation (see Figure 1) developed by Sherry Arnstein in 1969. This ladder depicts the citizens' power in determining a plan or programme (Arnstein, 1969), since, according to Arnstein:

"there is a critical difference between going through the empty ritual of participation, and having the real power needed to affect the outcome of the process" (Arnstein, 1969: 216).

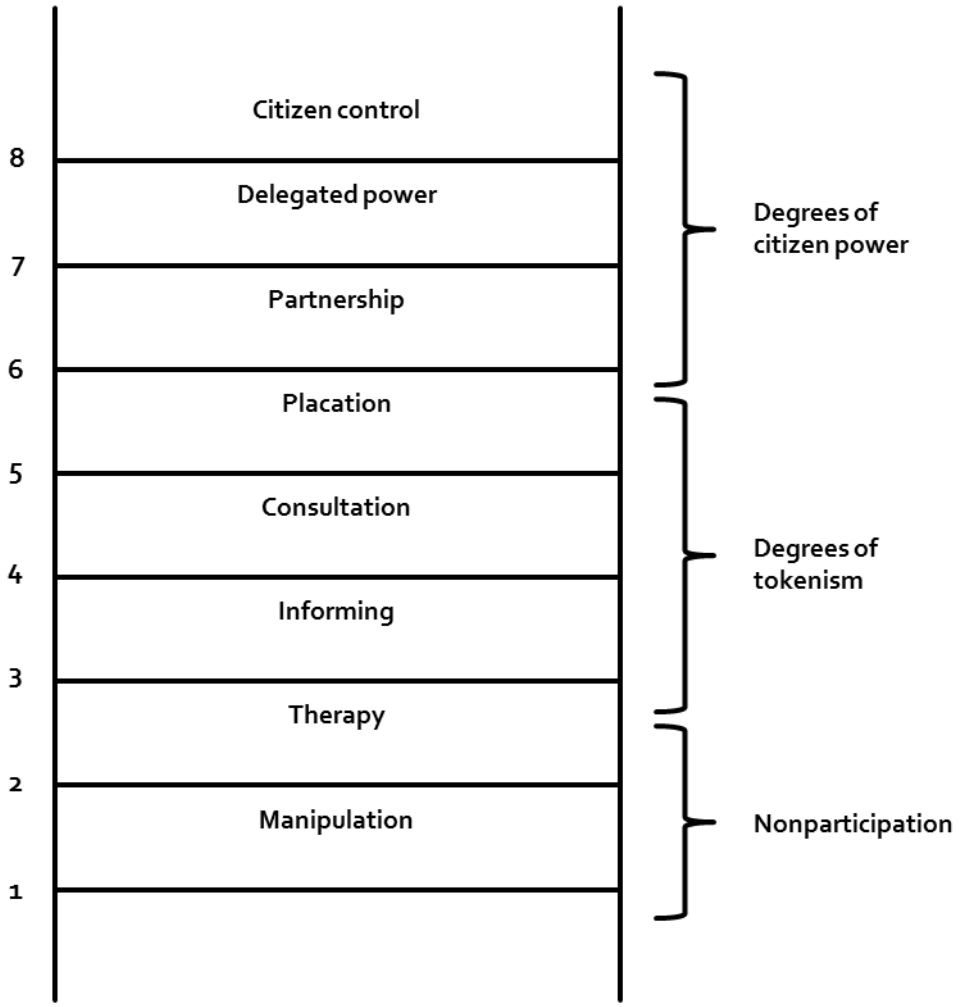

Figure 1: Eight rungs in a Ladder of Citizen Participation

Source: Arnstein (1969): 217.

The ladder distinguishes eight rungs of citizens' power to influence the final outcome (see Figure 1). These rungs are further clustered into three main levels of participation: non-participation, tokenism and citizen power. At the non-participation level, the public is either manipulated into thinking that public participation takes place (the manipulation rung) or into acting in the interest of the power-holders (the therapy rung). At the tokenism level, public participation has a form of making only a symbolic effort. It occurs when stakeholders are simply informed (the information rung), invited to express opinions (the consultation rung), or are

able to influence the decision making process to a limited extent (the placation rung). Finally, the full degree of participation is possible when citizens are assigned some degree of decision-making power: either this power is redistributed between citizens and authorities (the partnership rung), or citizens achieve dominant decision-making authority and have the power to veto a plan (the delegated power rung). At the highest rung – citizens control- the citizens hold full managerial power over issues directly affecting them.

In the context of participation projects there may be a gap between the existing degree of participation, the one which is possible within the existing institutional framework, and the desired degree of participation. In order to identify such gaps and to plan strategies for reducing them, the existing degree of participation needs to be analysed, including both classes of institutions – legal rules and social norms. Effecting change of institutions, in particular in case of social norms, is an incremental process which requires time and effort – respective strategies need to take this into account.

The Ladder of Citizens' Participation has been revised and adapted to different contexts, but also criticized. For example, the International Association of Public Participation (IAP2, 2007) has used the ladder to design the Spectrum of Public Participation which suggests techniques for different degrees of stakeholder involvement (see section 3.3). The criticism of the Arnstein's ladder concerns its hierarchical one-dimensional organization, namely the preference of the higher rungs over the lower ones. Some scholars suggest that lower levels of involvement might still be effective depending on the motivation and capacities of the stakeholders involved, and the organization of resource governance (Hurlbert, 2015).

For the purpose of this study, Arnstein's Ladder of Public Participation is used to analyse the degree of stakeholder involvement in water management possible within the existing institutional framework, as a basis for suggestions on a suitable design of the participation process in the GIZ project.

3.3 Conditions for and design of public participation

This section aims at depicting conditions and process designs which lead to effective public participation.

3.3.1 Conditions for effective public participation

There is a vast body of literature describing factors and conditions for public participation, and their selection has been made here according to the relevance for the project.

A main condition suggested in the literature is that at least some objectives of a participatory initiative are shared by a broad coalition of stakeholders. Awareness of stakeholders about the political and bureaucratic system of (in this case) water management is the another important condition which enables the initiation of the public participation process (Reed, 2008).

Irvin and Stansbury (2004) distinguish between the low-cost indicators of an ideal situation for public participation, and high-benefit indicators, that may render participation as particularly beneficial. The following six indicators were considered as the most relevant for water management in the three host communities of Jordan:

Indicators for low-cost participation:

- Stakeholders have the resources, both financial and time-wise, to attend meetings easily. Alternatively, the organisation initiating the public participation process provides stakeholders with resources for participation (Rowe and Frewer, 2002);
- The community is homogeneous and its main interests are clear and shared (requires fewer representatives of their interest groups);
- The topic does not require the representatives to understand complex technical information in a short time.

Indicators for high benefits of public participation:

- There is high hostility towards governmental bodies, and community validation of governance decisions is desired;
- Community members with strong influence are willing to participate in the process;
- The issue is perceived as approaching "crisis stage" if no action is taken.

3.3.2 Design of public participation processes

In general, success of a participatory approach depends on the nature and quality of the initiative that leads to it. A critical question here is who decides about the purpose of participation – which is different from people's motivation to participate, or their expectations. In many cases there are pre-defined ideas of an agency when project objectives are formulated and probably only some of the stakeholders will influence this decision at such an early stage. For stakeholders joining later-on, it is important how far the purpose of participation and project objectives are made explicit (this is also important if lower levels of participation are envisaged by the agency). The objectives of public participation significantly influence the process and the choice of participation techniques (methods).

As described above, important initial steps are identifying and characterising possible stakeholders (Luyet et al., 2012). Considering public participation in water management as a dynamic process, its success is to a large degree determined by the ideas of the stakeholders about what constitutes a good process, and their expectations about the benefits of participation. The next step in organising participatory water management is to identify the needs, desires and expectations of the various participants. In this way, the legitimacy of the process and acceptance of its outcomes can be increased (Webler et al., 2001).

Prevailing institutions, objectives of the initiative and stakeholders' expectations determine the levels of participation in the course of the process. It is not necessary, for example, that all people desire the highest possible level of control over decision making. In one example of public participation in integrated water management in a Jordanian village, people rejected both extremes of Arnstein's ladder. Their preferred degrees of participation were partnership and delegated power (Kerr and Jeffrey, 2008). In this sense, we claim that what is not desired should be as much respected as what is desired. Table 1 presents the spectrum of public participation objectives with their corresponding levels of participation and suggests techniques (methods) which may be suitable to stimulate public involvement.

The participation techniques need to be adapted to the specific phases of the participation process. In the beginning, a broader range of techniques need to be employed in order to motivate participants, compared to the range of techniques utilized at the end of the participation process, i.e. at the evaluation stage (Reed, 2008). Thus, the beginning of the process includes the provision of information, for example through the distribution of leaflets. More inclusive techniques such as focus groups or workshops might follow later. Also, methods need to be adapted

to the capacities of stakeholders, e.g. methods requiring reading or writing skills would exclude illiterate people (ibid.). Furthermore, additional attention should be paid to the development of social capital (see section 3.5) which ensures smooth implementation of joint decisions (Kerr Rault and Jeffrey, 2008). It should be considered that not only citizens and their organisations require capacities for public participation but also other stakeholders (public and private entities) and their representatives.

Table 1: Possible purposes of public participation and corresponding techniques of public involvement

	Inform	**Consult**	**Involve**	**Collaborate**	**Empower**
Public participation purpose	Public receives balanced and objective information which helps it understanding the problem, alternatives, opportunities and/or solutions	Public gives feedback on analysis, alternatives and/or solutions	Decision makers work directly with public throughout the process. Concerns and wishes of public are considered	Decision makers are partners to the public in each aspect of a decision, including the development of alternatives and finding the preferred solutions	Decision making lies in hands of public
Example of methods	Fact sheets Websites Open houses	Public comments Focus groups Surveys Public meetings	Workshops Deliberative polling	Citizen advisory committees Consensus building Participatory decision making	Citizen juries Ballots

Source: IAP2's Public Participation Spectrum (IAP2, 2007).

Finally, a legitimate participation process includes feedback loops which also require some degree of flexibility, because

> *"both participants and process organizers need to take time to reflect upon the experience and to feed these insights back into the design, so that the process can be improved" (Webler, 2001: 448).*

Hence, rather than being seen as static models designed a priori, models of public participation should be understood as dynamic processes that become more efficient in producing consensual and inclusive decisions as practice and

trust are being gained (Rault and Jeffrey, 2008). Public participation should not be seen as a "tool-kit approach" with predefined methods and procedures (Barnes, 2005; Reed, 2008).

Besides a reflective attitude built into the process and adopted by stakeholders, evaluation of the process and its results relates to previously identified objectives and expectations of stakeholders. A basic question about participation is "who defines success?". In this respect the foundations for participation in the evaluation phase are laid in the definition phases of the initiative, when objectives and indicators are formulated and plans are made about who will participate in the evaluation. However, describing details of participatory monitoring and evaluation here is beyond the scope of this study.

3.4 Inclusion of vulnerable groups in public participation

When designing the public participation process, it must be taken into account that local communities are heterogeneous entities with a diversity of groups and actors, all having different roles and agendas, and being at a different level within a community's hierarchical structure (Mfum-Mensa and Friedson-Riedenour, 2014). Involving only those who are the most competent and most easily engaged often implies excluding certain groups, in particular the vulnerable (De Freitas and Martin, 2015). Low levels of livelihoods or access to goods and services as well as possible special needs are possible criteria for defining vulnerability. Moreover, certain stakeholders may be deprived of information or excluded from networks (Hofmann-Souki et al., 2016), and in this way be unable to position themselves regarding the topic of interest.

However, an external categorisation of stakeholders may not correspond to their own self-perception. In addition, vulnerable individuals often do not organize as a group, which has important implications for their representation. This means that specific measures need to be included in the process for the identification of their interests, their positions towards the topic, and desired representatives.

Active participation of vulnerable groups in the water management process requires their empowerment, which can be achieved by:

- Awareness raising and mobilization. Vulnerable groups may be unaware of opportunities for participation, and may lack confidence in their potential to affect change and hence make insufficient mobilization efforts. This prevents them from acquiring knowledge, gaining confidence, forming opinions and finding ways to advocate them. Providing complete information about the

problem at hand, highlighting the benefits of participation and direct mobilization, and directly inviting vulnerable people at an early stage of public participation, are the first steps towards empowerment of vulnerable groups and ensuring their meaningful participation in decision making.

- Resources for participation. Vulnerable groups may lack the resources necessary for attending and following the meetings. For example, distributing written information to illiterate individuals decreases their ability and motivation to prepare for a meeting. Or, holding a meeting outside a village excludes those who do not have their own transport or cannot afford public transport. In such situations the agency initiating the participatory process should be ready to provide such resources to enable the participation of vulnerable groups. This may include education of stakeholders, organising their transport, etc. (Reed, 2008).
- Choosing carefully the time and space of meetings can contribute to the empowerment of vulnerable groups (De Freitas and Martin, 2015). The context of a meeting and its venue make certain groups feel uncomfortable to express their interests, complaints and ideas. This can be true, for example, for women in a male dominated group, or community representatives in a governmental space. In order to create spaces which encourage dialogue, it may be useful to invite the representatives of more powerful groups to the spaces of the vulnerable groups (and not vice versa), so that the former adapt to the norms of the latter, shifting perspectives and counterbalancing power relations.
- Another important aspect is the role of a group facilitator, who should be able to maintain positive groups dynamics and have credibility among all participants (Irvin and Stansbury, 2004). This helps when exploring the diversity of positions held by participants and setting clear objectives for the participatory process. It refers to both the whole round of stakeholder delegates and to the different stakeholder groups that they represent. In particular, vulnerable groups are often left without explicit facilitation which can make their internal decision-making more difficult or of lower quality.

Overall, the outcome of public participation seems to be more sensitive to the manner in which group dynamics are facilitated, the communication with participants, the clarity of objectives and the quality of planning, rather than to the participatory tools that are used (Reed, 2008). Depending on the nature of the inequality between the participants, be it age, nationality, gender, resources, or educational background, building opportunities to socialize and give voice to everybody is seen as a preliminary "plug-in" of the participatory process.

To summarize, involving vulnerable groups in public participation requires special efforts. To create a process which is meaningful to them, the spaces and methods of participation have to be chosen according to the specific needs of vulnerable groups and individuals. In order to understand the different dynamics between and within stakeholder groups, the insights from social capital theory are used, as explained in the following section.

3.5 Social capital

Definitions of social capital share the core idea that social networks have value. The general definition of the concept is "networks together with shared norms, values and understandings, facilitate co-operation within or among groups" (Foxton and Jones, 2011: 1). Social capital is constituted by the social resources that provide access to other forms of capital such as economic and physical capital (van der Ploeg and Marsden, 2008). According to Uphoff (2000), social capital is an accumulation of various types of social, psychological, cultural, cognitive, institutional, and related assets that increase the amount (or probability) of mutually beneficial cooperative behaviour. Thus, social capital is "anything that facilitates individual or collective action, generated by networks of relationships, reciprocity, trust, and social norms capital" (van der Ploeg and Marsden, 2008).

Social capital is generated through communities and social networks, but individuals and groups can use it at the same time. Individuals can exploit social capital of their networks to achieve private objectives, while groups can use it to enforce a certain set of norms or behaviours. In other words, social capital is generated collectively but it can also be used individually (Ferragina, 2010). This mutually beneficial relationship makes certain types of formal control and sanctions less necessary if social capital in a community is manifested through bounded solidarity and enforceable trust (Portes, 2000).

An important aspect of social capital is that it builds up over time and is practiced through various activities (e.g. going to the mosque, visiting neighbours, or informal meetings of women). For example, tight community networks in small towns or villages are created on the basis of community life passed down within families through generations and through strong enforcement of local norms (Portes, 2000). This implies that social capital is not easily imposed, and can be lost much faster than accumulated. Social capital decreases when shared values and norms such as trust, openness, reciprocity, solidarity and responsibility are not upheld (van der Ploeg and Marsden, 2008).

In general, social capital is considered beneficial for public participation, as it enforces stakeholder engagement on all the rungs of participation (see section 3.2), makes all participants more content with the decisions taken, and contributes to their motivation to implement those decisions. At the same time, social capital might also have negative influence on stakeholder involvement. In particular, social capital is often the reason for the existence of vulnerable groups, as it is related to power and ownership of or access to resources (van der Ploeg and Marsden, 2008). This leads to exclusion of certain stakeholders or their groups, creating an atmosphere of "us" and "them" (e.g. host communities and refugees). In this context, "if people care only for their immediate group or family, they can justify an unfair treatment of others" (ibid.).

In order to better understand the social capital in the three host communities, we classify it in accordance with Foxton and Jones (2011) into:

- Bonding social capital, which describes closer connections among people and is characterized by strong bonds e.g. among family members or among members of the same ethnic group;
- Bridging social capital, which describes more distant connections among people and is characterized by weaker, but more cross-cutting ties, e.g. with business associates, acquaintances, friends from different ethnic groups, friends of friends, etc.;
- Linking social capital, which describes connections with people in positions of power and is characterized by relations among people at different positions within a hierarchy. This type of capital is important for accessing public authorities and organizations responsible for resource management.

These different types of social capital are helpful to understand the potential for public participation in the three host communities. For example, refugees may have a high level of bonding capital because they share social norms with those most closely related to them. Members of host communities may have a stronger linking social capital, as they may be part of or have more access to public authorities or managing organizations.

3.6 Limitations of public participation, and costs and risks associated

Various factors prevent or limit public involvement and some risks are associated with public participation. Several authors (e.g. Irvin and Stansbury, 2004; Uphoff, 1992) have identified the following detrimental conditions:

- High complacency of the public in general, e.g. if decision-making is considered the government's job;
- High trust of the public in the government/agency to make the right decision;
- The problem at hand not being perceived as sufficiently important by the public to warrant their involvement, or otherwise benefits of participation are not easily identified;
- Self-perception of citizens as not being influential against stronger interest groups or the government or being overwhelmed by the problem;
- Inability to create an environment enabling equal participation of stakeholders with different scope of decision-making and/or economic power (e.g. between well-organised and paid lobbyist groups/companies and individual citizen volunteers, or between well-educated and informed stakeholders and those with lower levels of both);
- Lack (or unawareness) of real alternatives to the solution advocated by the government; the existence of central non-negotiables which limit the initiative power of participants;
- Large numbers of stakeholders and high diversity among them;
- The need for complex technical knowledge before being able to make informed decisions;
- Obstacles to regular meetings (large distances, etc.).

Participatory processes are time consuming for all participants and require financial resources for implementing specific activities. Ideally, the importance of the issue at stake should be in proportion to the time and effort invested. However, in real life, a problem is likely to have varying importance for different stakeholders, influencing their motivation to participate and readiness to bear the costs. The relation between costs and importance is not always easy to determine. Furthermore, there are risks of delays in view of the longer time needed to arrive at joint decisions. On the other hand, the costs of participation need to be seen in relation to potential follow-up costs of top-down decisions, e.g. for buffering neg-

ative social or environmental effects, higher costs of compliance control in case of resistance, potential protests or legal appeals against a decision by citizens or companies.

A common risk for participatory process is that joint decisions are subsequently ignored by those actors who were assigned the responsibility to implement them (Irvin and Stansbury, 2004). In such cases it may be questioned if the conditions for participation had been met in the first place, which include the propensity of powerful actors to leave some decision-making power to citizens and to be held accountable for their implementation.

While the results of participatory processes may be jointly agreed policies and/or measures, the fact that they are agreeable to all does not necessarily make them good or appropriate for efficient and sustainable resource management, for example if these decisions constitute the lowest common denominator only or consider too short a time frame, scope or scale. Luyet et al. (2012) also mention other risks which may arise during the participation process such as choice of stakeholders who do not represent the interests of the desired groups, frustration of some stakeholders, emergence of new conflicts, and empowerment of stakeholders who already enjoy a high degree of power.

In short, there are risks of making wrong choices at each step of the process. These can be minimised if efforts are made to understand the socio-ecological system in its entirety (including a variety of perspectives), investing sufficient time in the phases of shaping objectives and project planning, and by maintaining a reflective approach throughout the process.

4 Conceptual framework

The purpose of this section is to synthesize our analytical approach to public participation in water management in Jordan. The design of the conceptual framework is based on the Esser's adaptation of Coleman's "Macro-Micro-Model" on social processes, utilized for the analysis of institutional change (see Figure 2). The model depicts how a change of a macro-level situation can be explained. It assumes that the change observed at the macro level - pathway (d) in Figure 2 – is caused by processes at the micro level - pathways (a) to (c), whereby (a) represents the logic of the situation, (b) the logic of selection, and (c) the logic of aggregation.

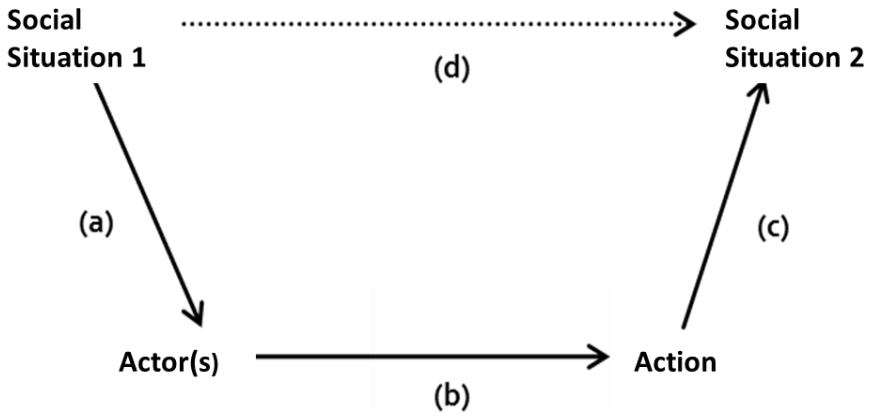

Figure 2: The Macro-Micro-Model by Hartmut Esser

Source: Esser (1999): 17 (adapted)

To analyse change or, in our case, to find entry points for possible future change, it is necessary to look at the multitude of different actors whose aggregated behaviour causes the change at the macro level. Applied to our case, this implies that the macro-level outcome of increased satisfaction with the water management system will be initiated through micro-level developments, i.e. stakeholders engaging in a participatory process. However, participation may not be the only measure necessary to achieve the desired macro-level change. The model also accounts for key elements facilitating or hindering the micro level processes, for example, the systemic constraints influencing actors in the initial situation, depicted in Figure 2 with the letter (a).

Figure 3 builds on this model, thereby also showing the delimitation of this research. The red boxes indicate the authors' research focus and boundaries.

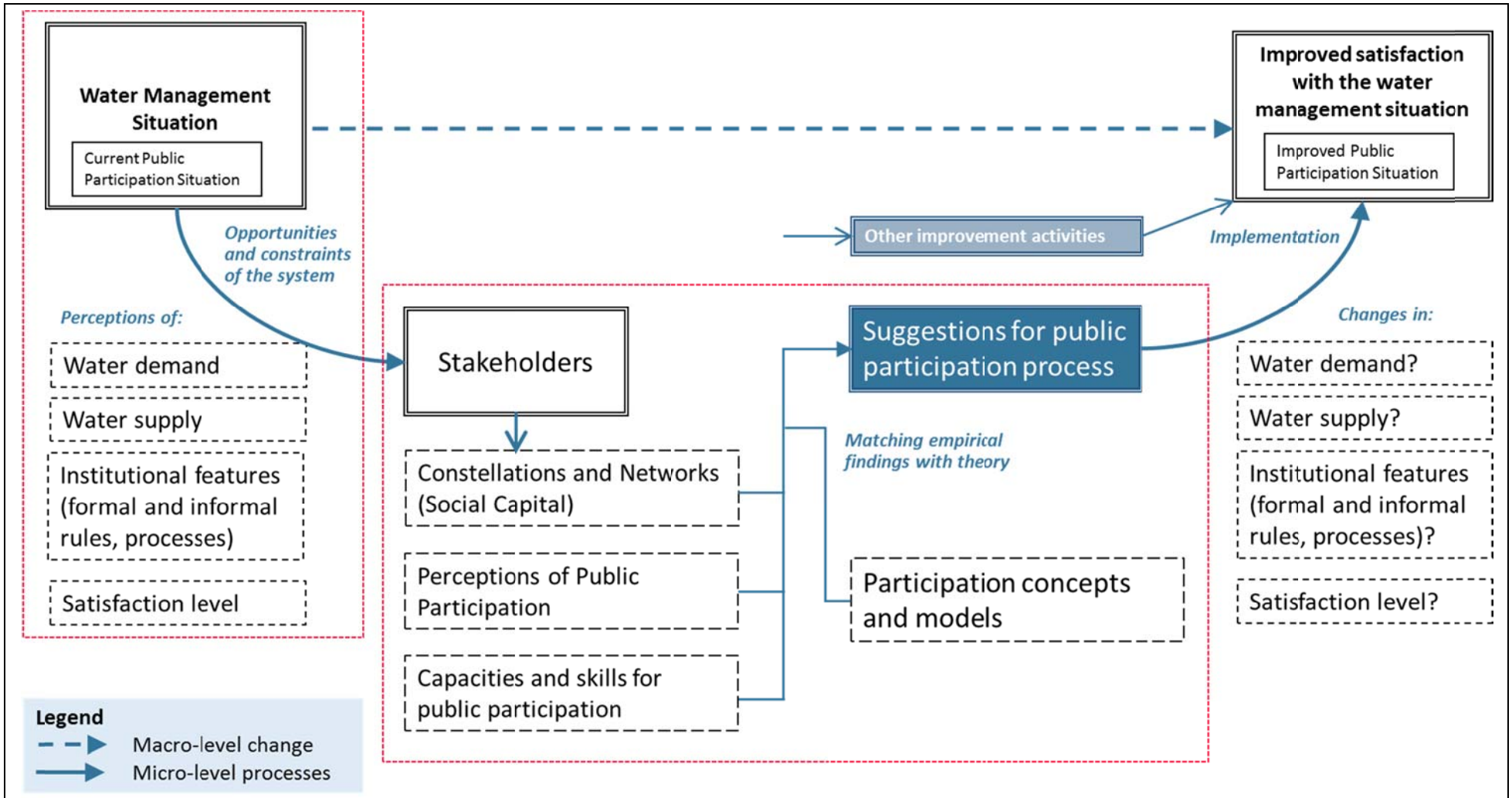

Figure 3: Analytical framework for analysing public participation in water management in Jordan

Source: own elaboration based on Esser (1999): 17.

Within its project "Supporting Participatory Resource Management to Stabilize the Situation in Host Communities" in Jordan, GIZ anticipates that an improvement in public participation in water infrastructure planning, combined with the implementation of prioritized selected infrastructure measures, will lead to an improvement in the communal water supply (GIZ 2015). Considering this anticipated change, the framework shows the relationship between the current water management situation and the potential improvement through participatory processes, eventually leading to a new water management situation. However, our point of reference for the macro-level Situation 2 is improved satisfaction with water supply and services instead. This is because in our view the joint learning process associated with participation may lead to a change of perception among stakeholders and lead to better understanding of each other's needs and limitations. However, it is hardly possible for us to establish any direct link with changes in water supply and services that may or may not be implemented following the participatory process in the project.

The anticipated change of the water management situation from Situation 1 to Situation 2, depicted as the dashed arrow in the figure, may be achieved through micro-level processes via the continuous arrows. Agents of change are various stakeholders, encompassing all identified groups involved in the process: villagers, refugees, vulnerable groups or individuals, authorities, the water utility, and others. The vehicle of change is a suitable process of participation. To determine a suitable concept of participation varieties of factors have to be considered.

Starting point of the analysis is the current water supply and management situation. It is mainly characterized by the institutional and technical features of the existing water management system, (perceptions of) water demand and changes due to the influx of refugees, as well as water supply, resulting in a certain satisfaction level of the water users. Therefore, there are various systemic opportunities and constraints currently affecting stakeholders. These aspects are shown in the left red box in Figure 3 and correspond to the first of our four research objectives. The results are described in Chapter 6 and analysed by means of institutional analysis in section 7.2 of this report. The research is limited to the accounts of respondents and own observations, and does not include results of the water audit, which was to be performed in a separate study.

The central red box depicts all factors and variables necessary to answer the research objectives two and three. Analysis focuses on the actors involved as well as possible actions within a suggested participation process, based on participation concepts and models from theory. Stakeholder constellations and networks

captures the relational interactions within and amongst stakeholder types, including, but not limited to, existing power relations, thus exposing possible constraints or challenges for the integration of all stakeholders, including vulnerable groups. Social Capital Theory is used to evaluate the degree to which public participation is feasible given the particular social context. Again, the research is limited as separate studies on stakeholder analysis and a characterisation of vulnerable groups are performed that were not yet available.

Through the analysis of stakeholder perceptions of participation, the framework accounts for the stakeholders' varying understanding of participatory processes, also shaped by past experiences. Moreover, this section provides a basis for determining their willingness to be involved, which amongst other things depends on the degree to which they are affected by the current water situation. The ladder of participation is used to categorize stakeholder perceptions.

The last section of empirical analysis will focus on stakeholder's capacities for participation. Building on participation theory outlined in Chapter 3, existing capacities will be discussed and relevant gaps identified.

The results of empirical findings are described in Chapter 6, and an analysis is documented in sections 7.3 and 7.4. Finally, in Chapter 8, the empirical findings are matched with solutions suggested in participation theory, to recommend characteristics of a feasible and suitable form of public participation in this context.

These forms of participation, if implemented, are then considered to affect change in the macro-level situation and improve overall satisfaction with water management practices. Investigating the subsequent actual change in water management is outside the remit for our research. We imply, however, that satisfaction may be increased even if changes in water infrastructure or management are limited. This may happen as a result of joint learning and exchange throughout the participation process, which has the potential to ameliorate existing conflicts of interests. The evaluation of the process and the outcome of the participatory initiative is also not part of the remit of this study. As shown in Figure 3, we assume that the effect of participation is limited and needs to be complemented with other activities to effect a satisfactory improvement of the water supply situation.

5 Methods of data collection and analysis

5.1 The research process and choice of methods

The first three chapters of this report describe the process this research has undergone so far. Literature review on Jordan and its water situation was the first step. The second step generated initial information provided by GIZ about the communities involved in the research as well as about projects already conducted in the area. Objectives for this research were narrowed down according to GIZ's intentions for the PRM project. This led to step three, an extensive literature review on theories which could be utilized to frame the problem at hand and develop an analytical approach to investigate it. Based on the selection of theories highlighted in Chapter 3, the analytical framework was developed in Chapter 4. This chapter describes in detail the methods used in this research to collect and analyse empirical data.

We utilized qualitative techniques of data collection and analysis. For data collection, transect walks and guideline-based in-depth interviews were chosen, as described below.

A personal meeting with GIZ – the Water Portfolio Management as well as PRM project team – in Amman, Jordan, gave further insights into the situation of the host communities as well as the intentions and objectives of the project.

5.2 Transect walks

A transect walk is a participatory research method used to obtain information about the views of different stakeholders on the state and availability of "natural resources of a village, their diversity and associated problems, and to assess opportunities" (NGO Programme, 2005). The method can be described as a systematic walk along a transect line through a community with community members while observing, listening and asking questions (de Zeeuw and Wilbers, 2013). It is predominantly done at the initial stage of research and can help to verify and appraise information at the analysis stage (NGO Programme, 2005).

The group accompanying a researcher during the walk should include a diversity of stakeholders who are motivated to participate and share their views (ibid.). De Zeeuw and Wilbers (2013) indicate difficulties of carrying out transect walks with groups that have a huge gap in hierarchy, because this may prevent some stakeholders from raising their voice in front of others. Given the patriarchal rela-

tionship, men and women might naturally start walking in separate groups so some researchers talk to the men while others converse with the group of women.

In our case, transect walks were used to get an overview of domestic water installations, perceived water consumption and distribution, as well as wastewater collection and use. Housing and other socioeconomic indicators could also be observed. Additionally, inequalities in water supply were revealed.

The first transect walks took place in the company of the contact persons suggested by GIZ. Further transect walks were carried out with one of the interviewees or unaccompanied in each community.

5.3 In-depth interviews

The interview method is distinguished by type (narrative, receptive) and structure (structured, semi-structured, non-structured) (Lamnek, 2010). In-depth interviews are often used when it is important to capture experiences, attitudes and perceptions of individuals concerning a specific topic. Ideally, during in-depth interviews, the interviewee can express perspectives on uncomfortable or difficult topics. Capturing people's perspectives helps to deduce reasons behind their decisions and actions. This is an essential insight when it comes to examining the potential for change on a macro-level and is the main reason for choosing in-depth interviews in this study. Additionally, a researcher can capture very extensive and specific attitudes on a topic in order to create a representative and comprehensive narrative later on (Miles and Gilbert, 2005).

The interviews conducted in the host communities in Jordan were semi-structured. The most important characteristic of a semi-structured interview is the ability to adapt it to the situation at hand. The guideline was designed to fit the research objectives of understanding social networks and the water management in the three host communities, as well as investigating existing preconditions for public participation. Questions were adapted during the interviews when interviewees were uncomfortable to talk openly about a certain topic. Similarly, open questions were posed when the interview stagnated. This made it possible to gather plenty of background information on the three communities, the families and the history.

5.4 Selection of respondents

The three host communities where field research was carried out – the villages of Kharaj, Samar and Foa'arah – were selected by GIZ based on criteria such as the low water supply per capita (GIZ, 2015) and their geographic location in the Northern Governorates, which are most heavily affected by the Syrian refugee influx. The stakeholders were all the residents as they all have a stake in the distribution of water in the area. Here, we distinguished between men and women, because they usually have different needs and responsibilities in the household and regarding water. We further distinguished between Jordanians and Syrians, as we were interested in the potential for public participation in a situation where refugees constitute a relatively large share of the local population as a separate part of the community with their own needs and challenges. Furthermore, we considered people with disabilities and focused on the level of support they get from their community. Vulnerable groups play an important part in this research, because they are potentially excluded from decision-making and their participation may require specific approaches.

Sampling involved a three-pronged approach. Firstly, some of the interviewees were suggested by GIZ. Secondly, local contacts of GIZ guided us towards interviewees. Informed about the types of stakeholders to be interviewed, we were guided to village households with different social and economic status, refugees, disabled persons, women, and people who they knew to have the least amount of water. However, this entails an inherent bias. Although the contact persons had an extensive knowledge about the people in the village, they brought the interviewers in contact with people they knew particularly well. In order to overcome this bias, we asked interviewees in the end to tell us who else they felt would provide us with valuable information. This is an element of the snowball technique which is used to counter biases in sampling. It has the potential to bring to light hidden and marginalized groups which otherwise would have gone overlooked (Atkinson and Flint, 2001). Beyond exposing vulnerable or marginalized stakeholders, this snowball approach made it possible to ascertain who the locals identify as influential or as important sources of information. It also provided information about possible gathering points and meetings. In sum, the citizens of each village were given the opportunity to steer the sampling process (van Weperen, 2013).

Other types of stakeholders interviewed were *imams*,*waithat (*female religious preachers), and employees of Yarmouk Water Company (YWC). YWC is an important stakeholder, as it is responsible for distributing water within the district

and takes an important place in the perceptions of community members about water supplies. Local imams and others perceived as having influence in the communities such as mayors and members of associations, were interviewed on the assumption that they are to some extent responsible for the organization of community life.

When designing our field research, we assumed that different stakeholder groups might use water resources differently, and thus have different interests and motivation to participate in water management.

In total, 73 interviews were conducted. In many cases several persons were present and contributed to the interview at least part of the time, according to social custom. This is not seen as problematic in the given case as contributions could be managed with specific questioning styles. Of the main respondents, 44% were women, 22% were refugees, 11% had family members with special needs (disabilities). Five *imams* and two *waithat* interviewed, as well as four mukhtars. Two interviews were conducted with several staff members of Yarmouk Water Company.

5.5 Interview guidelines and their adaptation

Based on the theoretical background and the conceptional framework, preliminary versions of the interview guidelines were elaborated together with the students of the German Jordanian University. A standard way of presenting the project to the potential interviewees was developed. When carrying out interviews we aimed to create a comfortable atmosphere to make the process look more like a conversation than some formalized procedure. The interviews began with general questions about respondents' families, their lives and habits, aiming to make the interviewees feel at ease and to gain their trust.

Different interview guidelines were designed to approach Syrian and Jordanian members of the three host communities, the imams, the mayors and the representatives of the water company. Guidelines for the members of communities included three groups of questions on:

- Social networks;
- Experiences with and organization of water supply and demand;
- Solutions to water problems and attitude towards public participation in water management.

The interview guidelines prepared for the Syrian refugees covered the same set of questions, and also included questions on their integration in the community. The guidelines prepared for the mayors aimed to capture the views of a person in power on the issues mentioned above. The guidelines directed at the imams aimed to investigate their influence and their role in informing the community about water-related issues.

After the first round of interviews the process was revised, and the interview guidelines in accordance with insights gained. Because of the different contexts in the communities of Kharaj, Samar and Foa'arah, the interview guidelines were adapted differently for each of the research groups conducting field work in these three villages.

5.6 Data analysis

The transcribed interviews were analysed using the qualitative content analysis method. Qualitative content analysis helps to structure the information gained during an interview in such way that it can be used to answer a research question (Gläser and Laudel, 2010). In our case, the structuring techniques were used to evaluate the available text material according to specific criteria (Mayring, 2008). This includes extracting and summarizing certain statements (content structuring) and/or focusing on specific expressions and analysing them in detail (typecasting structuring) (Mayring, 1983 as cited in Flick, 2006). Schmidt (2008) and Meyen et al. (2011) advise several steps for the structuring data analysis, which we used in this study.

Firstly, thematic categories were assigned by repeated reading of the interview transcripts. Readers paid attention to the theoretical concepts defined earlier, but also scanned the texts for new and unexpected passages which could contradict the initial assumptions or add new categories. The next step was selecting the categories (aspects) and codes (keywords, variables) which were to be assigned to specific text passages (Schmidt, 2008). We applied the thematic coding developed by Flick (2006) to compare studies which focus on different social groups and their views on certain phenomena or processes (ibid.). The three themes – social networks, water supply and demand, and public participation – were used when structuring interview guidelines and were also the main categories for content analysis. Coding was done across the villages. This made it possible to trace similarities and differences among different types of stakeholders

(women, refugees, imams) in the three villages, and among the three villages as a whole.

All transcripts were then coded with the same coding guideline. Not all the codes were represented in every interview. Some parts of the text were summarized to give a general overview of the background of the three villages and their citizens. Any data lost during coding could be regained when interviews were contextualized, which was the next step of the analysis (Meyen et al., 2011). A comparison of all three case studies constituted the last analytical step which deepened interpretations of singe case studies and stimulated theoretical thinking (Schmidt, 2008). Considering the amount of information gained during the interviews, the authors, synthesized the statements, but also contrasted some individual cases (Flick et al., 1995: 169).

6 Description of empirical findings

6.1 Kharaj

Kharaj is one of seven villages in the Al-Wasatiya sub-district of Irbid governorate. It is located 20 kilometres northwest of Irbid city. Kharaj has about 2850 residents, 8% of them are refugees.

Houses in Kharaj have up to three floors, mostly with surrounding gardens. Kharaj has four mosques. The village has a locally managed women's association that provides social services to women in the community. Other associations operating in the village are established at the governorate level. The village has two schools. A school specifically addressing refugee children is in the neighbouring village of Kufr Asad. Kharaj has a small health clinic. Other important services, such as a market, can only be found in Kufr Asad.

Two main tribal families (*ashera*) account for the greatest population share in Kharaj. When visiting the village for empirical research, the research group was accompanied by one of the women engaged in the local women's association. In general, a high level of willingness to participate in the interviews and a strong overall welcoming attitude were observed. One of the most prominent issues affecting the village is said to be water scarcity: Households receive an average of 22 litres per capita per day (IDRC, 2016). Other problems mentioned relate to lack of accessible social services, e.g. for people with disabilities, and increase of housing rent in recent years.

6.1.1 Social networks

Cultural and family bonds have been described as shaping the way people in Kharaj interact within their community and their social networks. They include unspoken codes within the *ashera* which regulate the way people communicate, make decisions, celebrate, and give solace. Large tribal families have their own D*iwan* where they meet for special occasions and discuss family matters. Each family has an informal leader called *Mukhtar* who is a representative of an *Ashera*. People turn to him when they need to make a unified complaint or decision concerning their *ashera*. The main tribal families in Kharaj are Al Widyan, Al Tradat, Al Omari, Al Thneibat, and Al Jaradat. However, only the first two apparently have their own *diwan* and *mukhtar*.

Family connections are said to be very strong in Kharaj. Members usually live in the same building or within walking distance of each other. They gather and par-

ticipate in common activities at weekends. This bond is not restricted to immediate family, but extends to distant family coming from the same *ashera*. Most family members stay very connected to the village since most of the family live here. Even if they emigrate, they apparently still build houses in their home village and return regularly. Relationships beyond tribal boundaries are generally more shallow or formal, especially with non-local residents. Exceptions are neighbours, who were considered and treated by several interviewees like family members.

Interviewees had different perspectives when it comes to whom they see as a person of influence in the village. Some see their family *mukhtar* as the leader and the person they would seek to solve their social problems:

> *"The main mukhtar for Kharaj is the most influential person. We can meet him at the community house, which we use for special occasions such as weddings and funerals for example. The mukhtar has to be elected by collecting signatures" (Jordanian woman, Kharaj).*

On the other hand, others referred to officials such as heads of the municipality or the sub-district. Some respondents were not able to name a person of influence at all. The answer given seems to depend on the degree of the interviewee's integration in or exclusion from the community.

These accounts of the social situation differ from the perspective of refugees. The latter appear rather conservative and cautious when it comes to interacting with locals, and communicate mainly within their own small family, according to interviewees. Relationships to their neighbours tend to be formal and are often restricted to a tenant-landlord relationship. Although relations between locals and refugees were often initially described as "excellent", upon further questioning it became apparent that interaction with refugees is restricted to participation in formal events such as weddings, funerals or Friday prayers at the mosque.

Exceptions from the general pattern of interaction between locals and refugees were reported. In some cases, locals helped refugees and treated them as family, thus providing an opportunity to develop deeper bonds with members within the community. Still, refugee relations to extended parts of the village are minimal. In general, they feel they have very little or no entitlement to make decisions or to complain about problems:

> *"We have no communication with the rest of the community. We just stick with our extended family. We have no relationship with the neighbours. Except our landlords, who live downstairs" (Syrian woman, Kharaj).*

When considering the refugees' view of their integration in the community, some refugees see Jordan as a place where they feel safe and would like to stay,

eventually integrating into the community. Others felt excluded and misplaced, perceiving the situation as temporary. Syrians mentioned choosing Kharaj as a settlement for different reasons. Some had settled in the village because it was considered affordable. Others came to Kharaj because they originally belonged to one of the local *ashera*, and were seeking blood relatives for help, or already have family members living in Kharaj:

> *"Yes it is a blood thing, I like it that ashera here actually means something. We sometimes visit each other, the other Wedyan respect us, and they take care of each other" (Syrian woman, Kharaj).*

The reactions of the refugees interviewed on participation in the community life and decision-making varied. While several of them showed enthusiasm, the majority stated that they would join if invited without wanting to impose or interfere. Locals in this situation did not mind including refugees in their meetings and making them more integrated in decision making, although they doubted the refugees' interest.

Women in Kharaj apparently have their own association. Women can seek the association's help by taking loans for starting small businesses or building and furnishing their homes. The association holds awareness seminars on topics important for the community. The association also gives occasional handicraft courses. Since the *diwans* are male dominated, having the association may empower local women. However, even within the association, family bonds determine who is actually involved in the activities. Minorities are not usually invited or encouraged to participate in the events organized by the association. In addition, young women do not seem to be strongly involved.

The nearest centre for people with special needs from Kharaj is in Kufr Asad. Although it is close by, it is said to be difficult for families to transport their children on a daily basis since no transport is provided by the centre. Not all types of special needs are covered by the facilities there, so that some families are forced to travel to Irbid City, which is even more difficult and expensive to reach. Refugee families that have members with special needs seek help through different organizations. The help provided by the centre in Kufr Asad does not seem to have capacity to take care of all people with disabilities in the district:

> *"I would love my daughter to go to school, this could make a difference, but there is none. I asked the association for the disabled in Kufr Assad, if my daughter could get help there, the lady responded vaguely and said "we'll see" but nothing ever came of it" (Syrian refugee, mother of a child with special needs, Kharaj).*

Much communication among the men of Kharaj takes place during the Friday prayers. They commonly meet before or after prayers to share news. Other places accessible only by men include the community houses, which are used for emergency family meetings or on special occasions. Exchange of information among women of the village seems to be less organised. The women's association is said to be a platform for interaction. However, not all women are aware of its existence and role. It may be assumed that more implicit communication patterns are more difficult to discuss in an interview.

Religion plays a major role in regulating people's interaction. Interviewees mention that imams often indirectly address disputes among neighbours and families and advise on the moral issues in Friday prayers. The imam can influence men of all generations by addressing issues of importance to the community, such as safety, stability or the role of youth. Reportedly, people tend to accept his words since he is considered a man of great knowledge in Islamic practices. The two imams interviewed underlined the importance of water and water conservation. They advise people to handle water carefully, although they mentioned that there is rarely the possibility to waste water when people have so little.

> *"Best charity is the charity of water" (Jordanian woman quoting Prophet Mohammed).*

6.1.2 Water management

As in the other villages, water is supplied to Kharaj following a weekly schedule set by YWC. In the summer months, water is rationed more strictly due to the water shortage[2]. When interviewing members of the community about water management, various conflicting interpretations and perceptions of the water situation in the village were found. While some respondents claimed that water was supplied for 24 hours, others said that water was only available for a few hours. Many interviewees thought that the water supply situation was better in Kufr Assad before the refugees arrived in 2011. The perception of inequality in water distribution was a common theme throughout the interviews, and was explained either by differences in the elevation of the houses or their location relative to the main water pipe. Some also mentioned illegal extraction and their neighbour's pumps as a cause of unequal water distribution and consumption. Several respondents claimed that Syrians used more water in the village. One Syrian woman

2 Details of water schedules, actual amounts supplied and their timings have been investigated in a separate water audit commissioned by GIZ, which may complement the experience of water users as documented here.

talked about how much more water there was in Syria but also mentioned that she had had to adapt to the situation in Kharaj:

> *"[Back in Syria] I would use a lot more water for cleaning the house; I would flood the house for washing. Here I just dust and wipe but I cannot use as much water. Now I am much more careful" (Syrian woman, Kharaj).*

The two main water-related problems mentioned in the interviews were low water pressure and irregular water supply. The water supply schedule seemed to change frequently, so that people were not able to prepare for filling water tanks when water arrived. Many adapted to the constant water shortages by private measures such as rainwater reservoirs or pumps. For others, these options were too expensive. Those who were most dissatisfied with their situation generally lived on the outskirts of the village, with the largest distance to the mains water supply. One Jordanian woman who lived far from the main pipe said it took her three years to get connected to the centralized water supply. Leakages were mentioned as an outstanding problem related to water infrastructure. Furthermore, the respondents reported differences in water supply in summer and winter. In summer, people suffered much more from water shortages, the schedule changed more frequently, and people were in greater need of water. The interviewees reported conflicts in the village because of water shortage, some of them between neighbours.

> *"In summer, water means war. People forget their manners" (Jordanian woman, Kharaj).*

The following reasons for conflicts were named: (1) having to wait for neighbours to fill up their tank (water reaches the houses at higher elevations only after the valves of tanks lower down are closed, (2) water affordability and illegal extraction, and (3) higher water bills because of illegal water extraction by others:

> *"People will complain if their neighbour got water but not them [...] Everyone around here has a pump, if people say that they don't have a pump, they are lying because it would be impossible to get water without a pump" (Jordanian woman, Kharaj).*

In spite of water-related conflicts, cases of sharing the resource were reported:

> *"Two of our neighbours give us a hard time, but there is one with whom we collaborate in terms of water. If we ask they would turn off their pump so we can check if the water reaches our place" (Jordanian woman, Kharaj).*

While some respondents mentioned that sharing was difficult because of the resource's scarcity, others said they would share water with others, if needed. We observed readiness to help among family members or within the tribe on big oc-

casions. Conversely, one Syrian woman and one Jordanian man mentioned they would feel too embarrassed to ask their landlord or neighbour for water. In general, people would help out each other, but extreme water scarcity makes it difficult to be charitable in this regard.

When facing problems with the water supply, people would commonly complain to the municipality or to the water company. However, other respondents mentioned that complaining was useless because nothing had ever happened. It is a common understanding that employees of the water company are very busy, they receive many complaints, and it takes them time to process those. Some believe personal connections to the person responsible for maintenance of infrastructure could help to solve personal water problems. For Syrian refugees, the main channel for complaints regarding water would be through their landlord, respondents said.

In order to better understand the water situation in the village, several questions addressed patterns of water consumption by households and sources of water supply. The municipal water is reportedly supplied through Kufr Asad and is mainly used for household activities like cleaning, taking showers, for the washing machine, watering trees, etc. Many households have rainwater reservoirs as an additional source of water supply. Various respondents explicitly mentioned that this water was used for cooking and drinking. In some other cases, when a family could not afford constructing a reservoir, drinking water was bought at the local store or gained through filtering the centrally supplied water. Private vendors are an alternative source of water: On average, water trucks were called for twice a month during the hot summer season. In the case of families with children with special needs, water consumption was generally not different to others. Water supplies to Syrian refugees were determined by the contracts with their landlords:

> *"When we first arrived here we drank tap water but we got digestive problems" (Syrian refugee, Kharaj).*

6.1.3 Public participation

The information flow in the village is mainly organized through the hierarchy of public authorities or within families. The *mukhtar*, whom many referred to as being the most influential person in the village, is responsible for delivering messages or complaints to the municipality in Kufr Asad. The feedback is then channelled back to the *mukhtar*, who spreads news to the families. Many families use Facebook or the mosque as a platform for sharing information. Those who are not part of the families, such as refugees, tend to be excluded from this information flow. Better understanding the flow of information related to water management

is also important when assessing the potential for public participation. If faced with water issues, most respondents mentioned calling the water company directly. Not knowing when the water will arrive is the main problem.

Structures enabling participation are limited in Kharaj. Men sometimes meet at the Diwan to discuss the organization of important events such as weddings or funerals, or to talk about the state of public services in general. One example of cooperation among villagers refers to their efforts to stabilize rents after they increased sharply due to the arrival of Syrian refugees. While men have various platforms to meet and discuss issues, women's engagement remains rather informal.

While conducting the interviews, it became apparent that women played an important role in water management and mobilizing participation. One Jordanian man pointed out that talking to women about water issues should be a priority, since they are the ones who are directly impacted. While many women expressed their willingness to participate in decision-making, most referred to the dependency on their husbands as the ultimate decision makers:

> *"Women are not allowed to go to these meetings; we are represented by our husbands" (Jordanian woman, Kharaj).*

Some women were seen as clear enablers of participation in community activities. The girls' school headmistress and her work in the women's association was mentioned several times as being pivotal for the inclusion of women in the community.

When asking the villagers about their willingness to be involved in meetings and decision-making related to water management, many initially responded positively. However, several indicators show there was little optimism for change and low perceived influence on the overall process. Some mentioned that community members fixed problems on their own, while others said there were too many procedures to go through. They all wished their complaints were taken more seriously, but it was understood that the municipality did not have any authority over the water company. It seems that those most willing to participate are the ones most impacted by water problems. Collective action is brought on by such issues as receiving a huge joint water bill or neighbours not receiving water at the same time. These and similar experiences might become a driver for public participation in the future. In the case of refugees, however, financial issues and the exclusion from the job and housing market seemed to be the most important issues, rather than water supply.

Finally, when asked about their vision for the future or their suggested solutions, improving water network, pressure and duration of supply were common

answers of villagers. Assistance in constructing water reservoirs and reliable water supply schedule were other suggestions for improving water management in Kharaj.

6.2 Samar

Samar is a small village in the Bani Kenanah district of the Irbid governorate. Located 20 kilometres north of Irbid, it is close to the Syrian and Israeli border. It has 4200 residents, 6% of which are Syrian refugees. The area covered with buildings stretches out over an elevation difference of about 60 metres, with houses on top of the hill and homes on the slopes of the nearby valley. This affects water supply, which is on average 24.5 litres per capita per day (IDRC, 2016).

Samar is composed of three main *ashera*. The relationships in the village are described as good and friendly. The village has six mosques that also provide educational services in the field of Quran rehearsals and the Shari'a rules. The Syrian refugees reportedly rent apartments from local citizens. Some refugees came particularly to Samar because they have Jordanian relatives with Syrian roots living there.

The group carrying out research in the village was welcomed by the director of the volunteer association and his assistants. Two of these assistants were assigned to accompany and assist the researchers during the data collection process. They facilitated the meetings with residents and were very responsive to the researchers' requests regarding the selection of respondents with particular characteristics, so that diversity of interviewees could be ensured.

6.2.1 Social networks

> *"In the village, there are a lot of connections. When there is a problem, people always come together and solve the problem. Samar is a different village. We never ask for outside help" (Jordanian man, Samar).*

Social relations among the villagers are perceived as shadowed by small problems which can reportedly be resolved within the community. Respondents said that the social bonds may not be as strong as they used to be generations ago, but are still appreciated as family-like by a lot of people. Several times, helping each other out was mentioned as a general rule within the village. This works similarly for neighbourhood relationships, where there is often an exchange not only of information and help, but also of resources like water:

"Everybody is very welcoming. My neighbour helps me a lot and is like a sister. When we first arrived, she gave me pillows and kitchen equipment" (Syrian woman, Samar).

Whereas most of the Jordanian families have been living in Samar for decades, the Syrian families have only been living in Samar for few years or less. They apparently come mostly from southern regions of Syria, such as Damascus and Da-ra'a. Jordanians are said to have welcomed the refugees and often helped them out with basic commodities, food, and water when they first arrived. However, the overall relationship between Jordanians and Syrians remains ambiguous. Long-time residents emphasized it was their duty to help, yet refugees often seem to have been perceived negatively in various respects, such as their assumed impact on the labour market and the increased demand for water. Syrians mentioned the help they received and pointed out their good relationship with Jordanians. On the other hand, their bonds to the new place of residence did not yet seem to be very strong, and some would rather return to their homeland or move elsewhere, if given the opportunity. This desire to move was not necessarily caused by dislike of Jordan, respondents said, but more because of the nostalgic feelings towards their home country or an opportunity to move to other countries where their family members lived and conditions were perceived as better.

The everyday lives of men and women differ greatly in accordance with traditional gender roles, in which men often are responsible for earning money, and women for housekeeping and raising children. In this context, women are in charge of water management and control domestic water consumption. If women have paid jobs, these are often in the educational sector or from home. That is also where they often see their competence. Female interviewees repeatedly voiced concerns about their participation in or potential contribution to decision-making. However, they also expressed interest in workshops or seminars addressing women specifically.

For people with special needs, both social integration and barrier-free structures were often described as inadequate. Disabilities were perceived as something to be dealt with privately or through charity, and were not considered a matter of public concern.

Information is exchanged mostly without formal structures and rather on a personal level, e.g. among neighbours or friends. Some interviewees reported about seminars that were held by the volunteers' association; however, those did not appear to be well known across the village. Besides, water and related topics seemed to be rarely addressed at such events.

The existing formal structures for social participation and information exchange include the volunteers' association, the community council, the sports centre, the Quran association/institute, the women's association and the education association/board. Informal structures include the respective family gatherings, special occasions like weddings or funerals, the Friday prayer at the mosque and other private meetings with neighbours:

> *"I would turn to one of the leaders of the nine tribes if I had any problems. But I also would turn to … [the head of an association]. He has this role because he is educated, kind, and known across the kingdom" (Jordanian man, Samar).*

Each of the main *ashera* has a representative or spokesperson, who is often referred to as a problem-solving contact. Beyond this family level, the head of the Volunteers' Association is widely respected as an influential person one can turn to at any time. Furthermore, the head of the municipality, the two *mukhtars*, and the head of the sports centre are also considered influential and are approached for help.

Religion plays a significant role both in the community relations and for coping with water scarcity. Firstly, the inclusion of refugees and the general cooperativeness are reasoned religiously, and fellow villagers were repeatedly referred to as "brothers and sisters". Secondly, God is turned to when facing problems, especially when other entities fail. Lastly, frugality and rationing of water is often motivated by Prophet Mohammed's teachings that motivate people to be rational in consuming water even if it is abundant.

6.2.2 Water management

Samar faces serious water scarcity in both absolute and relative terms. During the winter, water is supplied several times a week, and supply is thus seen as sufficient and rather reliable. In the summer, however, it is reportedly supplied at most once a week, and neither quantity and pressure, nor regularity of supply seems to be guaranteed.

People either get their water from YWC via the mains supply, buy it from private vendors with water trucks or as bottled water, or collect rainwater. In any case, because of inconsistent supply, water is mostly stored in reservoirs or tanks. Water storage facilities are commonly found either on the roof or underground, and vary greatly in size (1 m^3 to 5 m^3) and condition (old/contaminated to almost new/fully functional), as interviewees report. Since water pressure is quite low, almost everybody owns an electric pump to increase pressure and, when required, to get the water to the roof tanks. Especially in the summer, the water is appar-

ently not always supplied in accordance with the water schedule. For this reason, people say they have to stay awake late at night to check the passage of the water in the pipes in order for the meter not to count air – a frequent claim although YWC personnel argue this is not technically possible. As several interviewees reported, staying awake at night is associated with to considerable problems during the following day as these people could not concentrate at work. Respondents even related cases of road traffic accidents because people fell asleep while driving.

> *"In summer, I have to stay up late because the water might come in the middle of the night. Many people do this. One man fell asleep driving home from work because he waited all night for water" (Jordanian man, Samar).*

When considering the second costly alternative for water supply, water can be bought by calling for a private vendor with water trucks, which takes 2-3 days to arrive, or picking it up by oneself. Prices vary widely between winter and summer. The suppliers are said to practice monopolistic actions when they recognise the people's dependence on them. As an alternative, rainwater collection often ensures a relatively steady water supply, even though Samar is not in a high-precipitation area.

Water distribution through the network is strongly dependent on the elevation of a house in the village. Households situated at lower levels tend to get more water at a higher pressure; the same goes for households nearer to the main water pipe. Households that have more or better pumps than their neighbours also gain relative advantage. Moreover, good personal relations to the water company were said to facilitate water supplies in the relevant street or area. Most interviewees, however, thought their water scarcity was not much worse than that of any of their neighbours or in the surrounding villages, and considered it a problem that concerns the whole country.

Concerning water consumption, there are distinctive ways to use water. Rainwater or bottled water is preferred for drinking and cooking. Water from the tap serves for washing and other household activities. As most people are aware of the water situation, they conserve water in their daily routines. This may include opening the tap only halfway or using a special tap extension to restrict the flow, reusing water from cleaning for irrigation, or decreasing wet cleaning in general. Some people have abandoned plant cultivation due to water shortages; others have changed their irrigation methods and/or rather rely on drought-resistant crops.

When asked, everybody seemed willing to share water. In fact, most people were at some point of time in the situation of either giving or receiving water during shortages. Sharing takes place mainly among family members, then among neighbours, and sometimes also among acquaintances:

> *"[Water sharing] is based on compassion and understanding. I can't think of any big conflicts [with the refugees]. This week I use more, and next week you use more" (Jordanian man, Samar).*

On the other hand, conflicts about water seem to occur rarely. Illegal water extraction does not seem to be at the scale to stipulate collective action. People may be bothered if their neighbours use a bigger pump or are generally closer to the main water pipe, because this diminishes their own water supply. However, this is not openly communicated in order to preserve good social relationships.

The perception of water consumption is mixed and is often biased when it comes to Syrian refugees:

> *"There is more than just a spark of tension, not only concerning water" (Jordanian man, Samar).*

> *"I do not see a problem of social coexistence, integration is not the problem. There are problems and barriers to meeting needs of people. The language is the same, even the accent of the people in Samar and the Syrians are the same. There are the same norms and traditions. Syria has lots of water, so the problem is changing habits" (Jordanian man, Samar).*

Jordanian respondents often suggested that the water situation worsened because the Syrians would overuse the resource and did not know or care about its scarcity. Syrian interviewees themselves did not give the impression of being unaware about the water scarcity or wilfully wasting the resource. Some confirmed that they had been used to having more water back in their home country, but that they have adapted their habits. Apart from that, the population increase with the incoming families was mentioned as additional pressure on the resource. However, opinions differed if the refugees alone were accountable for that, as Jordanian families also grew remarkably.

The overall satisfaction with the water situation was low in terms of both quantity and quality. The tap water is perceived as having too much chlorine and has other undesirable properties making it unsuitable for drinking. This was often linked with the dilapidated condition of the public infrastructure. Interviewees reported frequent leakages and suspected the network to be scaled and corroded to the point that it loses significant amounts of water. Concerns were also expressed about the low water pressure, the unfair distribution, and the erratic supply. Fur-

thermore, complaints were expressed about economic effects like high water prices in summer (caused by having to buy bottled water or water from private vendors), or increasing electricity bills as a consequence of using the pumps. In fact, water is widely considered the most pressing problem that Samar faces.

While some think that water scarcity is the same all over the country, others reckon it is worse in their area because of its remoteness. There were also interviewees who considered the absolute water supply scarce yet sufficient, but the distribution as the crucial impairment. There was a quite broad consensus that the population increase had changed the water situation for the worse. Then again, the water company was often named as the responsible actor that did not manage the supply properly.

Unsurprisingly, people are critical of the local water utility. They observed that the company had neither personnel nor technical capacity to maintain the infrastructure properly:

> *"The water company does not have enough resources: few people, few cars, and no appropriate tools. [...] There is enough water, but the management of the water is just poor" (Jordanian man, Samar).*

The basic supply was already unsatisfactory; additionally, people felt left alone in the case of water shortages or leakages. Another grievance was the necessity of decent personal relations to the company in order to gain small relative advantage in water supply. It was a common impression that the company did not distribute the water fairly, but favoured certain well-connected persons or families. On top of that, these complaints seem to have remained unheard or ignored by the company. Many interviewees reported that they had complained several times, either alone, together with others or with the help of village authorities mentioned above, but received little or no help, let alone long-term solutions to their problems. The most common compensation for shortages is a voucher for free or subsidized water tanks. Overall, the communication between the water company and its customers seems far from functional.

A number of ideas on the way to change the situation for better were suggested by the respondents. Firstly, to change or repair the water network, since this was perceived as a basic problem:

> *"To solve the water problem, I know that changing the whole water network is very costly for the government, so instead, they should start with the worst networks. Another solution is: instead of pumping to all areas at once, the water company should split the areas and do each area on a different day. This will increase the water pressure" (Jordanian man, Samar).*

Often, the interviewees proposed assigning more responsibility to the state, as the water company is widely perceived as inefficient. A dam in the nearby valley was also envisioned as a key factor to alleviate water scarcity. Furthermore, a more equal distribution of water was seen as a way to increase satisfaction. Apart from the supply side, people suggested promotion or sponsorship of water reservoirs. Storage facilities, creating more independence from the fluctuating water supply, could be financed either by micro credits or subsidies. Lastly, it was suggested to decrease water consumption through awareness raising and training, or even taxes or levies on people who own swimming pools.

6.2.3 Public participation

Among the enabling conditions for public participation, formal structures for civic participation are found in the associations mentioned in section 6.2.1. There are various seminars and workshops, e.g. on arts, sports, drugs or crime prevention, tenants' obligations or olive production, but some seem to lack publicity or do not always address the issues of importance to the villagers. The participation structures in Irbid were mentioned many times as a positive example.

Past experience with participation had been rather discouraging. Several times, collective action organized to file complaints to the water company did not lead to positive changes:

> *"People are discouraged. […] They need an awareness programme and learn how to stand up for their rights" (Jordanian woman, Samar).*

The majority of respondents do not perceive activities by the volunteer association as very helpful in this respect, although it provides credits for building rainwater reservoirs. Since several development organisations were already active in Samar, also without long-term success, people voiced acceptance for them, but little confidence. The past attempt of a head of the municipality to establish community meetings was likewise mentioned as a negative example, as they were discontinued after two or three meetings. Summing up these experiences, the interviewees seem to have lost faith in change and in their potential to contribute to it.

Moreover, interviewees were sceptical about public participation regarding water, also due to their unpleasant experiences in interaction with the water utility. There were doubts about their own capabilities, education and/or knowledge on the water issue, and the potential outcomes of public participation. Still, when suggested, interviewees responded positively to the idea of community meetings and participation in decision-making which, in their opinion, could be successful.

However, they also named some preconditions: Meetings would have to be nearby and not to be held during working hours, with long-term solutions being planned, rather than short-term changes.

6.3 Foa'arah

Located in the north-west of Irbid, the village of Foa'arah became part of greater Irbid municipality by the first and second merger decisions taken by the Jordanian government. Its territory includes a series of gardens, valleys and hills overlooking Syria. Along with the adjacent village of Asa'arah, it is officially under the authority of Foa'arah municipality, which has two governors: a district member elected by the people and a district governor appointed by the government.

The village has about 4500 residents according to the latest 2015 communal estimates. Syrian refugees account for 17% of the population. The important rooms for public gathering include five mosques, various schools for different education levels, and a health centre. An important institution for community meetings, social gatherings and celebrations is said to be the local *diwan*. Unlike the other two villages, Foa'arah has only one common *diwan* for all families – the Diwan Ahaly Foa'arah, in the central mosque.

Prevailing problems in the village relate to wastewater, water scarcity and income. The village is not connected to wastewater facilities and the residents' needs must rely on private enterprises to remove black waters. With an estimated water supply of 23.5 litres per capita per day, access to water is a major issue especially in the summer. Many households collect rainwater in reservoirs/cisterns located under the house., Although not the most relevant issues, there are also financial concerns, since most of the community members are perceived to have a financial status below the national average.

6.3.1 Social networks

Foa'arah is populated by four main *asheera*: Al-Sa'adeen, Al-Badarnah, Al-Aazabat and Al-Hawatmeh. Each *asheera* is comprised of several subfamilies. Reportedly the *asheera* are usually involved in the solution of problems of a personal nature, for example financial ones. The issues of importance to the entire community are said to be solved at the village level. The presence in Foa'arah of only one *diwan* might, on the one hand, be an indicator for weaker family bonds, but on the other hand might point to better integration and social unity among community members.

Relations between neighbours, who are often related, appear to be strong. For instance, the sharing of resources, including water, was frequently mentioned:

> *"We share water with each other. We even share bread" (Jordanian woman, Foa'arah).*

In addition, a generally high level of trust can be observed. Residents insisted that it was a peaceful village with no conflicts. Community members have different views about whom to turn to if they needed help. Imams and the elderly of the village were most frequently mentioned.

Syrian refugees who reside in Foa'arah had come within the previous four years. Some of them chose Foa'arah because they had relatives already living in the village, while others came because of cheaper rents compared to cities. Most of the Jordanian community members referred to Syrian refugees as part of the community. The two groups share similar culture, religion and beliefs. However, the presence of refugees is perceived by some residents as problematic. In particular, their additional demand for already scarce water resources and jobs was brought up:

> *"I feel that there is more problem of unemployment, the increase of prices and it's hard to find a job. It is because the Syrians have more talent and can work better. They manage to find jobs at any field" (Jordanian man, Foa'arah).*

In general, the community members seem to tolerate the change introduced by the refugees and to understand their difficult situation. Although most villagers insisted on Syrians being integrated in the community life, the latter do not seem to be invited to informal meetings held to discuss village problems. This was explained by the refugees' disinclination to be involved in community formal and informal gatherings. They are said to be reluctant to participate in village activities, as they do not want to impose their presence. However, they seemed willing to participate if invited:

> *"I did not attend celebrations because I am afraid that people would tell me "how come do I attend a celebration while there is war and bombing in my country?" For the meetings, I would not attend because I am afraid people will tell me it is not my business. People did not actually tell me these things but I have it in my mind. If there is a funeral I would go and if I am invited by a close friend but I would keep a distance" (Syrian man, Foa'arah).*

Concerning the position of women in the community, they do not participate in meetings and other activities due to cultural reasons, as it is not customary for them to take part in public gatherings along with men. Thus, women in the village discussed different issues among themselves in informal social gatherings among

neighbours and relatives. They also voiced their opinions through their husbands who could deliver them further in village meetings.

"The place of women is behind the curtain" (Jordanian man, Foa'arah).

People with special needs lack access to facilities and services. To receive help, families with members of special needs have to go to Irbid city. This is both expensive and time consuming. This situation made the father of a disabled girl say:

"I just want my daughter to feel like a human being" (Jordanian man, Foa'arah).

A social structure often mentioned is the village's Facebook page. Officially called "history of my towns-people of Foa'arah", it was originally created to share photos of old inhabitants and ancestors, but soon became a platform to exchange information and discuss the problems of the village:

"At the beginning, I tried to post the picture of our grandfather. So everybody who has picture of their grandfathers can post it. At some point there were no more pictures left to post. People started introducing themselves, their education and give some ideas to promote the village" (Facebook page founder, Foa'arah).

Men and women alike use the page. To ensure this, the administrators try to create a safe place by admitting only people from the village and deleting inappropriate content like jokes. Refugees are so far not present on the page.

Along with traditions, religion plays an important role in the community. People reportedly are guided by their beliefs in many aspects of their lives, including social relations. The importance of religion leads people to refer to the imam for help. Imams use the Friday prayers, when almost the whole village gathers, to deliver important messages and collect donations. Imams are perceived as preachers giving advice regarding different aspects of life including water rationing.

6.3.2 Water management

Foa'arah has very limited water supply, especially during the summer. The village is supplied with water from one well in Asa'arah which is reported as constantly depleted. Other water sources in this village are rainwater, which is collected in tanks on the roofs, and bottled water from the shops.

Yarmouk Water Company is the official supplier of water in Foa'arah. However, some remote houses are not connected to the main water supply. Each house is said to have a different day and time within the week to get water; but the supply schedule is not reliable. The distribution of water also differs among households. It is said to depend on the location of a house (e.g. in a crowded or quiet area), on

its elevation, and proximity to the main water pipe. These factors contribute to differences in the duration of the water supply and water pressure.

There were quite a lot of complaints from the villagers about water supply, mostly addressing the quantity of water. The issue of water valves seems to be one of the major problems. To distribute water in Foa'arah, there are several valves spread in the village to open and close the way of the water. An operator from the water company has the key for the valves and regulates water distribution to the houses. However, the interviewees reported about some individuals having illegal keys and opening the valve for their household to receive more water. This creates tension in the community.

The quality of the water is another problem. Even though the water company declares that the water is safe to drink, the villagers distrust the quality of water supply. Some people think that the old water pipes are not only leaky, but may also influence water quality.

The attempts to complain to the water company do not seem to have been successful. At the same time, cases were reported of receiving more water after having complained. The complaints refer not only to water quantity and quality, but also to incorrect invoices said to be issued by the water company.

Some houses have rainwater collectors. The rainwater is mainly used as drinking water. However, this option is available only for the households who can afford the high cost of installation. This water source is available during the rainy season only. If a household can not collect rainwater, bottled water is bought from the shop. For more general usage, villagers buy water from tanks (private providers) if the centrally supplied water or rainwater is not enough for their daily requirements.

Because of the limited supply, the people in Foa'arah seem to use water only for basic needs like drinking, cooking, washing, and cleaning. The water availability in the village is perceived as having become worse with the increased population, also due to the arrival of refugees from Syria.

6.3.3 Public participation

In terms of existing formal structures for participation, Foa'arah has two charity associations, which are – according to the interviewees – ineffective and inactive and hence are not considered a driver for the participation process. The efforts to initiate a new association for disabled people were mentioned.

The main community structure for public participation in the village is the common diwan in the central mosque. It serves as a gathering place for members from all families who come here together for celebrations, funerals and meetings. In 2016, the residents of Foa'arah organized here the first village meeting. At the meeting on the problems related to water and robbery, the participation level was high with 200 to 300 people. The event was moderated by an imam. In the interviews, people showed their willingness to take part if another meeting were held. The meeting was agreed upon through the village Facebook page, which can be also serve as an informal structure for participation and is successfully used to initiate face-to-face meetings. The mosque is a place where the villagers gather and initiate something together based on religion, like helping each other financially or building public facilities together.

Past experiences with public participation are mixed. On the one hand, the recent meeting was perceived as a positive experience of self-organization. On the other hand, there was also discouraging experience with associations. Communication with and responsiveness of the water company is perceived negatively, even though people sometimes received more water after complaining. Many expressed hopelessness and the expectation that the water situation will even worsen.

When asked, almost all people expressed general willingness to participate in collective activities. The main obstacles to participation mentioned by interviewees were difficulties to perceive the benefit of an activity, or because of having other priorities such as personal financial problems or family issues. The response of the Syrians was mixed, but generally they expressed willingness to participate in activities if they were personally invited and/or knew somebody who was involved. The villagers showed enthusiasm of a foreign organisation coming to the village where so far no international projects had taken place. One man expressed his approval along with a critical thought on the actual implementation:

> *"Projects from GIZ and European organizations are good projects. But the people in our country do not work at the same level or knowledge, and sometimes there is ignorance. So, in the end, we do not get full benefit from the project" (Jordanian man, Foa'arah).*

The interviews showed that women are often responsible for managing water within a household. In one case this responsibility was even extended beyond the house, as the woman concerned was also the one active complainant to the water company. However, activities like the village meeting exclude women, people with special needs, and refugees. One interviewee suggested that women could theoretically have their own formal gatherings:

"They [the women] do not attend the meetings because of the tradition. The mixed meeting is not our culture… The place under the mosque is also open for ladies to organise their own meeting there" (Jordanian man, Foa'arah).

Yet, these have not taken place so far. When asked, most interviewed women said that they would attend a women-only meeting.

With regard to suggestions to improve the water management situation, the respondents discussed technical solutions such as improvement of infrastructure, increased water pressure, construction of new wells, and generally higher water extraction levels. Some proposed an improved design of valves to prevent illegal water abstraction. It was also suggested appointing a valve operator who was not from the village and would thus not favour certain people when distributing water. Frequently, awareness campaigns about water consumption were mentioned, especially for schools. As drivers for change people named schools, mosques and social media (the village Facebook group).

6.4 Yarmouk Water Company

Yarmouk Water Company, set up in 2010, serves four northern governorates, including Irbid. It is a subsidiary of the Water Authority of Jordan (WAJ). The information presented in this section describes results of interviews with two branch directors and several engineers in the districts of Bani Khanana and Irbid – the units that serve the three villages of this study.

The company works under the administration of the WAJ and, being state-owned, differs from private enterprises. According to the Irbid director, relations and flow of information with WAJ is satisfactory.

Contrary to information gathered from the community members of the three villages, Kufr Asad serves as an administrative centre, but is not the actual source of water. In reality, the water source is located in Wadi Al Arab. In Kharaj, the water is received from Al Wasati, while in Foa'arah, two local wells provide water. According to respondents, a third well is under construction for Foa'arah. Samar's water is obtained from wells in the surrounding valleys and is pumped up to the village.

It is the responsibility of the company to plan and schedule water distribution. According to the respondents, each village is assigned operators who control the water flow through valves, turning them off or on according to a schedule. Depending on the size of the village, either the whole village is supplied at once or different sectors of the village receive water on different days so as to maintain

water pressure. The main pipes apparently have too large a diameter for the small amount of water available. In practice the decisions are reportedly made by the local operator:

Q: "Are there specific rules about the distribution?"

A: "There is no specific rule. I distribute differently based on my experience" (A local operator of Yarmouk Water Company).

The construction of water infrastructure is contracted on the basis of public tenders; as a result private companies construct the system while Yarmouk Water Company is then left in charge of its operation and maintenance.

Both directors mentioned similar difficulties regarding water management. The underlying challenge is the physical water scarcity. This challenge is further exacerbated by a number of problems. Firstly, water prices of residents are lower than the costs to the company, also electricity costs are high. Secondly, both directors complained about the lack of human resources to meet the needs of the public. Working as plumbers and technicians seems to be unattractive for a number of reasons. Moreover there is no vocational training, so potential recruits are either completely unfamiliar with the work and need longer training periods on the job, or the company tries to attract engineering graduates, who have different career expectations. Given the staff shortage it is said to be difficult to respond promptly to problems such as pipe leakages. For example, in the Bani Khanana district only 2 teams of two operators were responsible for hundreds of valves, in addition to their maintenance duties.

Wells are said to be exploited in an unsustainable manner – they are overused to meet demand, with old or inadequate pipes and pumps. Problems apparently vary between summer and winter. During the summer demand is higher and as a result the water pressure is very low. During the winter there is more water resulting in a higher pressure which can lead to the old pipes bursting. The company is said to lack appropriate equipment to locate the underground leaks, which leads to an estimated physical loss of 30% of water.

However, the water companies possess a range of coping mechanisms that they employ to meet demand for water. These include attempts to dig new wells and efforts to improve infrastructure maintenance. Water shortages are overcome by supplying water in trucks, but this is very expensive because they purchase from private water vendors at higher prices but have to sell to customers at the same rates as piped water.

Directors seemed to be well aware of the challenges brought on by the refugee influx. The Irbid district director mentioned that additional efforts have maintained water provision services at the level existing before the refugee influx. However, they did not seem to be aware of particular water demand problems of the refugees as the latter live in Jordanian-owned houses and complaints are filed through Jordanians; the company could not know whether their customers are refugees or locals.

Distribution schedules are circumvented by the abuses of local residents, so that monitoring takes up considerable time of company operators:

Q: "Have you ever done something to this switches problem?" (i.e. manipulation of valves).

A: "I tried to tell the water authority. But it needs to be reported on paper and I have to say who did it. But I can't blame anyone without having seen it [...] People help me and report to me if the switches are opened. But they will not tell you who opened it [...] What helps is me staying in the village on the days the water is coming" (A local operator of Yarmouk Water Company).

The availability of water is apparently further stretched by the illegal use of wells by private water vendors. These companies sell this water at higher prices than the Yarmouk Water Company. At the same time, they often lack licenses and official certificates on the quality of the water. One manager pointed to a weakness of enforcement and the lack of sanctions as the reason for this particular problem. Controlling the extraction is not seen as responsibility of the company. At the same time a YWC employee mentioned his lack of trust in the laboratory tests on the quality of their own water, preferring not to drink it.

As well as being economically challenged, the water company is reported to be challenged in terms of management. These seem to relate to the definition of tasks for each organisational unit, to planning processes as well as the appropriate allocation of human resources. Responsibilities were reallocated during the privatisation process of YWC, with some employees said to have left hoping for better jobs at WAJ. However too many managers and too few operators were employed, according to a respondent. Furthermore, decisions on hiring new staff are not made l in the headquarters in Irbid, so local branches cannot directly address human resource needs. This adds to the difficulty of finding qualified technicians, as explained above. According to a respondent, since the privatisation more decision-making power was left to local managers and employees felt less controlled. Directors maintained, though, that technicians needed to be monitored to ensure work efficiency, as incentives for work are not very high. Adding to this, it appears

that workers who operate in the area where their family members live could be pressured to supply more water to them. Maintenance work seemed to follow complaints from water users rather than internal schedules. This creates an erratic impression and respondents could not judge the efficiency of this procedure.

There is an official complaint management system. A service hotline (call centre) is said to be in place where customers could file their complaints and report problems with water supply. Communications between the company and the public is not limited to official channels. Often, citizens call operators or the directors directly on their mobile phones. Technicians mentioned that they spend a considerable part of their time answering phone calls from water consumers, thus adding to the existing management problems. Facebook was mentioned as a way to communicate problems. Additionally, residents often call local radio stations where they express frustrations and complaints.

On the other hand, frustration was expressed by company employees about the lack of public awareness of the water company's efforts to cope with the challenges they face. Both directors noted that they felt as if the public did not appreciate the challenging conditions under which they provided their services. Lack of water would often be blamed on company employees. Nor are improvements made very transparent. Maintenance activities are only internally recorded, leading to a lack of knowledge on the part of the public about the work that has been completed. This leads to frustration and anger among the public. According to interviewees, these frustrations are most often not addressed through the official call centres, but rather in person to the operators or at the branch offices, sometimes with insults. Additionally, the public is not fully knowledgeable of their own role in ensuring an efficient, high-quality water supply. For example, some residents do not clean their own tanks and reservoirs.

Besides the call centre, YWC uses other means to inform the public. The water company also communicates with local imams, who pass on the information to their congregations in order to raise awareness amongst the public when there are problems with the supply of water or changes in the water schedule. Residents are also informed about how to detect problems with pipes in their own houses.

Another effort to raise awareness and address the public is the "water friends" programme. This programme involves volunteers, mainly students, who report illegal consumption and misuse of the valves. This provides valuable assistance to the water company which, as already mentioned, lacks human resources. Concerning the improvement of awareness and transparency, a project sponsored by the Stockholm International Water Institute was mentioned. According to the Ir-

bid director, improving awareness is necessary. Awareness raising campaigns are also targeted directly at refugees where water related issues are discussed. Women mostly attend the campaigns, as men are unable to come during working hours.

With regard to employing people from the villages to help in water management, one director considered this unwise, as in his opinion they were not trained, and it would be unfair to current water company employees. Expectations towards the GIZ project were higher regarding the infrastructure rehabilitation activities, whereas the benefits from round tables were not perceived as very clear.

7 Analysis and discussion

Following the structure of the conceptual framework and our research objectives, this chapter addressed the first three research objectives: Understanding stakeholders' perception of water supply, use and management, identifying residents' propensity to participate in water management and the social conditions that have an impact on it.

7.1 Systematisation of problems perceived in water management

Insufficient water supply in the three host communities is considered a problem by both the members of those communities (villagers) and the personnel of the Yarmouk Water Company. At the same time, the two groups have different perceptions of the causes of this problem (see Figure 4). While low centralized water supplies is the main primary cause identified by the two groups, poor water quality and unequal water supply are of greater concern for the villagers than for the YWC. The representative of the host communities and the Yarmouk Water Company were consistent on such causes of low water supply as physical water scarcity, population growth (including the increase due to the refugee influx), poor state of the infrastructure and frequent water leakages. At the same time, the YWC representatives also provide reasons for the poor condition of infrastructure and frequent water leakages by referring to the high costs of infrastructure maintenance, lack of equipment to repair damages, and lack of technical personnel to address all the infrastructure-related problems at short notice. The villagers do not seem to be aware of these factors contributing to poor infrastructure conditions and further to low levels of water supplies.

Lack of monitoring due to personnel shortages was also a reason given by the YWC representatives for undetected illegal water extraction by the villagers (e.g. through illegal pipe connections) which further leads to the problem of inequality of water supply among households. The company also employs volunteers, the so-called "water friends", to help the operators with the monitoring. These people are mostly students, informing the water company about leakages, illegal consumption, and people cheating with the valves. However, the villagers do not seem to notice their efforts. They did not mention existing monitoring or sanctioning mechanisms, official or otherwise.

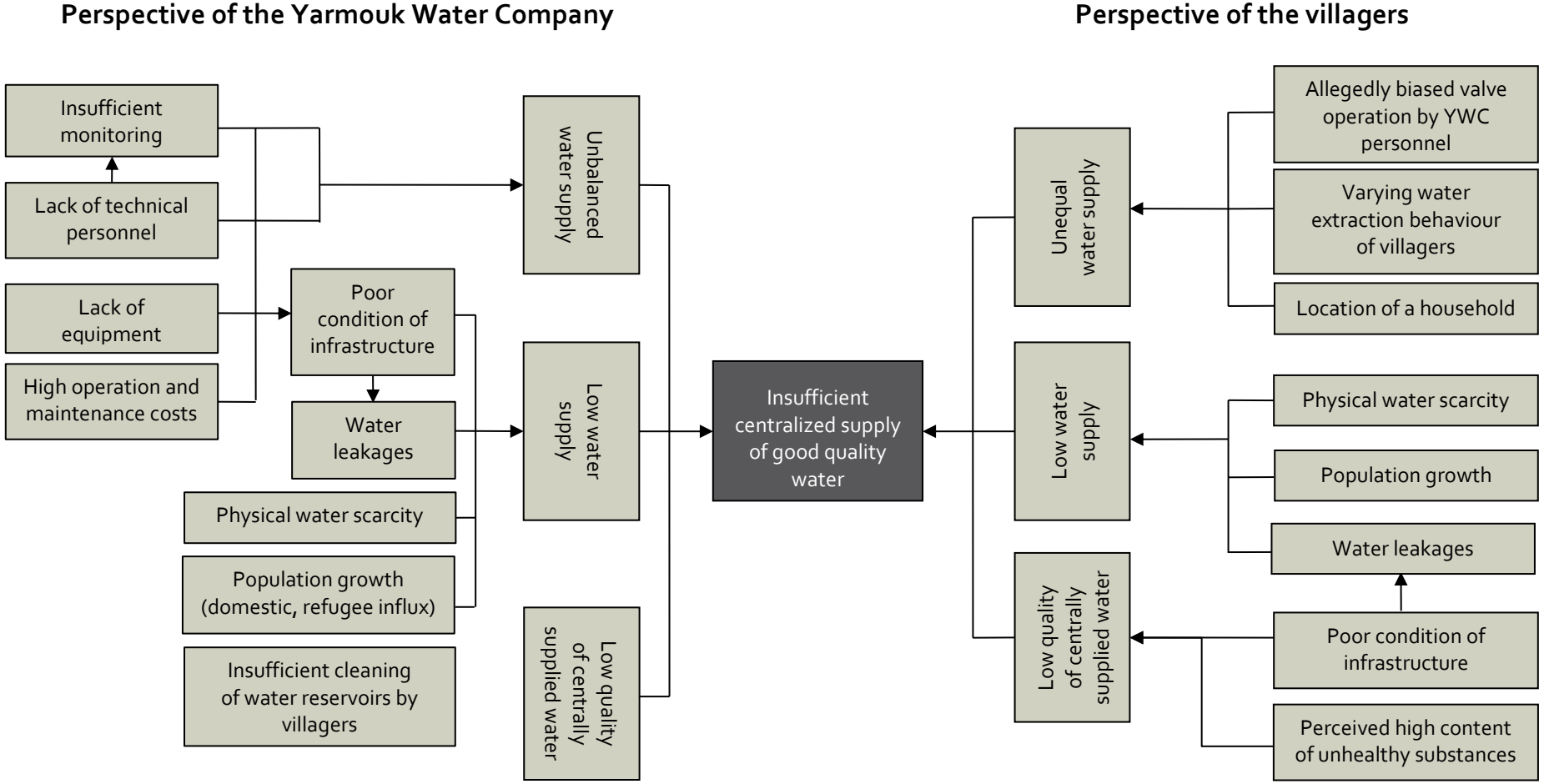

Figure 4: Problem analysis of unsatisfactory public water supply as perceived by respondents

Source: compiled by the authors.

Besides higher water extraction by some neighbours, the villagers suggested a different set of explanations to unequal water supply which included the location of a household in terms of topography and distance to the main pipe, but also bad faith on the part of the YWC personnel, who may operate the valves to the benefit of particular families. This was to some degree corroborated by a YWC representative who suggested that:

> *"It is easier to get more [water] when you know someone like the operators so they may give more to some people."*

The quality of centrally supplied water is of concern to the members of the three host communities, who blame the poor infrastructure. The YWC personnel have a different view of this aspect of the problem, suggesting that some villagers do not clean their water reservoirs frequently and thoroughly enough.

Both actor groups see the development of new water sources and increase of water supply as a solution to the problem. At the same time, considering the limits to increase in water supply set by physical water scarcity, other aspects of problem solution should be considered which would reduce potential for water-related conflicts. These are in particular a more reliable water supply and increased exchange of information between the two actor groups. The existence of the two different perceptions of the problem at hand points to different information possessed by the two actor groups, but also to the lack of exchange between their representatives. Promoting information exchange would contribute to better mutual understanding, more trust and acceptance of decisions taken, and would increase satisfaction with the water supply.

7.2 Water management institutions

This section considers the water management institutions identified during the field research in the three host communities. Particular attention is paid to the informal institutions, i.e. specific water-related rules and behavioural patterns developed within single families or stakeholder groups. In addition, the implementation of these rules is discussed.

The formal rules whose implementation is controlled by the Yarmouk Water Company include the following four sets:

- rules regulating water supply to the villages and single households (see rules 1, 2 and 3 in Table 2);

- rules regulating the actions of villagers and the YWC personnel in case of water-related accidents such as damage to the water pipe network, water leakages, etc. (see rules 4 and 5 in Table 2);
- rules regulating additional water supply measures in case of extreme water shortage in summer months (see rule 6 in Table 2); and
- rules regulating invoicing for water use (see rules 7, 8 and 9 in Table 2).

The formal rules do not seem to be well implemented. Several of them seem to be adhered to only sporadically, or may be violated by the personnel of Yarmouk Water Company and/or the villagers. The following potential reasons for the problems with the implementation of formal rules have been identified:

- Physical factors influencing the water supply, such as household location (on elevation, close or far from the main pipe), condition of pipes, season, population growth etc. These factors influence the adherence to the water supply schedule;
- Insufficient YWC personnel, which influences the implementation of rules regulating the operation of valves and network maintenance;
- Possibly bad faith of some villagers who might illegally connect to water supply infrastructure and operate valves, or of some YWC staff members who might operate valves to the advantage of certain households;
- Insufficient monitoring and control by the YWC which might reinforce illegal operation and maintenance of the water supply network by the YWC personnel and/or villagers.

Failures in the implementation of formal rules reinforces the insecurity of water supply for the villagers, which is primarily caused by physical water scarcity. As response to this insecurity but also to the need of organizing water management at the community and family levels, a range of informal rules has evolved in the three villages. To cope with irregular water supply, in particular in summer, the villagers harvest rainwater (rule 10), conserve water (rule 11), and buy trucked water (rule 12). Though these social norms are generally adhered to, the outcome of villagers' compliance with them may vary greatly. Thus, not everyone can afford a rainwater reservoir. The attitude to water conservation depends on the economic situation of a household, on the amount of water received through the mains supply, and the religiosity.

Table 2: Water management institutions

	Rule	Compliance
	Formal institutions	
1	Water is being delivered in accordance with the schedule	The water supply schedule does not seem to be adhered to
2	Valves are opened and closed by operators according to the schedule	The rule does not seem to be scrupulously implemented: ▪ The actions of the operators do not always seem to conform with the schedule; ▪ Some of the villagers seem to possess the valve keys and manage the valves to their benefits.
3	Villagers are not allowed to construct, maintain or manage water supply infrastructure, otherwise a fine will be imposed	The rule is not implemented scrupulously: ▪ Illegal connections to water supply network seem to take place sporadically; ▪ Several respondents claimed to have attempted to fix some of the infrastructure-related problems on their own, e.g. repair leakages.
4	Infrastructure damage or water leakages observed must be reported to the Yarmouk Water Company	The rule seems to be complied with
5	The personnel of the Yarmouk Water Company must repair the infrastructure or stop the water leakage reported	The rule seems to be complied with, but with delay
6	In the case of water shortage in summer, water is delivered by trucks to households or villages affected by water shortage	The rule is partly implemented, as not all households receive trucked water from the YWC; some have to rely on private vendors for water.
7	The Yarmouk Water Company invoices each household every month for the water consumed.	The rule is complied with
8	Only the water consumed must be paid for	Some ambiguity in rule implementation has been observed: several cases were reported when the invoices were issued for a larger amount of water than consumed by a household
9	Households must pay their invoices, otherwise the water supply will be cut off	The rule seems to be complied with. At least one case was mentioned when a household was cut off from water supply because of debts

	Rule	Compliance
Informal institutions		
10	To ensure water supply, rainwater should be harvested and stored in reservoirs/cisterns	Implementation of the rule is possible only for those who can afford the costs associated. An association providing credits for construction of water reservoirs/cisterns exists only in Samar
11	Water must be used reasonably and not be wasted	This rule originating in religion was mentioned by all interviewees. The differences in water use seem to lie in the interpretation of reasonable water use and water waste, religiosity, and the well-being of a household
12	In case of water shortage in summer, trucked water should be bought	This rule seems to be generally complied with
13	Men ensure water harvesting, filling water tanks, and organising water supply	This rule seems to be generally complied with
14	Women are responsible for water management within households	This rule seems to be generally complied with
15	One should use tap water only for cleaning, washing and irrigation. Only rainwater or bottled water should be used for drinking and cooking	This rule is complied with by all households interviewed
16	One must not complain about neighbours or acquaintances if they receive more water because of having a pump, benefiting from connections to the YWC personnel, or open the valves illegally	This rule seems to be generally complied with

Source: compiled by the authors.

Also the water bought in summer differs between households experiencing similar water scarcity. While some households may be able to afford to buy more and have facilities to store the water, others are forced to consume less water due to financial constraints or lack of storage capacity.

The responsibilities for the two main water-related activities, i.e. water procurement and water conservation, seem to be clearly distributed within a family. The former is the task of men who:

- monitor the water supply schedule, open the water tap at the right time and fill water reservoirs;
- pump water from the underground or on-ground water reservoir to the roof reservoir;
- organise purchase and delivery of trucked water in times of water shortage;
- communicate with YWC personnel regarding water supply, infrastructure damage and water bills.

Women are the main actors when it comes to the organization of water consumption and water conservation. They take decisions on how much water should be used for washing, cleaning, cooking, and other needs.

Besides the clear distribution of water-management tasks, the families in the three host communities have a clear idea about the sources of water used for different purposes (see rule 15). The last informal rule 16 regulates the relationship among households with regard to water use. It prioritizes the value of social capital over the value of fair and equal water supply, and will be further addressed in the section 7.3.

The formal and informal rules considered in Table 2 and their implementation correlate strongly. Failures in implementation of rules 1, 2 and 5 undermine the implementation of rule 3. Adherence to the rule 16 by the villagers undermines the implementation of the rules 2 and 3.

The analysis of existing formal and informal rules points out different stakeholder groups responsible for different aspects of water management at different levels. This allows the agency initiating participatory water management in the three host-communities to undertake targeted interventions in order to improve the situation.

7.3 Stakeholders and their stake in water management

For a better overview of the various interests and stakes of the different stakeholder types, Table 3 summarizes the findings with respect to different dimensions: gender, nationality, power and wealth, disability as well as geographic location.

Table 3: Stakeholder types, their stake in water management and in changes therein

Stakeholder	Stakeholder dimension	Stake
Villager	Gender	Women are the main water managers within a family. They seem to know best how much water is being consumed and for which purpose. Many of them try to conserve water and use simple water-conservation techniques. Water scarcity affects their work results, they may perhaps fear loss of reputation if they cannot properly do their duties. We may assume that women might be more concerned about the quantity and quality of centrally supplied water. Men are responsible for water procurement. Therefore they organize purchase of additional water in the summer and turning on the tap to fill water reservoirs. Both men and women take time to wait at the valves for the water to come.
	Nationality	For Syrian refugees, lack of water is one of various problems faced, while financial difficulties and unemployment considered more severe. Their uncertain situation and incomplete integration in the Jordanian society might make them reluctant to participate. On the other hand, participation in the decision-making might foster them being acknowledged as part of the community. In some cases, the amount of water to be consumed by a Syrian family is fixed in rental contracts. If these contracts were reviewed during the improvement process of water supply, Syrian refugees would benefit. Otherwise they would benefit little from changes in overall water management. For Jordanians, fixing water amounts in these contracts is almost the only means of control over refugees' share of water.
	Power and wealth	Large *ashera* constitute the most powerful entities in the villages. They are supported by the mukhtar and imam who reinforce the family model. Equipped with a higher social capital and mutual cooperation within the family might make it easier for them to handle water shortages. In this regard, their interest in participating in water management might be less strong in comparison to smaller or poorer families who are more vulnerable to water scarcity. On the other hand, representatives of powerful families might be motivated to participate in order to confirm and maintain their power in the community; and less influential families might be hesitant to foster their interests, because of not feeling entitled.

Stake-holder	Stakeholder dimension	Stake
	Free riders	Villagers who violate formal and/or informal water management rules benefit from low levels of control and have little interest in system changes as they might fear to lose both water access and informal power.
	Geographic location	Households closer to the main line or valve and at lower altitude, the smaller the household's stakes are, as these families are better off in terms of water supply. In contrast, households located far from the main line/valve and at higher elevations have higher stake to improve the water management system as they have to pay much more for other means of water supply. However, addressing water distribution conflicts within the village is seen as negatively affecting relationships with neighbours and may shift the balance of power.
	Disability	Families with members with special needs might be interested in participating, if the latter require more water. Some families formulated special demands on the water system, such as sanitary facilities in schools.
Water Company	Operators	Answering calls from water users takes up time and causes frustrations if they cannot help. On the other hand, the job allows them to do something beneficial for others. Considering the lack of personnel reported by the Yarmouk Water company, the poor condition of the water supply infrastructure, and high stress in answering the requests of citizens, the operators might be interested in improved water management if it has the potential to lower their work load and limit complaints.
	Management	The interest to participate for the managers within the Yarmouk Water Company lies in maintaining water supplies for all and limiting complaints from water users. Answering calls from water users takes up their time, but being able to help others empowers them. However, their interest in participation may be limited as they may have more trust in direct infrastructure improvements. Depending on the level of public participation chosen, the YWC managers might need to share decision-making functions with other stakeholders. This might decrease their interest in participatory water management. Client orientation is limited by the scarcity of the resource, lack of operating staff, and by the limited control over infrastructure investments. Need to rely on laboratories for testing water qualities and on clients to trust the tests.

Stake-holder	Stakeholder dimension	Stake
Private water providers		Profit from high water scarcity in summer, unclear legal situations and limited control of formal institutions. Providers of trucked/bottled water profit from low perceived water quality of other suppliers.
Water Authority of Jordan and Ministry of Water and Irrigation		Interested in reducing water use and violent complaints of water users, which poses intrinsic contradictions. This in particular as they have overall financial and planning control regarding water provision and investments and need to maintain this for the whole country. Historical experiences with centralisation and decentralisation may have left officers with mixed feelings regarding participatory approaches. Have long-standing relations with GIZ as implementing agency – most likely interested in maintaining these relations and conforming to related expectations of donors.
Source: compiled by the authors.		

7.4 Social capital and its role in public participation

To enable participation, it is necessary to analyse the social structures and networks, power relations, and the forms of decision-making.

7.4.1 Social structures, cooperation and power relations

As seen above, there are different arenas regarding water management:

- Water supply towards the communities (relationship between water companies and water users), regarding quantity, frequency, reliability and quality;
- Water distribution and use within the communities (relationship between the inhabitants, also influenced by installations and the overall water supply system).

It follows that village residents may contribute to problems and to solutions in both arenas. Hence it is useful to analyse social structures and cooperation practices and capacities.

Social capital theory defines social capital as a facilitator of cooperation among groups (Foxton and Jones, 2011). Among all three communities, family ties dominated social networks. The family is the strongest, most reliable and prolonged entity, which not only determines the social status of the individual within the community, but also shapes norms and values. In most cases, the ties comprise of the inner family circle, the extended family, and even neighbours in certain cases.

These family relations were passed down through generations and can be classified as bonding social capital, meaning that internal family support is strong.

Table 4: Informal institutions supporting the maintenance of social capital

No.	Informal institution
1	One should turn to the mukhtar if one has a problem
2	The problems within a family must be solved within a family, without turning to the third party, such as public authorities
3	Problems, both private and public, should be brought to the most influential family member
4	Problems between families are resolved by their representatives
5	The solutions to a problem decided upon by the head of a family or negotiated by the representatives of two or more families cannot be challenged by other family members
6	Only men take part in the meetings. Women can voice their concerns through their husbands and/or sons

Source: compiled by the authors.

The power and importance of family has accrued over centuries and is founded on an historical and cultural context which required mutual support, self-organisation of family life through design and implementation of institutions, and sanctioning of non-compliance. The social norms supporting the maintenance of social capital are summarized in Table 4. Having been practiced for decades and centuries, they have very deep roots, and cannot be easily eliminated or ignored. Besides strengthening the family ties, these rules reinforce the hierarchical structures and power relations within families and, possibly, among the families.

Social capital can also be noticed in water-related issues. Thus, sharing water in cases of water scarcity is more likely among close relatives. *Mukhtars* are often the intermediaries in communication between water users and the YWC personnel: they collect complaints from the villagers and deliver them further to the company. The situations demonstrating the importance of social capital are those related to inequality in water supply caused by the actions of single households, such as the installation of individual powerful pumps, illegal connection to water network or illegal operation of valves. Though such behaviour could be addressed by collective action at the community level, maintenance of good relationships with family members and neighbours seems to be of higher importance than collective development and implementation of rules which would ensure equal access of all villagers to the limited centrally supplied water. Respecting social capi-

tal seems to provide the villagers with the insurance of receiving help and assistance in difficult situations in the future.

Social capital is usually considered beneficial for public participation (see section 3.5), as it is easier to identify a representative of a group, information can be transmitted more easily within a group, and decisions taken by the group representatives are more readily accepted and implemented.

At the same time social capital might have negative effects on public participation:

- As indicated in section 3.5, social capital is one of the reasons for the existence of vulnerable individuals or groups. In our case these are those who do not belong to a family (e.g. refugees) and those who are not well accepted in a family (e.g. single and childless women). These people are excluded from the information which is shared among members of one group, do not have a person of reference guarding their interests, are more difficult to mobilize and to voice their concerns. During the meetings with representatives of other groups, vulnerable individuals without strong social capital might be ignored and disadvantaged by the decisions taken.
- We might expect that during the meetings the representatives of the host communities will act in favour of their families. This might cause dissatisfaction on the part of other villagers, who do not belong to the representative's family but whose interests should be protected by the representative.
- Social capital might jeopardize implementation of decisions reached through the public participation process. High value of the family interests might reduce compliance with the rules.

On the community level there was no official platform in Kharaj and Samar, where different *asheras* could come together and share their positions. Still, family heads enjoyed a high level of trust, and their reputation was recognized by other influential families as well. There might be other, more subtle forms of exchange and negotiation which were not explicitly mentioned in the interviews.

An imam is an advisor on religious questions, rules and norms. He is able to draw attention to problems on the community level. Additionally, as a meeting point for men on Fridays the mosque can be important for facilitating public participation. For example, meetings can be announced here (see Reed, 2008). Interestingly, in Samar and Kharaj, the imams simply advised water conservation in accordance with the Prophet's words. In Foa'arah the Imam took on a more active role, leading the first all-village meeting in the village *diwan* and discussing issues such as robbery, water scarcity and wastewater disposal. In general, the imam can

be seen as a group facilitator on a more moral level, which could bring people together. For women in particular, the female religious preacher (*waitha*) may have similar influence. But although integral parts of their community and the water system, they cannot serve as external facilitators.

7.4.2 Vulnerable groups

A separate external vulnerability study is expected for the three villages, so that the analysis of vulnerable groups here is limited and cannot lead to a clear definition and delimitation of vulnerable groups.

Based on our findings, the following factors may contribute to people's vulnerability with respect to water supply in particular:

- living far away from main water pipes or on higher elevations;
- not having personal connections to YWC staff;
- struggling to afford other means of water supply (rainwater reservoir, pump, tank, bottles);
- greater dependency on water for their livelihood than others;
- reluctance to raise a conflicting issue within the community (unsettling social peace and power structures);
- having neighbours who are unwilling to alleviate the water problem through collective solutions;
- not belonging to an influential *ashera*;
- having no direct connection to an influential figure or network in the village;
- have little opportunity or capacity to do favours for others;
- not living in conformity with key social norms.

Some of these factors refer to a lower social status in general, and a combination of factors may generally lead to higher vulnerability. Obviously people with a higher social status are able to overcome water-specific disadvantages more easily.

Some groups and individuals explicitly expressed their dissatisfaction about the existing social rules, which made them feel excluded. This was often the case when talking to smaller families or people with special needs. Others, especially women, felt they could rely on others to speak for their interests.

In the following, and due to the specific focus of the project, we analyse the situation of women, refugees and people with special needs within the predominant system regarding social and water issues.

Traditional gender roles were predominant in all villages. Gender segregation was common on all levels of community life and seemed to be persistent and unchallenged. Women mainly identified themselves within their group, which showed that gender specific bonds are strong (Foxton and Jones, 2011). As a cultural custom, it is not common for women to intervene in the public sphere. They do not usually attend any occasions in *diwans* or mosques where men participate. Syrian women tended to be more isolated in their new environment, probably because their traditional networks were disrupted following their displacement. One important step to strengthen their position in society is for the individual to reflect their marginalized role (Freire, 1970). In our case, women had different views about their situation. Some female interviewees said that some women expressed their opinions in the public discourse. This may be considered acceptable if done in a modest way. Other women felt represented by their husbands without insisting on publicly voicing their concerns. The possibility to participate at community level was given by regular meetings in schools where women and men discussed topics such as water issues. There were women's associations in Kharaj and Samar; these mainly addressed domestic issues, offering classes such as handicraft workshops, with no direct focus on integrating women in other participatory levels.

Women have a significant role in water management. They control large parts of the water consumption of their households. This is why water-related issues more directly affect women and their work.

Syrian refugees are seen as a vulnerable group in all three communities. Nearly all lacked financial resources and depended on external help without having the possibility to legally pursue a career. Even though some of them told us that they arrived in Jordan with some savings, after three or four years with little or no income they had nothing left. Even if they had higher education qualifications, they could not apply these appropriately without work permission. They had limited access to public services, especially health services. Moreover, their involvement in community life was in practice restricted to informal meetings like weddings or funerals in the *diwan*. Refugees are classified as a marginalized group in Kharaj, Samar and Foa'arah (see de Freitas and Martin, 2015).

Their relations to Jordanian community members remained ambivalent but did not exceed the level of bridging social capital. In all the cases, Jordanian respondents initially asserted their excellent relations with the arrived migrants. Support mechanisms for the Syrians existed when Jordanians and Syrians had a landlord-tenant relationship, or when family roots or business links reached back to Syria, and Jordanians wanted to show gratitude and reciprocity. The related culture and religious beliefs support the convergence of the two ethnic groups.

Nevertheless, some of the Jordanian community members seem to perceive negative impacts of the accelerated population growth due to the refugee influx. These impacts relate to the increased economic pressure of rising rents and food prices, and decreased water pressure because of the additional demand on the water infrastructure. Moreover, they were sometimes perceived as using more water than Jordanians do. Some refugees perceived their situation as temporary, and longed to return home. Following Ostrom (1997), this perception also decreases the likelihood of their participation in any water management process, because they would be unlikely to reap future benefits from a better functioning resource system. On the other hand, many refugees tried to adapt to the local water consumption habits. Some went as far as attending special courses organized by the Yarmouk Water Company. This could be a promising sign, because the adoption of local norms of routine behaviour could contribute towards building social capital (Rydin and Pennington, 2000; Woolcock and Narayan, 2000).

In an effort not to strain relations with their hosts, Syrian refugees sometimes refrained from interfering much in community life. Only if really necessary would refugees seek help or information from Jordanians they knew personally. These could be landlords or neighbours.

In none of the villages were refugees organised in any association or otherwise represented as a group, according to respondents. This is understandable as their previous social structures in Syria had been uprooted. Hence *ashera*-based maintenance mechanisms were difficult to maintain.

An adequate public infrastructure for people with special needs is hardly available in any of the three communities. Whereas Samar had its own association, it only addressed some disabilities. Parents had to travel long distances and be prepared for high expenses to get proper help for their children. Consequently, some of the people with special needs were not present in community life. These families were widely left alone and were often not aware of similar cases in their own community. They remained completely silent in the public sphere without any prospect of improvement. In some cases, it was mentioned that families with children with special needs required more water for cleaning purposes. Considering these circumstances, people with special needs can be seen as vulnerable regarding water supply.

According to our research findings and following de Freitas and Martin (2015), vulnerable people in the three villages seem to lack the awareness of opportunities for participation, make few mobilisation efforts, have insufficient resources for participation, and/or have aims which differ from those of other community members.

7.5 Fulfilment of conditions for public participation

Based on the information obtained during field research, this section considers how far the preconditions for meaningful and effective public participation (see section 3.3) are fulfilled in the three host communities, and anticipated risks and obstacles (see section 3.6).

Table 5: Fulfilment of preconditions for public participation in the three host communities

Conditions for high participation	**Rather yes**	**Rather no**
Stakeholders have financial and monetary resources to attend meetings. Alternatively, the organization initiating the public participation process is willing to provide stakeholders with resources for participation	-	-
The community is homogeneous and its main interests are clear and shared (requires fewer representatives of their interest groups)		x
The topic does not require the representatives to understand complex technical information in a short time		x
There is hostility towards governmental bodies, and community validation of governance decisions is desired	x	
Community members with strong influence are willing to participate	x	
The issue is perceived as approaching "crisis stage" if no action is taken	x	
Obstacles to public participation	**Rather yes**	**Rather no**
High complacency of the public in general, e.g. decision-making is considered the government's job	x	
High trust of the public in the government/agency to make the right decision		x
The problem at hand not being perceived as sufficiently important by the public to warrant own involvement, or otherwise benefits of participation are not easily identified	x	x
Self-perception of citizens as not being influential against stronger interest groups or the government or being overwhelmed by the problem	x	
Inability to create an environment enabling equal participation of stakeholders with different scope of decision-making and/or economic power	(x)	-
Lack (or unawareness) of real alternatives to the solution advocated by the government, existence of central non-negotiables which limit the initiative power of participants	-	-
Large numbers of stakeholders and high diversity among them	x	

Source: compiled by the authors, based on Irvin and Stansbury (2004), Uphoff (1992), Rowe and Frewer (2002).

Keeping in mind the process character of public participation (Kerr and Jeffrey, 2008), this can be only seen as a preliminary analysis as people's capacities, perceptions and needs can change with new experiences made during the process.

7.5.1 General perceptions of villagers

The first question is whether people consider their participation in the water management to be necessary and are as a consequence willing to participate in some form. In general people tend to be willing to participate if their lives are directly affected by the outcomes of the process (Innes and Booher, 2004). In all villages, most people demonstrated dissatisfaction with the water situation and indicated that their lives were adversely affected. This indicates a general openness and motivation to become active.

The willingness of actors to participate can be also seen in the extent to which they are already actively engaged in existing structures. In all villages, people expressed interest to be potentially active in village meetings. Especially, in Foa'arah these meetings seem to be taking place. This experience indicates that there are people willing to be actively engaged in change. Lower levels of participation are requested, too, such as simply being informed, in particular regarding to the water schedule. However, experience of failed meetings like in Samar show that people can easily lose faith in collective activities when these do not lead to results. Participatory processes can only be successful when participants perceive their participation as meaningful (Santos and Chess, 2003; Webler et al., 2001). This is an important aspect because negativity and little hope regarding the water situation and a potential for change can be found in all three villages. In this way, any form of a participation process should bear results so that people can feel that they are able to initiate change.

As for the cooperation with international projects, there are mixed expectations. Whereas in Kharaj and Samar there is a lack of confidence due to unsatisfactory experience in the past, in Foa'arah people have no experience and are thus enthusiastic about new opportunities. GIZ is not well-known in the villages, so the first project will leave a lasting impression. However, people do not always keep records of the organisations and might be confused over a multitude of projects.

As regards cooperating with the water company, villagers generally show little trust. In the past people have received little information about the water situation and their complaints often appeared to have remained unheard. A first step to increase trust could be increasing transparency and improving information flow

from the water company, for example regarding maintenance work and the water schedule.

Some suggestions, made both in Samar and Foa'arah, e.g. water consumption advice, indicate a more information-driven participation process. However, most suggested solutions focus on technical improvements. This is regarded with caution by YWC as people might not have the necessary technical expertise, so that their suggestions seemed unfeasible to YWC employees. However, villagers also tried, against the regulations of the water company, to repair leaking pipes by themselves. This indicates that they might also be interested in a higher form of participation such as partnership as defined by Arnstein (1969). In this way, they could directly and practically solve problems themselves at the village level. Although this might be effective to counter the lack of labour force in the water company, the company is reluctant to accept such a solution as people are not formally trained and there are concerns about fairness towards current employees. Interestingly, other villagers would refrain from making small repairs to pipes because they were afraid of being accused of stealing water.

7.5.2 Perceptions of different types of stakeholders

People are affected to different extents within the villages. This might lead to differing individual motivations to participate. Further, stakeholder types have different priorities and face different problems.

In all three villages, women's perception of public participation differs from that of men. Their participation is mostly channelled through their husbands, who inform them and ask their opinion. Further, issues are informally discussed between women visiting each other. Some also take an active role in complaining directly to the water company but women are generally not attending village meetings. Mixed meetings were usually perceived as not corresponding to the social norms of gender roles. However, there was a general interest in women-only meetings and workshops with regard to water for women but there is little practical experience. There is therefore potential for forms of participation which go beyond consultation. Various existing channels could be used to engage the women in the villages. In Kharaj and Samar, the women's associations could address at least some of the women. In Foa'arah the Facebook group is a public space where women are present. It could be possible to foster these efforts and thus make opinions of women more visible.

Syrian refugees are struggling with other issues besides water. Some of them also did not regard the villages as their home and thus might also see problems

like the water situation as only temporarily affecting their lives. Thus, they might be less interested in becoming actively engaged in a participation process. Furthermore, they lack active participation in all forms in the villages. However, being part of a participation process can bring general empowerment (Freire, 1970), and refugees and in general people who are reluctant to participate might do so if additional benefits became clear to them.

People with power in the community can have more or less interest in a participation process. Wealthy families with good coping mechanisms for the water situation may be less willing to participate. On the other hand, people with informal authority such as *imams* or *mukhtars* could perceive the process as strengthening their role in the community. To some degree, especially in Kharaj, some of the people might have enough trust and be willing to delegate their power to these representatives who are usually responsible for channelling information. As it is necessary for a legitimized leader to listen to people's opinions and inform them about the ongoing process (Webler et al., 2001), this form of participation could then be a mix of informing and consulting.

People in water-sensitive geographic locations, e.g. far away from the main line, in high areas or crowded places, have a high stake in the participation, so it can be expected that they are very willing to participate. This stakeholder type, especially Jordanian men or in some cases women, regularly try to make their voice heard by complaining to the water company. It shows that they expect at least to be consulted about their opinion in the water situation

People with special needs have a high stake in the participation process. However, they lack adequate services in Kharaj and Foa'arah and there is no association that would represent their interests. Further, because disabilities are perceived as something to deal with privately or via charity, people with special needs are not thought to need to be involved in a participation process. If this is to be challenged, a participation process could start to involve their families.

Operators of the water company in the villages have an important role in the current water management as they decide about local distribution. An interviewed operator did not think it feasible to involve people from the villages into his activities such as monitoring the switches despite acknowledging a lack of personnel. However the data basis is insufficient to generalise perceptions of operators.

The management of the water company has had positive past experience with participatory processes, such as locals monitoring the infrastructure within the scope of the "water friends" programme. However, suggestions to involve people in a more active partnership are perceived as difficult because the villagers are not

experts and the company does not want to disadvantage its own employees. Possible modes of collaboration without threatening the position of operators are yet to be explored, in particular regarding water distribution within the villages.

Table 6: Stakeholder types and their perception of participation

Stakeholder	Stakeholder dimension	Perceptions
Villager	Gender	Women have experience with information and consultation but there is interest in higher forms of participation. Being present in public may be seen as acceptable if women representatives "behave modestly" (sic) while doing so. However they might be perceived by other women as "manly" if stepping out of their traditional role. Some women find it perfectly acceptable to be represented by male family members as all of them would profit from improvements in water supply.
	Nationality	Syrians have little experience with participation on the village level. A participatory process might be a chance for many to raise their voice in their communities for the first time. Therefore, the participation might lead to their general empowerment. However, they are interested in maintaining good relationships with their hosts and cannot afford to engage in conflicts. Moreover, water does not usually rank first among the problems of refugees.
	Power	Different stakes of powerful people resulting in different willingness to participate. Influential, trusted people such as *imams* and *mukhtars* could in some cases be more actively involved in participation process and inform and consult the people they represent. This may depend on the personal value system. Men might feel they lose power if women speak for themselves, however this was not voiced in the interviews.
	Geographic location	Because of the high stakes, villagers with repetitive and acute water problems often complain actively, especially when also Jordanian and male. Would expect to be at least consulted for their opinion.
	Disability	High stakes in the participation process but, depending on the disability, not all might be able to voice their concerns. Representation by the family in case of severe disability. Water is one of several problems in daily life, not necessarily the main problem.

Stake-holder	Stakeholder dimension	Perceptions
Water Company	Operators	Possibly reluctant to be involved in participatory process given the overall water scarcity and desolate situation of the infrastructure which has been going on for a long time already.
	Manage-ment	Previous experience with participatory approaches such as water friends but higher forms of participation such as partnership with villagers perceived as difficult because villagers are not water experts and the company does not want to disadvantage its employees. Physical improvements in infrastructure seen as more promising, unclarity over possible benefits of participation.
Private water companies		No information available.
WAJ and MWI		No direct information available. Reportedly interested in participation if this was effective in controlling violent complaints of citizens regarding water supply.
Source: compiled by the authors.		

Summing up, people have different perceptions of public participation processes depending on what they have at stake and what experiences they already had in participation. Different stakeholder types such as women and refugees might have other expectations towards a participation process. The different perceptions are summed up in Table 6.

Notwithstanding the openness of many stakeholders to participate in actions that may improve water management, there are certain systemic forces that may hinder the process, as further explained in section 7.6 below, besides possible limitations of people's or organisations' capacities that are the topic of the forthcoming section.

7.6 Capacities for participation

Any successful participation project is strongly dependent on the capacities and skills of the potential participants. Meaningful contributions require empowered and capable participants who possess sufficient resources, the necessary information, and the confidence to participate (Reed, 2008; Irvin and Stansbury, 2004). In this section, the existing capacities and skills for participation will be discussed and gaps identified.

7.6.1 Resources for participation: time and financing

As Irvin and Stansbury (2004) as well as Rowe and Frewer (2002) mention, one critical component of successful participation is that potential participants have sufficient resources, both in terms of finances and of time. The analysis regarding both issues is deduced indirectly from interviewee's responses to other questions and observations. As mentioned, financial issues played a significant role in all villages and many interviewees seemed limited in their choices due to financial constraints. This most strongly affected refugees, who had no financial income other than what is being provided by the United National High Commissioner on Refugees (UNHCR). Still, a large number of positive replies to the question especially expressed possible future involvement in community meetings. It might however influence the outcome of a participatory process in an indirect manner, as differences in wealth often lead to social power imbalances, which clearly impact participation.

Several interviewees, especially refugees, mentioned their immobility, due to the absence of private and public transport, and the dependence on their social network for such services. Overall, an impression of strong dependence on motorised transport emerged. Even short distances of one kilometre or less were travelled by car. One woman in Kharaj stated that after the women's association moved to another part of the village further away, she stopped going to meetings. This was due to her fear of negative perception by the community if she walked unaccompanied. Accessible and socially acceptable transport seemed to be an important factor for inclusive participation.

Possible time constraints emerged in some interviews only. Experience of YWC has shown that working hours limit the possibilities of men to participate in lectures on water use. Some parents of children with disabilities were more time constrained. Especially for single parents this could effectively hinder participation.

Of great importance are commitment and availability of resources by sponsoring and other facilitating parties. This does not only apply to the planning and conducting of a participation process itself but especially for the implementation of gained insights and results.

As regards the Yarmouk Water Company, there is insufficient information about the capacity to meaningfully partake in the entire participatory process and integrate the results into their operations to produce a real change. This firstly requires managerial power and competence but also an organisational culture open to learning and adaptation, as well as sufficiently skilled staff. According to the interviews with the managing directors, YWC seems to lack organisational

clarity, and it suffers from understaffing at the operating level. There is a potential risk that these difficulties hinder in particular the implementation of changes. Moreover, as the Company is not financially self-sufficient, its control over resources is limited – overall lack of funding may result in a situation in which improvements in one area are crippled by increasing deficits in other areas. Operators in particular face limitations to effect changes that would upset the balance of power and social structures in communities that they themselves are related to.

7.6.2 Information and knowledge

A more pressing issue than lack of monetary or temporal resources appeared to be the access to information and the resulting level of knowledge about the situation in question. Appropriators must have a shared image of how the resource system operates, and the effects of their actions in order for a community to reach intensive cooperation (Ostrom, 1997). This does not seem to be the case for all concerned but could become a subject of joint learning during the participation process if designed in a reflective manner.

Only when stakeholders are informed about the problems, limitations, options, and alternatives are they able to contribute in a participatory way (Reed, 2008). But these aspects appeared poorly developed in all three villages. Most information in the villages only flows along informal pathways, thus being highly exclusive by nature, especially for vulnerable groups and for less influential families (see Figure 5). An exception to some extent is Foa'arah, where a communal information exchange takes place via Facebook. However, here too the group of refugees is excluded.

The nature of the given structures translates into a strongly diverging level of knowledge of the different stakeholders and stakeholder groups, which in turn hinders equal participation. This is clearly expressed in our case by the confusion with regard to water management. Villagers were often unaware of the exact times of water delivery, gave contradicting answers with respect to responsible authorities, and some were not even able to name their water supplier. This situation is exacerbated by non-transparent reporting practices of the water company. Given such differing degrees of knowledge, a participatory approach faces severe challenges of imbalance regarding the understanding of the water supply and management system. YWC, on the other hand, is unable to monitor supply of water to refugees if the latter is controlled by Jordanian landlords. This means that water needs and use patterns of refugees are unknown to the company. Moreover, operators seem to maintain water distribution patterns mainly according to their experience, not always being aware of overall governing rules – changes in

population structure, water availability or policy may remain unanswered at the level of local water distribution. However, more research is necessary on this level given the limited number of respondents in this study.

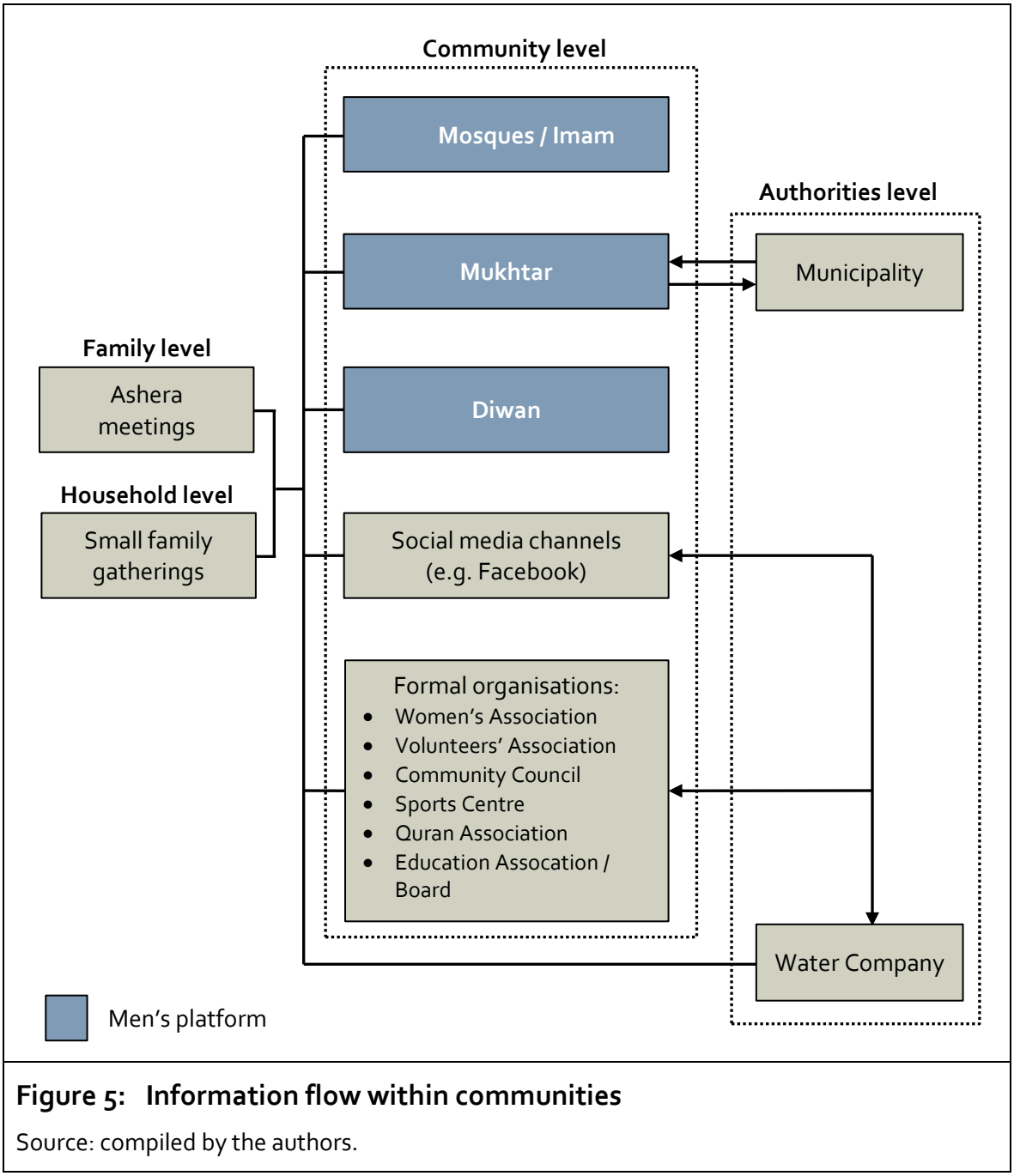

Figure 5: Information flow within communities

Source: compiled by the authors.

Similarly, there is much ignorance regarding existing participatory structures such as associations, Facebook groups, and other platforms of exchange Vulnerable groups, in particular, lack awareness and access to these structures. Accord-

ingly, this low level of common understanding and the lack of information constitute a challenge for participatory projects (Reed, 2008; Ostrom, 1997).

Knowledge also plays a vital role when it comes to technical skills and capacities. To help to improve a technical system, such as the water supply and its infrastructure, a certain level of technical understanding is required for citizens to generate meaningful solutions in such a process. Company managers, on the other hand, may not be aware of the experiences of different user groups with water supply, as shown above. To this regard participation indeed means joint learning and collaborative efforts to understanding each other.

On the other hand, the infrastructure has been in place for some 60 years. Some people mentioned repairing leakages of pipes themselves, they must have a certain level of technical competence. One Syrian refugee mentioned changing the water installations of the entire house by himself. It can be assumed that most citizens, especially women, are unfamiliar with technical specifications and are not able to discuss these issues. Accordingly, it would seem that the facilitation of such understanding across all stakeholders is one major challenge for participation. In contrast, governance aspects are a field where stakeholders might meet on a more equal level.

Knowledge of the given political and bureaucratic system and of one's own levers of influence constitutes an enabling factor for participation (Reed, 2008). To have transparent and enforced rules and boundaries enables participants to play along.

General water supply mechanisms were known to all respondents. However operators could not ensure with their available capacities that water was evenly distributed to each household, even though this was one of the company's objectives

Most villagers, in turn, were highly unsure as to where to direct their discontent with current management practices (see Figure 6 for information flow between the water company and the villagers). Previous attempts to complain, even if enacted jointly, had either failed completely or the results had not been transparent. Usually, no further measures were taken due to the perceived lack of alternatives. This applied most strikingly to women, who often had no awareness of possible ways of voicing their concerns except through their husbands, but also to refugees who were often not fully introduced into the functioning of local structures, as well as less influential families that also had little knowledge of the bureaucratic structures. Again there seems to be an uneven distribution of influence on the local level, which highlights the challenges facing any participatory process.

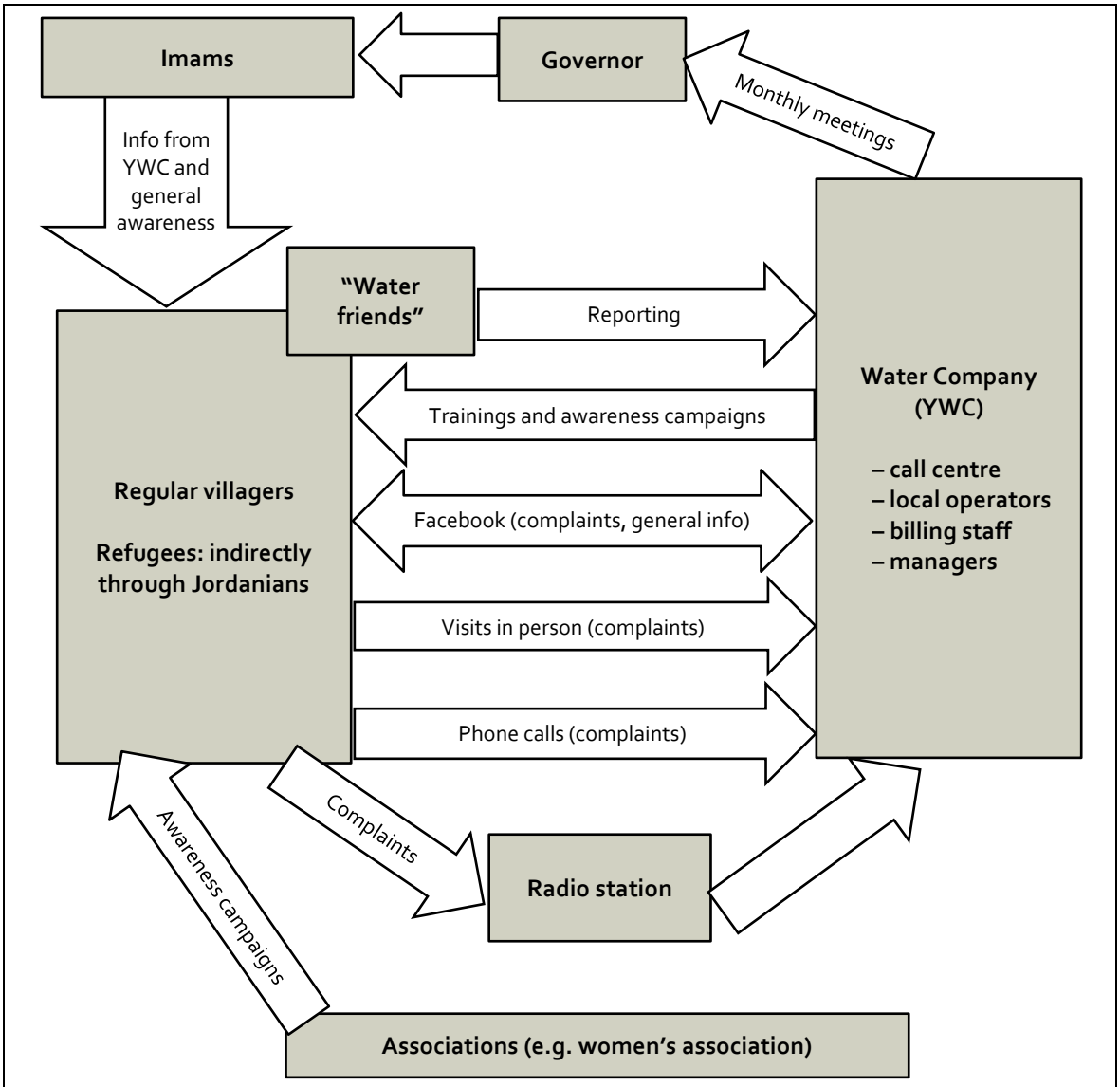

Figure 6: Information flow in water management

Source: compiled by the authors

Together these different components of knowledge influence the confidence which individuals have in their own abilities and in their own perceived impact on any process. According to Reed (2008), a high level of confidence is necessary for any meaningful participatory approach, as it is one crucial component of the willingness to participate. Consequently it is to be expected that especially women and refugees, but also less powerful members of community lack confidence to participate equally when engaging with more powerful villagers.

7.6.3 Social capital as a resource for participation

As analysed above, stakeholders have different types and degrees of social capital which may or may not support their participation. A general involvement in social networks, e.g. a large *ashera* or an active association, is conducive for participation in this context. Formal or informal platforms of exchange, e.g. *diwans*, school meetings, mosques, Facebook groups or regular meetings in private houses, are central for any group of people to reach a common understanding of the problem and possibly elaborate a joint position towards it. Refugees, some women and otherwise marginalised residents are much less-well equipped with this form of social capital. In consequence, they are not constituted as a group, do not have a common position and have no representative. Selecting individuals of these stakeholder types e.g. to participate in round tables would not necessarily mean that the stakeholders feel "represented" – much prior work is needed to create social capital among them for reaching such an objective.

Another form of social capital – the relationships based on cronyism (*wasta*) – may be seen as an informal way of participation. However it is likely to make more formal participation methods less effective, in particular if the latter threaten the reciprocity of *wasta* relationships in fields central to people's livelihoods.

7.6.4 Synthesis of stakeholders' capacities to participate

Summarizing the above, participants' lack of resources, although often a potential constraint in participatory projects, is dismissed as a general obstacle in this case. However, attention must be directed towards the provision of non-exclusive means of transport as well as accounting for resource constraints within Yarmouk Water company. Differing levels of knowledge and information of the potential participants on the other hand, seem to constitute a more serious challenge in this case as it could potentially undermine participants' confidence and thus their willingness and ability to participate. This concerns especially vulnerable groups, mostly refugees. Also, it applies more to the villages of Samar and Kharaj than for Foa'arah.

Table 7: Stakeholder types and their capacities for participation

Stake-holder	Stakeholder dimension	Capacities
Villager	Gender	Women are generally less informed in most regards and possess less technical capacities and self-assurance, which is a potential obstacle for them to participate. On the other hand they have a clear understanding of consumption patterns and find ways to deal with the shortages. Due to their societal role, they probably show less confidence in participating in meetings where men also attend. Furthermore, limited mobility clearly affects women more than men, potentially impeding their ability to participate. Men are hindered from attending meetings that take place during their working hours.
	Nationality	On average, Syrian refugees suffer much more from limitations in financial resources and modes of transport. Especially the latter seems to be important for involvement. Additionally, they have less knowledge of existing structures, platforms for exchange, and possibilities for getting involved.
	Power and wealth	There is a clear information gap between powerful and less influential families. This affects knowledge about water management, political structures, possibilities to voice concerns successfully. This divide will impact on some participants' confidence and their ability to have their voices heard.
	Geographic location	Distance to the venue of meetings might affect the ability to participation where there is a lack of private modes of transport. This affects mostly vulnerable groups as explained above.
	Disability	Parents of disabled children, especially if single, are much more time-constrained and might not be able to participate without help.
Water Company	Operators	Severe understaffing on the operating level. If they need to be involved in the participatory process, this will pose a severe challenge. However they have detailed knowledge and much experience regarding practical water management and installations at local level.
	Management	Centralized decision making and management difficulties might hinder the actual implementation of results from participatory processes.

Source: compiled by the authors.

Young people tend to be overlooked as a type of stakeholder. Concluding from talks with young people in the villages, they have partly formed own ideas and a specific perspective on water issues, and they might be motivated to take part in a bottom-up process as a way to become an active member of the society and create their own future.

7.7 Systemic conditions for and limitations to effecting change through participation

Overall, any intervention into the existing water management system – and a participatory process as such is considered an intervention already – would lead to shifts in the reward structure of stakeholders: from a systemic point of view the present way of functioning exists because it makes sense for some, if not for all actors. For example, it was reported that village-level water distribution patterns did not change after the arrival of refugees although water needs changed.

Hence, there are forces and mechanisms within the system that try to maintain the existing patterns – a phenomenon which is called autopoiesis (see Luhmann, 1984).

The system makes sense (i.e. has a meaning) because, among other things

- it is predictable for those within the system and thus reduces complexity;
- it gives various benefits to stakeholders; and
- as a sub-system of Jordanian society it stabilises the social system as a whole.

It follows that there is an interest in maintaining the existing system, even if it is not considered efficient by stakeholders. Any small disturbance of the system would therefore lead to corrective action with the aim to return to the previous equilibrium. For example, YWC staff had given their mobile phone numbers to water users although they admit that answering phone calls takes up a considerable amount of time that they then lack for maintaining water supply – for this reason a call centre is supposed to receive phone calls. Asked what would happen if their telephone number changed, they considered that they could then work more efficiently. However, they would give their new telephone number to others again. Being approachable and maintaining good relationships is considered a central part of the water management (and overall social) system. Other central stabilising patterns apparently relate to things such as problem-solving and care within the family/*ashera* first, to the role of religious rules, Friday prayers and the mosque, to principles of *wasta* (cronyism) combined with a silent understanding

that grey areas of formal rules may be explored to one's own benefit without facing sanctions from others. A tendency towards giving preference to urban users is another central pattern. This may explain why the water supply appears to be better in the urban areas rather than in the rural area where water is produced or flowing through. This phenomenon may be observed in other parts of the world, too (Bauer et al., 2014). Also the debate on the pricing of water is not new.

Consequently, change may be perceived as a threat – there is something to lose for all stakeholders: predictability of the system, material benefits (money/ income, water access), social status (prestige), formal authority, or informal power. In order to anticipate resistance to change it is helpful to be aware of what different stakeholder might not want to lose, in particular if they faced difficulties making up for this loss.

This perspective leads to several central considerations regarding a change process:

- working on changes in the system is impossible without working on the system's meaning for its actors;
- it would be difficult to establish an organisational change process that works against prevailing system dynamics (see e.g. Senge, 1990);
- any path and final solution would need to be compatible with people's horizon, so that they may relate to it based on their own experience (cf. Luhmann, 1984). Change is therefore not likely to be radical, and discussing expectations and stakeholders' definitions of success needs to form a central part of the participation process.

Larger disturbances, such as an immediate threat to the water supply, might cause stakeholders to implement changes to their patterns with the aim to stabilise the system on a different level. A precondition is that influential stakeholders perceive a threat to the system, see promising/compatible solutions and do not feel overwhelmed by the problem. In this case these actors are mainly YWC managers, MWI and WAJ on a national level. Local actors and operators are likely to feel overwhelmed and helpless in view of the country's water scarcity. In order for them to become meaningfully engaged, the problem and solutions to be tackled need to be closer to their immediate context and possibly formulated by them. The joint definition of specific problems and objectives hence forms an important step in the participation process.

8 Conclusions and recommendations

In this final chapter we draw conclusions regarding the initial research questions of this study and give recommendations for drafting a concept for participation process in the given context.

8.1 Conclusions on research question 1: How is water management organized in and for the three Jordanian refugee-hosting communities?

The water supply situation in the three host communities is considered unsatisfactory by all actors interviewed within this research. The perception of the reasons for such situation, however, differs. Though representatives of all stakeholder groups recognise the physical water scarcity and the poor condition of the water supply infrastructure, the personnel of the Yarmouk Water Company explain the problem by the systemic problems in water management (e.g. lack of equipment and technical personnel, high costs of infrastructure maintenance, etc.). The villagers emphasize the water consumption and infrastructure management behaviour of their fellow citizens (e.g. installing powerful water pumps, illegal connection to pipe network, illegal operation of valves, etc.). In spite of the weaknesses, the water supply system still seems to function, no water supply collapse or major water-related conflicts have been observed.

The perception of how well the water management in the three host communities functions differs among stakeholders and depends on a variety of physical and social factors. The physical factors include the availability of rainwater reservoir, location of a household in relation to the main pipe and in terms of topography. These factors ensure better water supply to those who possess water reservoirs, those located close to the main pipe and at a lower topographical level. These households are more satisfied with the operation of water management than the households affected in a negative way by the factors mentioned above. The social factors relate mostly to the social capital of a family. Social capital increases access of a household to financial resources necessary to construct a rainwater reservoir and information on water supply or opportunities to improve it. Further, it improves a family's connection to the personnel of the Yarmouk Water Company. This might contribute to quicker processing of the water-related complaints by the latter and, as mentioned by some interviewees, might motivate the valve operators to act in the interest of those they know in a village. Finally, social

capital prevents collective action by the villagers against fellow citizens who violate the rules when connecting illegally to water supply network and operating the valves, or who behave without regard for the wellbeing of neighbours, for example, when they fill in their water reservoir and leave those located farther from the main pipe without water.

Overall, the functioning of the water management in the three communities is enabled by the institutions (rules and strategies) developed to cope with numerous problems. We can distinguish two clusters of water management institutions:

- Institutions regulating water supply and management towards the communities. These institutions determine the frequency and reliability of water supply, as well as the quantity and quality of water delivered centrally. Here we talk about both formal rules of the Yarmouk Water Company governing the daily routines for the YWC personnel, and informal rules regulating the latter's communication with water users and some of their activities.
- Institutions regulating water distribution and use within the communities and families. Here we talk about the social norms which coordinate relationships among inhabitants and their effects on water distribution, in particular inequalities in supply to different households.

These two building blocks of water management in the three host communities are interrelated, but separating them helps to clarify responsibilities of different actors and understand their current and potential contribution to solving the water management problems. This means that while the participation process seems to concentrate on the relationship between YWC and water users (cluster a), there may be room for improvement in intra-community water distribution (cluster b). Given the social setting within the communities this is not likely to happen by itself but would need external facilitation and a specifically designed process. It involves an analysis by the inhabitants of the distribution problems and their causes, including the informal institutions and values that they cherish. This would start a joint learning process as described in section 8.3. It could be beneficial to foster exchange between the communities and explore solutions practiced by others, as villagers may be unwilling to tackle conflicts with direct neighbours at the moment.

We have observed that formal rules regulating water management often are not or cannot be implemented. In this context the informal rules gain in importance and come to the forefront of water management. We have identified that informal rules regulate both relationships between the water provider (Yarmouk Water Company) and water consumers, and also among water consumers.

For example, the YWC personnel shares their telephone numbers with citizens to be accessible and be able to react faster on the problems related to water supply; the villagers stay awake at night waiting for the water to come through pipes and open a tap.

As already demonstrated, social capital strongly influences the design of informal institutions which benefit those belonging to large, powerful tribes. Strong social capital makes it easier to identify the representative of a group, information could be transmitted more easily within a group, the acceptance of decisions taken by the groups' representative might be easier, and implementation of these decisions – smoother. However, those groups of individuals lacking social capital are being deprived of access to information, voice in decisions on water management within community, they might suffer more from water scarcity if they cannot ask others to share water with them. These groups and individuals are those identified as vulnerable within this study; they include refugees, to some degree women, especially single and childless women, and people with special needs. The existence and importance of social capital undermines the mobilization of these people and their potential participation in water management. The interests of vulnerable stakeholders might be ignored during the meetings and in the decisions taken.

Other factors influencing public participation are access to information, availability of transport to reach the meetings, readiness of participants to invest their time in participation process, openness of participants, their readiness to discuss difficult issues, to hear and respect the position of other participants, and consider various interests when reaching common decisions. It might be particularly problematic for the representatives of powerful actors to pay due attention to less powerful actors, or even allocate decision-making power to them. For example, the personnel of Yarmouk Water Company might be unwilling to include representatives of the three host communities in the decisions about water schedules or to involve the villagers in the monitoring and maintenance of the water infrastructure, as these might be perceived as undermining the power and status of the Yarmouk Water Company. Similarly, the Jordanians in the three host communities might be unwilling to involve Syrians in the decision making, if the latter are considered outsiders or only temporary residents.

After the public participation has been organised, and common decisions on water management taken, the degree of improvement in water management will further depend on whether the rules designed during the public participation process rules address the multiplicity of water-related interests, whether they are

supported by sanctioning mechanisms, and how they are finally implemented by different actors.

This report focuses on the water-related stakes and interests of the YWC personnel and groups of citizens within the three host communities; the perspective of MWI and the Water Authority were beyond the remit of the study due to previous agreement with GIZ. Hence the results cannot yet be put into a national perspective. Furthermore, the analysis of the water management system remains incomplete without the results of the water audit that were not available at the time of writing. The same holds true for the reports on stakeholder analysis and the mapping of vulnerable groups in the respective communities.

8.2 Conclusions on research question 2: What is the potential for public participation as an approach to increasing the satisfaction of all water users?

The literature on participation sheds light on conditions and factors for success of public participation processes. These relate to the nature of the topic and decisions to be addressed, to the composition of stakeholders, their motivation and the available capacities and resources.

Our findings show that these conditions are partially fulfilled in the study area:

- Water is perceived as a central problem and the water provider is not trusted to provide effective or efficient water management.
- There is an interest in improving the water supply and in participation but not much confidence in the potential for success. German organisations have a good reputation.
- What is at stake for different people varies a lot, both regarding water needs and the benefits that stakeholders might lose in an inclusive participatory process. Influential stakeholders are not usually the ones that have the most problems with water supply and their motivation to participate is less pronounced.
- Given the complicated patterns of potential gains and losses among village residents, the communities cannot be considered homogenous in their interests.
- Refugees, members of smaller families, some women and people with special needs have insufficient resources and capacities for participation, in particular social capital and transport. These stakeholder types are considered as groups

by the project but are so far not constituted as groups. Young people have not yet been considered as a relevant stakeholder type.

- The technical information that needs to be understood in order to participate in the process is not overly complex, but information flow on water supply is limited and knowledge is unevenly distributed. This also holds true for YWC staff to some extent, e.g. regarding water distribution to refugees. Knowledge differences exist between GIZ (e.g. their project objectives and intervention logic) and the villagers (e.g. the particular priorities and expectations of different groups). Knowledge is expected to increase on all sides during the participatory process.
- Besides the conditions for participation, we consider the system's functioning and the potential for change on the basis of institutional analysis and systems theory.
- Formal and informal rules that govern water management for and within the villages have a function in maintaining the overall social system. People attach meaning to this system and they value predictability of its patterns. Attempts to challenge it might prompt active or passive resistance.
- Changes to water supply are not possible without working on the meaning of the system to its stakeholders. This includes critically examining (and perhaps changing) formal and informal rules by stakeholders themselves, as mentioned in section 8.1.
- People have found coping mechanisms for water supply problems, some more than others. Given that most involve financial costs, those people who can better afford them do not necessarily perceive a strong need to change the system, unless they are personally concerned with the wellbeing of the community as a whole.
- Disadvantaged people have an interest in avoiding conflicts in the village, the more so as they might depend on others for support in *wasta* relationships. The underlying rule is that problems are to be solved within the family or *ashera* first, and persisting problems should be solved through facilitation of or representation by influential men.
- The issue raises strong emotions and stakeholders have formed fixed perceptions of each other.

We conclude that an inclusive and effective participatory process will not come at a low cost, in particular regarding time and facilitation. This is to compensate for insufficiently fulfilled conditions. Furthermore the problematic aspects to be

tackled and their order need to be appropriately framed to allow for the necessary learning process to evolve.

At the outset, participation is not strictly defined and levels of participation for stakeholder types are not fixed, which leaves some room for flexibility. Similarly, the planned participation-related activities/outputs are only indirectly linked to the overall outcome "Water supply in three host communities is improved" (GIZ-PRM 2015), leaving space for interpreting the meaning of "improvement" and to create the missing link together with stakeholders. Still, round table "policy dialogues" with stakeholder representatives have already been chosen as a main method of participation. This early choice indicates an underlying participation paradigm based on communicative rationale, i.e. where decisions are made through agreement and shared understanding, and actors are motivated by a feeling of commitment and interdependency (Groot and Maarleveld, 2000). This rationale is not explicit, but marks a choice which has implications for process design. In fact it is related with higher levels of autonomy for stakeholders and heavily focused on learning (ibid). This rationale is therefore considered in the recommendations below. It should be mentioned that authors on participation usually recommend selecting methods of participation *after* deciding on the level of participation, and the latter *after* identifying and characterising the stakeholders, their perceptions and expectations of the participation process and outcomes as well as defining the purpose of participation (see section 3.3).

8.3 Recommendations for designing a participation process in the given context

During design of a participation process and its subsequent implementation numerous decisions need to be made. We make suggestions for central design principles and approaches that conform to the setting as analysed above. Overall, there are several building blocks and parameters of a participation process, all of which are interlinked and relevant for process design and fine-tuning, as explained in this section. An overview is given in Figure 7. It also depicts the two experiential learning processes that evolve: learning about water management while working on its problems and possible solutions, as well as learning about participatory practices. Both processes require planning, observation and reflection.

As said above, some aspects of the participation process and the project as a whole are more concretely defined than others in the intervention logic. Results of the external studies on stakeholder analysis and mapping of vulnerable groups

may now be used to specify the purpose of participation and assign preliminary participation levels for different stakeholder types (see section 3.3.2).

As regards the project outcome of improved water supply, a possible purpose of participation could be to improve satisfaction with the water supplies to communities and/or within communities (the latter relates rather to community development, the former requires joint learning among all stakeholders). As said, this purpose had been our working assumption. Beyond this, GIZ seems inclined to foster participation with the aim of reaching more general goals of inclusion and social equality. This rather normative approach is considered in Chapter 3 and section 7.7. In any case, increasing the level of participation for some stakeholders – i.e. women and Syrian refugees – is implied in the definition of the project outcome (GIZ, 2015), with the aim of narrowing the participation gap of these stakeholder groups. Needless to say, achieving completely equal participation of all stakeholder groups lies much further ahead.

As regards **choice of stakeholders**, young people are suggested to be considered as a separate stakeholder type as their perspective and stake are different from that of older people, as interview results have shown. Moreover, poor residents with houses on hilltops and/or at the end of distribution pipes may have a particular stake (see also further criteria for vulnerability listed in section 7.2.2).

It follows that **desired levels of participation need to be defined separately for different stakeholder types**. If an increase in participation level over time is desired it may be helpful to design a parallel process to achieve this increase (separately from the process of improving water management), with corresponding indicators and feedback loops for joint reflection.

This need for reflection and the underlying paradigm of communicative participation imply that **the participation process should be understood and staged as a learning process**, as described in Groot and Maarleveld (2000). Joint learning (on the subject and on each other's perspective) may catalyse social and technological change compatible with the existing system.

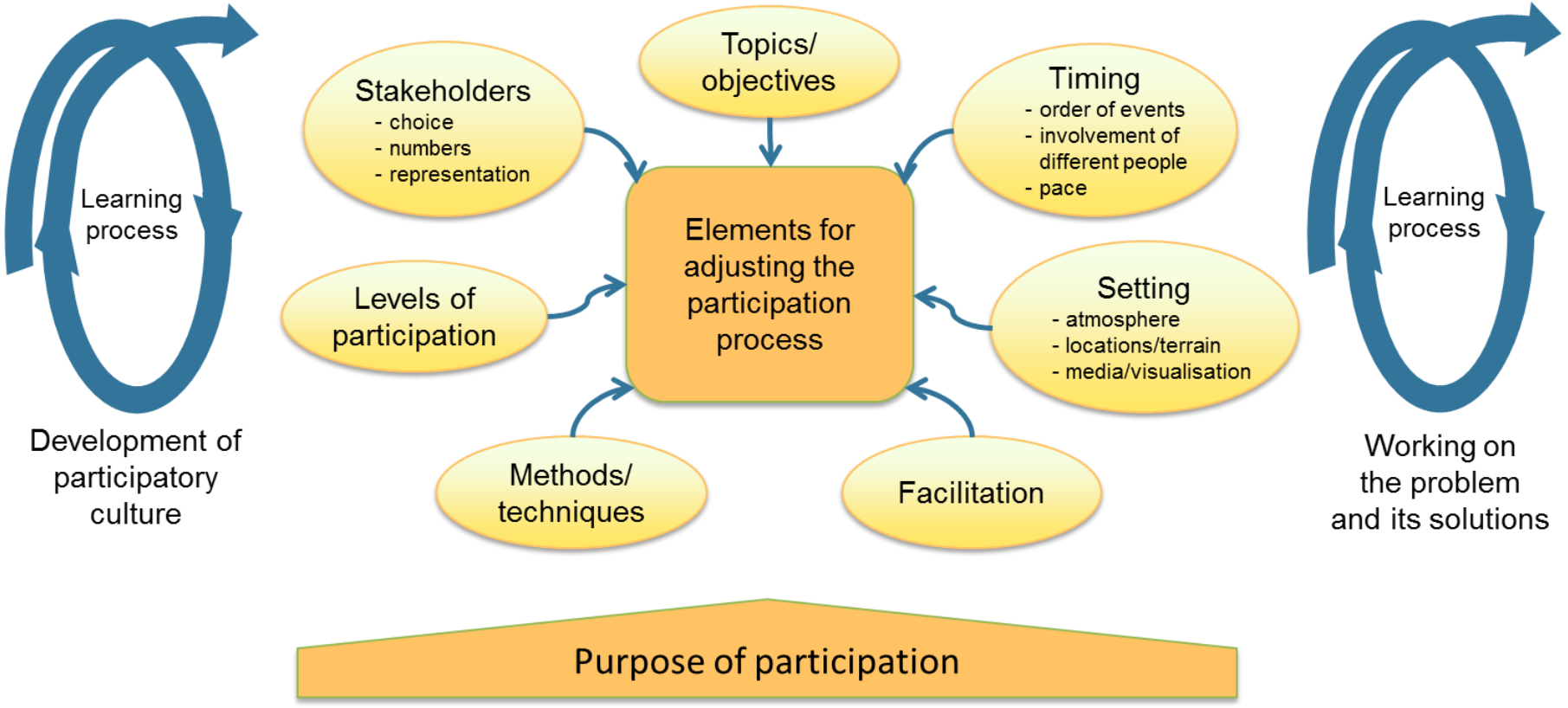

Figure 7: Design and fine-tuning of a participation process through various interlinked parameters

Source: own elaboration.

As observed during this study and given the conflictive situation regarding water supply, strong emotions shape the perceptions of at least some of the stakeholders. Learning is hardly possible in such a state. For the participation concept this means avoiding confrontational situations that harden conflict lines and existing prejudices. Instead, **a transition to a learning culture needs to be facilitated**. This could mean – at least at the beginning – creating separate spaces for different interest groups, in which they may express themselves and have their perspectives documented, and where the documented perspectives of other interest groups are fed back to them. Separation in time and place avoids a frustrating confrontation of opinions that is commonly experienced (also between water utility employees and village residents). Instead it pays respect to individual perceptions of reality and allows learning about others without having to react to them right away.

Such joint work starts with the **problem descriptions of people**. With time, common aspects can be highlighted, but differences must be made visible and heard to show that they are valued. To a limited extent, scientific findings on the topic might be helpful to bring in an external voice, e.g. about changes in water availability and water uses over time. This enables learning not only from each other, but with each other. For example, in participatory policy processes of forest management, Ende (2013) has had very positive experience with exhibitions that showed the meaning of landscape and forests to different stakeholders and changes across centuries. Strolling through the exhibition with casual conversations replaced initial joint negotiations on objectives and positions of stakeholders that held strong opposing views.

Questions might be raised as people **discover gaps in the knowledge** about how the system works. Some of them may be used to involve people in the process by **assigning small investigations**, as described in Zholdoshova (2015). For example, existing formal and informal rules of water governance are a field where people are likely to have only partial knowledge and where they might want to verify the findings of this report.

With time, a **joint understanding of the problem is reached, including causes and effects**. This understanding is crucial for people – it enables them to **prioritise problem aspects**, generate meaningful solutions and directions for change. For example, in our case the question arises whether the focus should only be on the management of the water supply towards the village sectors (i.e. the relationship between YWC and the villagers), or if solutions for distribution problems within

the communities should be explored as well (including possible collective action or rule-making within villages).

Providing a stage for stakeholders to share their own success stories of change or of coping with problems is a promising part of the learning process. Examples might become known through small investigations by villagers and then be presented and discussed across the villages.

Opinions differ about whether it is necessary in such a process to focus on defining a shared objective among stakeholders. Although many authors attach much importance to jointly defining objectives for further collaboration, some facilitators consider that stakeholders naturally start out with different interests – outspoken or not, implying that collaboration might be possible without forcing people to artificially find a common objective. In any case it is important to **become aware of who defines the success of the process and how**. This means making explicit and discussing the expectations of different stakeholders towards both process and its results. This might be an occasion to **define limitations of the process**, so as to avoid frustrations later-on if expectations cannot be met.

External and impartial facilitation is required for the process as a whole, and moderation for separate methods and events, as described in section 3.4. Facilitation implies a service role that supports progress of stakeholders, rather not a leadership role. Facilitation of learning is the central focus here, i.e. creating spaces and occasions for increasing understanding of the water supply situation, water management institutions, and other cause-effect relationships (see sections 7.2 and 8.1) as well as the problem perceptions of other stakeholders. Feedback from villagers to our research showed that there is indeed an interest to learn, also from other families. A necessary condition voiced was for them to be approached with respect. Specific suggestions for facilitating learning processes of vulnerable people are given below. As regards the round tables, and given the conflict potential of the issue, specific moderation techniques are available such as dynamic facilitation. This moderation technique is designed for conflictive situations and those where people do not really believe in a solution anymore (zur Bonsen, 2007). It specifically takes up participants' concerns, challenges, perceptions and ideas in parallel. By visualising them as they arise in the discussion, the process is structured while building trust and leading to constructive problem-solving. More information on this method may be found in Zubizaretta (2006) or zur Bonsen (2007), for example.

Whichever facilitation method is used, **documenting** events, actors' contributions and elaborated results in a clear and concise way supports learning and trust-

building, and it makes it possible to share what has been done with others who could not be present.

Furthermore it is advisable to have **more than one facilitator.** This is because facilitators are observers and they decide and act according to their perceptions of the process. An individual observer has certain blind spots that can be made visible by a second observer who comes from a different background (von Foerster and Pörksen, 2006). This is crucial to avoid misjudgement of situations. Furthermore stakeholders have different intuitive access to facilitators, conforming to personal sympathy and cultural conformity.

The **choice of methods** for participation depends not only on the level of participation at different stages of the process, but also on the (increasing) capacities and expectations of stakeholders, the capacities of facilitators, and a certain need for pragmatism in the face of limited resources. While round tables of representatives are pre-selected, they have limitations particularly at the initial stages of the process. As explained above, less confrontational approaches are needed when imputations and conflicts exist, as observed during the study. Furthermore it faces challenges of representativeness, in particular among **vulnerable stakeholders** who are not constituted as a group with a trusted representative, and who may not yet have clear-cut positions.

Informing and consulting are likely initial levels of their participation. This should be supported with specific methods such as focus groups, series of informal and formal meetings, information leaflets, WhatsApp messages, etc. Women have sometimes voiced their need for a meeting place of their own. If it is not possible to constitute groups among them, small surveys could be an alternative, perhaps with the help of local associations. Just like with other stakeholders, building capacity in this context means facilitating people's learning on the topic and the functioning of the system, albeit with different methods and focus, in addition more time, protected spaces and effort is needed for them to form and discuss their opinions and demands, and to decide who may represent them at the round table meetings – people who might need to be especially prepared for this task and who then need to give regular feed-back to these fellow stakeholders. It is a common problem of participation processes that information does not flow back sufficiently to marginalised groups, also among women. See section 3.4 for further general recommendations regarding inclusion of vulnerable people.

As mentioned there, too, the **timing, setting, venue and atmosphere are decisive** conditions for participation. Within the round tables, for example, actor groups are likely to form blocks if the choice of seats is left to them. While this

might empower vulnerable stakeholders, fixed blocks might reinforce a confrontational atmosphere. In such a situation dispersing powerful actor groups across the room e.g. by including group work sessions or predefined seating orders might be experimented with. Inviting people to the place where the problem is perceived or where system functioning can be observed will generate strikingly different and constructive discussions, even if they seem less formal. Dialogue may also be encouraged through inviting more powerful stakeholders to the spaces of vulnerable groups to make the latter feel more comfortable and to shift perspectives (see also de Freitas and Martin, 2015). This may seem to take up more time of otherwise busy people or may seem awkward, but it helps to show that it is equally awkward and time-consuming for these disadvantaged people to come to places of powerful actors e.g. in the city. For example, YWC representatives asked how they may reach women directly. Again, creating a separate platform in parallel to the mixed round tables could be a promising idea, as it visibly allocates time and attention for women's perspectives and experiences.

It is helpful if **later stages in the process can be handled flexibly**, responding to arising priorities and capacities of stakeholders.

Building trust in the process is essential, given the varied experience people have had with projects. Elements for trust-building include transparency, information-giving, visualising people's inputs as well as jointly agreeing on certain rules for interaction. Transparency means explaining the purpose of participation, the choice of stakeholders and their representatives, their degree of involvement, the planned steps and possible flexibility, the objectives of the initiative, the choice of topics, means of information-giving, and likely limitations of the process. Information-giving relates to sharing information in an understandable way that covers central aspects of system functioning and possible effects of changes. Agreeing on rules for interaction and procedure should also include what should not happen in the process. A related question to discuss, for example, is what would need to happen so that the participation process would *fail*. This helps participants to see what is necessary for success, in turn.

Likewise, before searching for solutions to a selected problem it may be useful to elaborate the criteria which promising solutions would need to fulfil in the eyes of all stakeholders.

Creating small successes is an intriguing way of increasing trust and motivation to participate. Choosing a small but pressing problem to which a visible solution can be found creates confidence when it comes to tackling more complex problems. The uncertainty over water delivery schedules could be an example (but

it is for stakeholders to decide how complex this is in reality, when analysing its causes).

Ideally, **measures for improvement** are then sought for and assessed jointly on the basis of the previously agreed criteria before selecting those to be implemented. In the PRM project, some infrastructure improvements have already been planned from the start. This was done so as to answer likely expectations of stakeholders for direct material improvements, and was based on existing knowledge of GIZ about water-related needs of vulnerable households. Still, providing predefined benefits independently from the participation process might deprive GIZ and YWC of a possibility to answer demands voiced by participants coming out of the participation process and create successful examples of stakeholder-led improvements. Advantages and disadvantages of such a longer joint process have to be weighed up.

Needless to say, many issues mentioned above – from problem definition to expected results and levels of participation of stakeholder types, are likely to be adapted in the course of the process, which shows progress in joint learning. The **need for observation, a reflective attitude and built-in feedback loops** has been explained in section 3.3 and cannot be over-estimated. A participation process, in particular with higher levels of participation and autonomy, is based on an experiential learning cycle, where reflection, planning, action and reflection are reiterated (Groot and Maarleveld, 2000). This is the case even if not all the stakeholders are involved in each step of the process.

Over a longer time scale, **evaluation** is part of this learning and improvement cycle, and should cover both the results and the process itself. As for reflection phases, participatory evaluation ensures that "blind spots" in the observations of individuals are covered (see Luhmann, 1984).

It may have become apparent that separate activities for capacity-building are probably not necessary if the whole participation process is staged as a learning process as described above. This reiterates observations of Reed (2008) that the outcomes of participation processes seem to be more sensitive to the manner in which group dynamics are facilitated, to communication with participants and to the quality and transparency of planning, rather than to the choice of participation techniques.

8.4 Integration into the broader context of water management

Most of the emerging problems faced by societies nowadays are characterized by uncertainty and unpredictability, and, independent of their scale, the response to them is inevitably local: the pressing nature of the environmental and social challenges does not allow communities to wait while solutions are being developed at higher administrative levels, and spontaneous adaptation to changing conditions takes place. This is also the case in the Jordanian rural communities, which had to cope with the refugee influx from the neighbouring Syria in parallel to or even prior to response and support from the government. Though the local responses to the difficulties faced by the communities might not always be the best possible solution, they need to be acknowledged and further developed also as part of formal institution-building in order to increase the resilience of the socio-ecological-technical systems and ensure success of participatory governance and management processes.

The study presented here is based on a range of research findings addressing issues like multi-level participatory governance of natural resources, management of common-pool resources and public participation. Most of the related literature focuses on suggesting the conditions and principles which contribute to success of water management. At the same time, the process of arriving at those conditions is not well covered, although – and maybe because – the necessary steps, measures and conditions of such a development process are complex and crucial for arriving at functioning participatory resource management. This study contributes to filling this gap. It goes beyond the analysis of the *availability* of conditions for success of public participation in the three host communities, and develops concrete case-specific recommendations on their *building*. Using the institutional economics perspective of water management and a systemic approach, this study recognises and underlines the importance of social aspects of water management in addition to technical aspects.

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Countries in the Middle East have been experiencing severe water shortages for several decades. In Jordan this crisis has been aggravated by population increase, climate change and the influx of Syrian refugees. In the process of managing the increasing water demand and its unstable supply some population groups become disadvantaged. It is increasingly recognised that a sustainable solution to the problem should extend beyond ist technical dimension and ensure the involvement of various stakeholder groups. But how can an inclusive participatory process be designed that is likely to arrive at a more sustainable water management system?

This is the question addressed by this book. The potential of participation in water management is examined for three exemplary refugee-hosting Jordanian rural communities. The book goes beyond the discussion of advantages of the approach and determines the conditions under which a participatory process will need to be designed. These are rooted, among other things, in the strong informal institutions regulating relationships within Jordanian society. Making explicit the complex web of water-related interests, social rules and power relations among water users and managers as well as actors' existing problem-solving capacities is the basis for subsequently elaborating design principles for a participatory process that may lead to a more inclusive and sustainable water management system in the region

Results highlight the need to embed interventions in natural resource management – with technical and institutional components – within the overall social system that forms Jordanian society. This study therefore contributes to the small but growing body of literature on social water studies in the MENA region.

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