

Chapter 13

Benefits and Barriers of Participation: Experiences of Applied Research Projects in Integrated Water Resources Management

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Abstract The role and design of participation for the successful implementation of Integrated Water Resources Management (IWRM) has been intensely discussed. However, in the specific context of applied IWRM research, benefits of participation and specific conditions to realize these benefits are often neglected. Such disregard is problematic when scientific driven IWRM concepts are increasingly interwoven with actual IWRM implementation. In order to discover specific benefits and challenges of conducting participation in applied research, both quantitative and qualitative interviews were carried out amongst 15 German IWRM research projects in emerging and developing countries and contrasted with hypotheses in the literature. Results show that researchers tend to agree with hypotheses in the literature, e.g. in terms of the positive role of participatory processes, its different functions and specific design principles in term of skills of researchers and frame conditions. However, researchers of the IWRM funding initiative especially highlighted challenges with regards to several prerequisites like skills of researchers to conduct participatory processes or structural conditions. For

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instance, hard skills are often missing, e.g. the knowledge on how to design participation processes in view of the respective research goal. Moreover, unlike practitioners, researchers are rarely trained in soft skills like intercultural competences for adjusting participatory approaches to different cultural contexts. In terms of structural conditions, the German BMBF research context shows temporal and financial restrictions. Furthermore, conditions within the target country such as political and social aspects are important and not easy to overlook if the project is based in Germany like it is the case in most of the research projects investigated.

Keywords Participatory research · Participatory processes · Stakeholder involvement · Applied research · IWRM

13.1 Introduction

Participation is an intensely discussed topic within the field of Integrated Water Resources Management (IWRM). Both researchers (e.g. Mostert 2003; Pahl-Wostl et al. 2007; Özerol and Newig 2008) and practitioners (e.g. BMZ 1999; GWP 2000; The World Bank 2006) have underlined the importance of participation and specific design principles for participatory processes to achieve an effective IWRM. Against this background, research funding agencies require participation to be a fundamental element of IWRM applied research projects (e.g. BMBF 2013).¹ However, scholars have not systematically addressed the role and design of participatory research in the interdisciplinary IWRM research context. There are no systematic analyses of the role participation should play to achieve IWRM related research results that are aimed at implementation and which specific functions of participatory processes are relevant. More importantly, there is no systematic analysis of the specific requirements necessary for facilitating participation in IWRM related research. As a consequence, the specific roles and designs of participatory processes for applied research remain rather unclear within the IWRM research community.

The purpose of this paper is to contribute to this discussion. We first query if and in which way participation fosters IWRM related research results. Second, we ask for requirements to facilitate participation processes within the IWRM research context. For this purpose, we refer to participation as different forms of influence in the progress of generating and implementing research results by those that are not routinely involved in this process (adapted from Newig and Kvarda 2012). This definition differentiates from those that address actors for other purposes such as

¹We refer applied research to the generation of knowledge in order to solve real world problems. In this article, we use the terms *applied research* and *research* synonymously.

general learning and thus distinguishes from the concept of capacity development (Ibisch et al., Chap. 14). Furthermore, we emphasize the generation and implementation of research results as in the case of applied research societal actors can take part in both processes.

To achieve our research objective, we followed a three-step approach. In a first step, we briefly introduced common hypotheses in terms of roles and prerequisites for participation (research). Here, we included common hypotheses in the field of participation in general and respective hypotheses in the field of participatory research. This was aimed at setting the frame for further analyzing the roles and prerequisites in the IWRM research context. In a second step, a standardized survey among researchers of 15 IWRM related research projects funded by the German Federal Ministry of Education and Research (BMBF) was conducted, among them projects of the funding initiatives “Integrated Water Resources Management”, “International Water Research Alliance Saxony”, “Research for Sustainable Development of Megacities of Tomorrow”, and “Global Change and the Hydrological Cycle”.² This survey was aimed at generating quantitative data on the understanding of participation, the role of participation in the research projects and the respective requirements for achieving benefits of participation. In a third step, qualitative in-depth interviews and discussions with researchers from the IWRM projects were conducted in order to get examples of the quantitative analysis and further detailed information on specific challenges of participation in the different projects since these challenges had just been tentatively indicated in a general way in the standardized survey.³

In this chapter, we present the results of this endeavor. Section 13.2 defines the potential benefits of participation within the IWRM research context. Here, we first discuss the expected role of participation for IWRM applied research results depending on scales and research topics. We then highlight the functions of participation explaining the attributed roles of participation in the IWRM applied research context. Section 13.3 further presents requirements to achieve these benefits. Here, we distinguish between hard and soft skills of researchers and structural

²The questionnaire can be found in the appendix.

³The quantitative survey was conducted by the main author. It was e-mail based and comprised mainly closed questions. It was sent to the coordinators of IWRM projects and it was in their hand if they worked on it by themselves, handed it over to subprojects addressing participation, or discussed it with the whole project. The qualitative survey was guided and partly implemented by two of the subsequent authors. The survey consisted of telephone interviews and had the form of a guided interview. These interviews took place with IWRM researchers that were mentioned as the vital contact for participatory issues as a result of the quantitative survey. Furthermore, there have been six working group meetings with several participation researchers or facilitators of the IWRM projects. Next to exchanging lessons learnt, these meetings aimed at preparing and analyzing the interviews with the IWRM researchers. In general, researchers of the IWRM funding initiative that participated in the interviews and discussions have different disciplinary backgrounds like social science, natural science and engineering. Finally, all interviews and discussions took place in German. We thus did not cite the specific questions of the interviews in this text, but mentioned the results in those sections of the text that are directly linked to the questions.

aspects such as the frame conditions of German research projects and the conditions within the host countries. In a final section, we conclude by summarizing and discussing the results and giving ideas for further practice and research. In doing so, we hope to contribute to the theoretical discussion and the practical facilitation of participation in the IWRM applied research context and beyond.

13.2 Why Participatory Processes in the IWRM Research Context?

What motivates researchers to initiate participatory processes within IWRM applied research projects? To answer this question, we discuss both the attributed role of participation (13.2.1) and the respective functions of participation (13.2.2). More precisely, we refer to roles and functions that seem to be predominant in the literature (1) to test if these design principles are supported by the researchers for the IWRM research context and (2) to show in which way the design principles are implemented in the projects.

13.2.1 Role of Participation

As mentioned above, both researchers (e.g. Mostert 2003; Pahl-Wostl et al. 2007; Özerol and Newig 2008) and practitioners (e.g. BMZ 1999; GWP 2000; The World Bank 2006) often ascribe a rather positive role to participation in planning and decision-making processes. This refers to both political processes such as the implementation of the European Water Framework Directive (European Community 2000/60/EC; Newig et al. 2005) and research related activities such as in the field of environmental modelling (e.g. Voinov and Bousquet 2010). However, participatory approaches do not necessarily benefit the solution to problems in the field of environmental management (e.g. Newig and Fritsch 2009). Moreover, some researchers even emphasize negative effects of participation (e.g. Cooke and Kothari 2001).

The results of the standardized survey amongst the 15 German IWRM research projects in developing and emerging countries go in line with the rather positive picture of participation drawn in parts of the literature. In fact, the IWRM researchers assigned participation medium (5 projects) up to high relevance (8 projects) with regards to achieving IWRM related research results. Only two projects assigned participation a low relevance. No project considered participation as being irrelevant to achieve IWRM research results.

Following the IWRM scientists, such an important role of participation applies to different levels of society where IWRM research is conducted. According to 12 research projects, an important level for participatory processes is the macro level. The macro level refers to basin management planning across regional scales

(e.g. local, national, regional and international) and different water using sectors (e.g. agriculture, industry and tourism). Examples are the development of common river basin management strategies or decision support tools. 11 projects also underlined a positive role of participation at micro level. The micro level refers to specific technological solutions such as desalination or wastewater treatment plants. The differentiation between micro and macro levels, however, does not exclude further levels of participation, the interaction of these levels in one project context or a restriction to specific actors at certain levels. It just describes the different scopes of problems IWRM related research projects preferentially deal with (for project descriptions see Ibisch et al. 2013).

13.2.2 Specific Functions of Participation

In the general debate on public participation, researchers basically argue that the need for participation results from deficiencies of authorized decision makers (Fung 2006). What this actually means becomes apparent by looking at the different functions, i.e. benefits of participation. In the general debate on public participation, researchers suggest a wide set of functions, like information exchange and mutual learning, the integration of interests, the acceptance and thus implementation of decisions, their ownership, as well as further qualification of stakeholders (below). The quantitative survey amongst IWRM researchers suggests that these functions hold true to different degrees for IWRM related applied research.

13.2.2.1 Information Exchange and Mutual Learning

Information exchange and mutual learning is an often mentioned function of participation (e.g. Beierle 2002; von Korff et al. 2010, 2012 in terms of information contributions; Pahl-Wostl 2007 and Luyet et al. 2012 in terms of mutual learning). In line with these statements, the quantitative survey showed that 13 out of 15 research projects underlined the function of information exchange and mutual learning of researchers and stakeholders in view of generating and implementing IWRM related research results. Qualitative interviews further revealed that these processes generally took place between various kinds of actors. First, different disciplines such as natural science, engineering and social science exchanged information and learned from their respective scientific knowledge. Such exchange could enhance solutions for common problems in a specific study area. Second, scientific actors on the one hand and practitioners of different sectors and levels on the other hand interchanged and learned from their respective scientific and practical knowledge. Such exchange could lead to an adjustment of research questions and approaches in order to make IWRM research more relevant for IWRM practitioners.

Furthermore, based on qualitative interviews and discussions within working groups, such information exchange and learning experiences are assumed to take

place at different levels of IWRM research: At macro level, for example, participation processes could stimulate information exchange and learning between stakeholders in terms of a common strategy to manage water resources. Here, information on interests, competences and limits could be exchanged, thus building a common knowledge basis. An example for such a process is the scenario process initiated in the GLOWA Jordan River project. Here, the so-called story and simulation (SAS) approach was applied to integrate scientific knowledge and knowledge about regional conditions in order to develop long-term water strategies under climate change conditions for the Jordan River catchment (Onigkeit et al., Chap. 12).

At micro level, such information exchange and learning processes could refer to the usage of specific technologies. Within the CuveWaters project in Namibia (Liehr et al., Chap. 26), water users participated in the planning of water supply facilities (e.g. rain- and floodwater harvesting facilities and attached small scale farming, desalination plants), the construction process, operation and maintenance and the monitoring of the implementation. Especially during the planning phase as well as during implementation, the communities could influence the process significantly according to their demands (Zimmermann et al. 2012).

13.2.2.2 Integration of Interests

Integrating different interests is supposed to be one vital function of participation (e.g. Luyet et al. 2012). For instance, Beierle (2002) found out that participation increases the amount of joint gains. Gaddis et al. (2010) showed that participatory modelling efforts have contributed to finding new and applicable solutions to historically conflicting water pollution issues in Vermont. In line with such statements, the quantitative survey shows that 10 out of 15 projects of the IWRM funding initiative emphasize the integration and balance of interests as a vital function of participation. We base this on the fact that participation of stakeholders supports the exchange of information and opinions, thus building options for cooperation.

The qualitative interviews further suggest that this function is especially important at macro level, e.g. for the development of scientifically based common management strategies. For instance, in the Isfahan project, a workshop especially on water issues in the agricultural sector was conducted in order to support inter-sectoral, cooperative conflict resolution. Participants were representatives from the German and Iranian agricultural sector, the provincial government as well as independent consultants. Major topics were the actual situation of the agricultural sector in the basin, traditional water rights and their change, water use efficiency, new irrigation methods and techniques and options for financing. Another example is the GLOWA Jordan River project where the scenario methodology was applied in order to visualize and discuss the differing viewpoints on water issues in this conflict-laden region.

However, qualitative interviews also revealed that a balancing of interest may also be important at micro level. An example is the CuveWaters project, where several stakeholder workshops were conducted in the pilot village that had been

selected for the technology of rainwater harvesting. The involvement of all residents of the pilot village in this process was a key to balance diverse interests within the village on the issues of the location of four pilot plants, the possible beneficiaries, but also the responsibilities for maintenance and management.

13.2.2.3 Increased Acceptance and Legitimation

In the general debate on participation, researchers suggest that participation enhances acceptance and thus implementation of decisions (e.g. Mostert 2003; Newig and Fritsch 2009; von Korff et al. 2010, 2012; Luyet et al. 2012). The quantitative analysis showed that 11 out of 15 projects of the IWRM funding initiative agreed that participatory processes foster acceptance of IWRM research and its results, thus providing the basis for further measures within the project context and beyond. Acceptance may be fostered through giving the opportunity to discuss approaches (e.g. in respect of their adaptability) and test conclusions of researchers as one interviewee stated.

Furthermore, the qualitative interviews suggest that at macro level, river basin management plans, strategies and decision support tools are assumed to be more accepted and thus implemented the more stakeholders are being involved in their development. In Iran, for instance, stakeholders have actively participated in the development of a Water Management Tool (WMT) in order to increase the acceptance of the tool and to build up ownership (Mohajeri et al., Chap. 23). An interactive workshop with representatives from the main sectors was conducted. It was supposed to address two main issues: the different perceptions regarding the main water management problems in the Isfahan region and the question of who should be responsible for the operation and maintenance of the WMT. Therefore, participants were invited to discuss which data should be fed into the tool in order to address the major water problems. Furthermore, they were given the opportunity to express their expectations towards the purposes the tool should serve.

Similarly, at micro level, specific technological innovations are more likely to be used if stakeholders participated in their conception. One example is the project IWRM Mongolia (Karthé et al. 2014). In this project, participatory methods were used in order to integrate the local population into the decision-making process about the sanitation system that was to be introduced (Siegel et al. 2014a, b). Within a participatory sanitation planning process, the needs and demands of the local population and other relevant stakeholders were queried. A stakeholder workshop was conducted in order to present the technical options, and eventually the residents chose their preferred sanitation system (for the description of the queries Siegel et al. 2012). Another example is the CuveWaters project where participatory processes such as the involvement of future beneficiaries in decision-making processes on the location and the organizational structure of the implemented rainwater harvesting and gardening technology as well as several capacity development measures enhanced the acceptance of small scale farming practices which had not been practiced before in the project region.

13.2.2.4 Generation of Ownership

Closely related to the question of acceptance, ownership is highlighted as an essential function of participation (e.g. Harrison et al. 2001). Ownership refers to the voluntary and self-binding adoption of responsibility. The quantitative survey suggests that 11 out of 15 IWRM projects think that participation enhances ownership for IWRM related research results. We assume that participatory processes lay the foundations for common decisions that are acknowledged by stakeholders as being their own. Conversely, if there are no participatory processes, people may perceive scientifically based management suggestions as imposed and thus possibly neglect them.

An example at macro level stems from the CuveWaters project. A digital atlas was developed in close cooperation with Namibian and German partners. This tool offers planners at different spatial levels information necessary for an integrated resource management. The GIS based tool includes maps, fact sheets on technological options as well as photographs and background information. In a next step it is planned to integrate it into a basin water information system which is currently under development by the Namibian Ministry of Water as it allows access and exchange of information and by this supports decision makers (Röhrig and Liehr 2011).

At micro level, participatory processes could enhance ownership for technological innovations generated and implemented within the project context. Positive examples are the pilot plants in Namibia (desalination and water harvesting plants). Within three years of operation almost no incident of vandalism or theft appeared and the users perceive the plants as their own property.

13.2.2.5 Qualification

In the general debate on participation, qualification in terms of competencies of participants (e.g. hard and soft skills) has been emphasized in two ways. Some researchers highlight competences as a precondition for successful participatory processes (Harrison et al. 2001; Özerol and Newig 2008; Korff et al. 2010). Some underline the development of “second order” effects (Renn 2006),⁴ e.g. further civic competencies (e.g. von Korff et al. 2010) or competencies of local scientists to use participatory methods (Hirsch et al. 2010) as a result of participatory processes. In this latter case, we understand qualification as a possible function of participatory processes.

As the quantitative survey suggests, supporting the qualification of the public in terms of hard and soft skills was supported by just one third of the research projects as a function of participation. Such reservation may be explained by two aspects. First, there may be overlaps of this function with the topic of capacity development (Ibisch et al., Chap. 14). Second, scientists usually do not aim at inducing broader

⁴Renn (2006) refers to the effects of deliberation as one form of participation.

societal changes but want to answer a specific research question. In general, it is difficult to quantify effects of qualification processes resulting from the IWRM funding initiative since researchers usually do not take part in further processes after the end of their project and there is usually no post-evaluation phase after the end of projects.

In sum, participation seems to be conducive to develop and implement IWRM related applied research results based on various functions such as information exchange, balancing interests and creating acceptance and ownership. On the one hand, this is in line with the broader discussion on the relevance of participation for IWRM. Just as in the general debate, researchers of the IWRM funding initiative attribute participation an important role for an IWRM in general. They also support similar functions of participation. However, researchers of the funding initiative have another focus since they emphasize instrumental rather than intrinsic functions of participation. Participation is not conducted for the sake of basic democracy but rather in order to improve the output of decisions in terms of research results and their implementation (for the general discussion see Özerol and Newig 2008).

13.3 Prerequisites for Achieving the Potential Benefits of Participation

Even though researchers and practitioners underline the important role of participation for water management, participation is no panacea for IWRM. To achieve the potential benefits of participation, the respective design of participatory processes is essential (e.g. Mostert 2003 and von Korff et al. 2010 for water; Hage et al. 2010 for environmental issues as well as Rowe and Frewer 2000 and Bryson et al. 2013 in general). In the following, we start by discussing design principles with regard to skills of researchers (13.3.1) and continue with those referring to structural conditions (13.3.2). Here, we refer to design principles that seem to be predominant in the literature (1) to test if these design principles are supported by the researchers for the IWRM research context, (2) to show in which way the design principles are implemented in the projects and (3) to discuss if there have been specific problems when implementing such principles in the projects.

13.3.1 Skills of Researchers

To achieve successful participatory processes, those that implement such processes need both specific hard and soft skills. To clarify, we refer hard skills to the theoretical knowledge of how to design participatory processes in respect of specific goals and conditions. Soft skills refer to the personal skills of researchers to implement the approaches.

13.3.1.1 Hard Skills of Researchers

Theoretical knowledge about the design of participation processes includes several aspects like the questions of who should be integrated, to which degree, when and by which means.

Identification of Stakeholders

To achieve the benefits of participation, those that facilitate participatory processes first have to identify the respective stakeholder groups to be involved (Fung 2006; Hage et al. 2010), usually based on sophisticated stakeholder analysis (e.g. Bryson et al. 2013; von Korff et al. 2010). If the facilitators cannot build on recent stakeholder analyses, the definition of stakeholders requires skills to conduct such an analysis at the pre-phase of the project based on existing methods described in the literature (for an overview see Beveridge et al. 2012). However, research also suggests that there are also some general principles of who should or should not be involved in water management processes, e.g. decision-making authorities (Hirsch et al. 2010; von Korff et al. 2010). Furthermore, the type of actor to be involved may depend on the respective cultural context (Hirsch et al. 2010) and goals and thus also determines the degree (Biggs 1989) or method (Rowe and Frewer 2000) of participation. In terms of context, for instance, elites can both dominate and discipline the process (Hirsch et al. 2010). In terms of goals, aiming at generating new ideas might call for involving less powerful people (Hage et al. 2010).

In the quantitative survey, 8 out of 15 IWRM research projects underlined lacking skills as a basic obstacle to successfully facilitate participatory processes. Such a statement could suggest that sophisticated stakeholder analyses may not be the rule in IWRM research projects. However, the statement of lacking skills does not especially refer to stakeholder analysis but to the facilitation of participatory processes in general. In terms of specific actor groups, the survey goes in line with parts of the literature calling for the involvement of very heterogeneous actors in participatory processes. In fact, the most frequently mentioned groups are members of the political-administrative system and of the general public. Another relevant group are water companies, e.g. water supply and disposal companies. Furthermore, science, development agencies and the press were mentioned as well as the agricultural sector. Whereas this sector includes various types of actors, their nomination points to the necessity of increased exchange between water and agricultural sectors.

In the qualitative survey, researchers further emphasized that actors have to be involved according to the respective project goals and contexts. In terms of the project goals, the development of general river basin management plans may lead to the involvement of other types of actors than the goal of developing locally adapted technological solutions. For developing general river basin management plans and tools, actors from all water using sectors in a given basin should be integrated. In Iran, for instance, actors from the agricultural, water and wastewater, environmental, energy and mining sector were involved for generating relevant information for a decision support tool. In order to develop specific technological innovations, the directly concerned actor group should be integrated. Thus, rainwater harvesting

technologies within the CuveWaters project have been developed with the residents of the Namibian pilot village, in particular.

Regarding the specific local setting, researchers suggested in our qualitative interviews to consider habits and routines of people which can result from specific political, cultural and natural conditions on site. Here, about half of the researchers underlined that political elites, seniors or experts have to be involved in the participatory process because of their technical know-how, knowledge of problem solving and of political decision making. One example is the development of technological strategies in Namibia. First it was suggested to implement ground-water recharge as a means of storing local floodwater in times of abundance as a source of drinking water for cattle during times of drought. In several workshops with Namibian and German experts, decision makers and researchers, it turned out that small scale flood water harvesting fits much better to the Namibian conditions. Thus, an adapted technology was developed which combines aspects of rainwater harvesting and the idea of storing water underground for purposes such as irrigation of crops rather than using the water as a source of drinking water for cattle. The result of this participatory process was a change both of the storage technology and the water usage.

In other cases, IWRM researchers suggested that the involvement of political elites, seniors or experts may be counterproductive. Strong hierarchies can hinder successful participatory processes, e.g. the presence of senior experts might undermine the participatory process by their authority. Thus, in order to deal with problems of authority, specific participatory methods are to be used. In the IWRM Iran project, for instance, researchers had to take into consideration that the existence of hierarchical structures may lead to problems when it comes to collaborative decision-making. In Iran there is no culture of “speaking one’s mind” when seniors have already given their opinion. In this case, a proactive handling, i.e. addressing the problem and highlighting the importance of hearing all stakeholders’ opinions, proved to be a useful approach.

Degree of Participation

In the general debate on participation, several different degrees of participation are differentiated, ranging e.g. from non-participation to different forms of citizen power (Arnstein 1969) or from information transfer to co-decision (Mostert 2003). Furthermore, scholars emphasize that there is no blueprint for an adequate degree of participation and that higher degrees are less common (e.g. Fung 2006). These assumptions are very similar to the debate on participatory research. Here, researchers differentiate between several degrees of participation which reflect varying degrees of participants’ control over the research process, e.g. ranging from contractual over consultative and collaborative up to collegiate modes of participation (basically Biggs 1989, also Cornwell and Jewkes 1995; Barreteau et al. 2010). Researchers further argue that there is no blueprint for an adequate degree of participation and state that such a decision depends on the respective (research) objectives, contexts and stage of the process (Biggs 1989; Cornwell and Jewkes 1995; Rowe and Frewer 2000; Barreteau et al. 2010; Hage et al. 2010). In practice, some observe that higher

degrees of participatory research are implemented to a lesser extent than lower degrees (Biggs 1989; Cornwell and Jewkes 1995; Hage et al. 2010).

The results of the surveys amongst IWRM researchers draw a similar picture as the above mentioned discussions and observations on degrees of participation. In the quantitative survey we differentiated between three degrees of participatory research, particularly according to Mostert (2003). At a lowest degree, researchers have to guarantee information transmissions to the respective stakeholders. A middle degree is defined by active involvement of stakeholders, e.g. by contributing to information lacks or by giving further recommendations. A high degree is defined by co-decisions of scientists and other groups. The results of the survey suggest that in general a low degree of participation, i.e. a steady information flow, is seen as the minimum prerequisite for the success of any IWRM research project. Moreover, information transmissions are to be completed by higher forms of participation, be it either information generation or co-decision making.

The qualitative interviews further suggest that if stakeholders either advise or co-decide in the research projects strongly depends on the respective research goals and contexts. In terms of research goals, the differentiation between rather basic and applied research is relevant. If the goal is to implement adapted technologies for local needs, stakeholders should be integrated to a higher degree as missing involvement may lead to less accepted decisions. An example is the implementation of three household rainwater harvesting tanks in the selected pilot village in Namibia. There was a budget for three tanks for three households. Within a community workshop the inhabitants of the village had to decide which household is to get a tank. This was a vital process to legitimate the tanks within the community (Zimmermann et al. 2012).

If researchers only generate basic knowledge or compile data for future decisions, actor involvement can in some distinct cases be rather low as actors may not contribute to the actual research task. In the case of the floodwater harvesting technology in Namibia, the selection of the pilot village was mainly based on hydrological as well as infrastructural considerations as it was most important to find a place where there is a reliable supply with floodwater as well as the possibility to use the place for demonstration purposes. Here, the involvement of the stakeholders within the village started after the selection of the actual location. However, in most cases participation may be required for data generation. An example is the monitoring of the operation of the Namibian facility. This was shared between the researchers and the users. They had the task to monitor rainfall, water levels in tanks and the amount of agricultural produce. This process generated data not only necessary for the project monitoring but also for the users to learn how to manage the water resource and facility. However, this shared monitoring was a long and strenuous learning process for the users.

In terms of the research context, the qualitative interviews suggest that the respective participatory culture is of relevance. That is, the degree of participation should be adjusted to the respective local cultural conditions. If stakeholders are used to co-decide, they should not be excluded from research processes. If they are not used to participate, a high degree of participation may be less useful as political

decision-makers may not support the participatory processes. But again, there is no blue print, and researchers can also decide to act progressively. Experiences in Vietnam, Uzbekistan and Iran showed that a higher degree of participation was positively recognized. In Iran, project partners showed great reservations against participation at the beginning of the project. After the workshops, however, the feedback was very positive.

Timeframe

In the general debate about participatory processes and research, scholars often demand sufficient temporal resources for participation (e.g. Hirsch et al. 2010; Luyet et al. 2012). However, they seem hesitant to give general statements on timeframes for participatory research processes. If such timeframes are discussed, researchers emphasize the impact of the method and thus the research goal and context of participation (Rowe and Frewer 2000). Furthermore, researchers emphasize that the higher the degree of participation, the higher are the temporal demands for conducting participatory processes (Biggs 1989). Roux et al. (2006) emphasize that the transfer of tacit knowledge needs more time in contrast to explicit knowledge, in our view reflecting more intense participatory processes.

In the quantitative survey, researchers stated almost concordantly that planning for enough time to conduct participatory processes is important. We further asked if there are different time needs for specific actor groups, in our view reflecting different modes of participation. In general, researchers gave very heterogeneous answers dependent on actor groups. If the project has to deal with veto players, IWRM researchers suggested a time frame of approximately 3 years which fits the general duration of the projects. With regards to the involvement of other actors, the answers varied strongly, from very sporadic information to a continuous involvement of stakeholders.

The findings of the qualitative interviews suggest that the varying answers within the quantitative survey result again from specific research goals and contexts. On the one hand, the continuous involvement of veto players may be particularly important since all research projects aim at contributing to problem solving processes. On the other hand, varying answers as to other actor groups may result from different sub-goals and contexts of the projects. For instance, information transmissions to the public may be the more useful the less information and support there is in respect of the general water problems and its solutions.

Methods

In the general debate on public participation, different methods are suggested to achieve different goals (e.g. Rowe and Frewer 2005; Creighton 2005; Luyet et al. 2012). This also holds true for participatory research (Biggs 1989). Furthermore, scholars emphasize that the respective context impacts the effectiveness of methods (e.g. Rowe and Frewer 2000).

In the IWRM funding initiative, it became obvious how important it is to use different methods dependent on the respective purposes and contexts of research. In most projects, participation aims at generating information and developing solutions that take into account the different interests of stakeholders. Generating

information is the basis for more adapted research results and is seen as a core goal of researchers. Integrating interests, however, is not a core issue of researchers but becomes part of their goals if they aim at contributing to results that can be implemented and that are sustainable. Both goals need different methods as can be exemplified using the case IWRM in Iran and the GLOWA Jordan River project. Within the IWRM Iran project, information could be generated within a goal oriented workshop using the technique of the World Café. In this case this meant having small heterogeneous discussion groups that were moderated (“hosted”) by independent experts and followed by a plenum discussion. Within the GLOWA Jordan River project, even the discussion of joint river basin management strategies needed experienced moderation experts which were capable of dealing with the politically strained atmosphere in the Middle East.

In terms of different political and cultural contexts, diverse information techniques are useful dependent on facilitating participation in more or less open societies. In Namibia, for instance, the goal of information generation could be achieved by open discussions, given a rather strong participatory culture due to the developments achieved after the independence of the country in 1990. In the IWRM Iran project, in contrast, information from stakeholders for the decision support tools was gathered using the method of the World Café which had been adjusted to local conditions. In a land like Iran with a strong hierarchical social system it was not easy to conduct a workshop where every stakeholder regardless of his or her social standing was in a position to give an opinion. Usually, the seniors’ word is law. Therefore, each discussion group was led by a moderator or “host” who was not a superior authority or senior official but an independent expert. Moreover, prior to the workshop, the seniors were asked to show restraint and to give every participant the opportunity to speak out on the issues. Despite major reservations even by the Iranian partners the workshop was a success in the end.

13.3.1.2 Soft Skills of Researchers

Apart from hard skills, researchers need specific soft skills to implement participatory processes. These skills comprise personal moderation skills, cultural knowledge and language skills in particular, dependent on the specific research goals and contexts. Furthermore, skills to handle the possible double role of investigating and practically implementing participatory processes are of relevance in some projects.

Moderation Skills

In the literature, high quality moderation or facilitation is often emphasized as a prerequisite for successful participatory processes (e.g. Anson et al. 1995 in general, Luyet et al. 2012 for environmental management). For instance, moderators can support to generate and integrate information (Rowe and Frewer 2005; Krueger et al. 2012) or to resolve conflicts (Reed 2008; Krueger et al. 2012). Moreover, highly sophisticated participation techniques and goals such as consensus building

require facilitation (Bryson et al. 2013). However, Sigel et al. (2014) state that researchers do not necessarily have the skills to moderate processes since they are usually not trained in this regard.

Based on discussions among IWRM researchers, moderation skills are not only important for the IWRM research context but also highly challenging. These challenges result from the somewhat contradictory legitimization of researchers given their ascribed objectiveness as researchers on the one hand and the lack of political legitimization to moderate processes in foreign countries on the other hand. In order to maintain support by stakeholders in such situations, we state that scientists should not dominate or force the stakeholders but rather be hesitant to moderate the processes. This especially applies to projects in conflicting environments and where stakeholders have different communication and hierarchy traditions. However, it also applies to situations where the goal is to generate information in rather open atmospheres as in the Namibian context.

Cross-cultural Competence

Nations can vary across several cultural dimensions such as the degree of masculinity or uncertainty avoidance (Hofstede et al. 2010). These different cultural settings may influence participatory approaches (Hailey 2001). Among others, high degrees of masculinity and uncertainty avoidance may have a negative impact on the implementation of participatory water management approaches (Enserink et al. 2007). Take, for example, the lack of a discussion culture and bottom-up processes researchers experienced in the former Soviet republics (Hirsch et al. 2010).

The qualitative interviews suggest that cultural settings had an impact on participatory processes. For instance, some researchers highlighted cultural related passiveness as a vital problem when being responsible for such processes. However, they also emphasized that problems particularly arise when researchers do not have the same cultural roots as stakeholders in the host country as it is the case in the IWRM Isfahan project where parts of the project staff have an Iranian background. If researchers do not have the same cultural roots, they might work under more difficult conditions as their colleagues from the German development cooperation. First, researchers sometimes do not only have to deal with one cultural setting, but a larger amount of settings given the collaboration with several projects. Second, those that are facilitating participatory processes are not per se interested in and used to intercultural communication. Most importantly, researchers do not get any cultural training before working in a new cultural setting as it is common in the development context. For instance, the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) prepares their employees that are supposed to work in international settings in a special program lasting for several months. Even though such programs do not guarantee successful collaboration in an intercultural context, they are assumed to be a necessary prerequisite in this regard.

Language Skills

One further prerequisite for implementing successful participatory process refers to language skills of researchers. In the literature, such skills are discussed in two ways. On the one hand, researchers emphasize sufficient language skills as a

prerequisite for facilitating successful participatory processes (Hirsch et al. 2010). On the other hand, researchers highlight that limited language skills can also foster process appropriation by locals (Daniell et al. 2010). If language barriers are assessed to have a rather negative or positive effect on participation may depend on the respective goal of the process, e.g. to which degree skills shall be transferred or research results shall be implemented (Daniell et al. 2010).

In the IWRM funding initiative, the researchers see language barriers as a hindrance to successful participation rather than a success factor. In fact, the quantitative survey showed that 11 out of 15 projects underlined that language barriers complicate the implementation of participatory processes. Qualitative interviews further suggested that if researchers do not speak the respective language, they should resort to professional translators or multilingual moderators rather than use third languages such as English. This is assumed to be important to avoid misunderstandings and to build trust between the researchers and the participating group.

Furthermore, as a result of the qualitative interviews, researchers support the idea that the role of language skills depends on research goals and further underline the respective context. If the goal of researchers is to generate knowledge within the research community of a given country, language skills may be less of a problem, as within the CuveWaters project when researchers work together with Namibian researchers or consultants. However, if the goal is to inform the broader public to enhance the chance of implementation of research results, the respective mother tongue should be used, e.g. when pilot technologies are implemented. Even though most Namibian villagers have basic English skills, it is difficult for them to express their opinions and emotions about certain parts of the technology or the operational concept in another language than their mother tongue Oshiwambo.

In terms of the context, the degree of mutual trust seems to be important. If the participating actors are rather skeptic towards the research process, language skills become more important to avoid misunderstandings and to build up trust. In the IWRM Iran project, for instance, the fact that some of the German project staff spoke Farsi was very helpful for smoothing misunderstandings between German and Iranian partners as well as stakeholders and to create a working atmosphere based on mutual trust.

Double Role of Researchers: Researchers and Facilitators of Participatory Processes

The double role of researchers as both researchers and facilitators of participatory processes has been described as a common trend in scientific processes (von Korff et al. 2012). This could be seen in a positive way, given the assumed impartiality of researchers. However, some scholars suggest that researchers should be rather reluctant in facilitating participatory processes. Instead, local leaders are suggested to facilitate such processes given their abilities to mobilize resources for implementation (Cornwall and Jewkes 1995). Hirsch et al. (2010) suggest that locals may be better to facilitate such processes since they can generate trust as a vital prerequisite for successful participation. Furthermore, some argue that the respective goal is

important, suggesting researchers to facilitate social learning processes and practitioners to facilitate operational management related activities (Daniell et al. 2010).

Researchers within the IWRM funding initiative often execute a double role of researching and facilitating processes: On the one hand, they are researchers in a specific scientific disciplinary field, mostly within the natural and engineering science but also within the social science context. On the other hand, they are asked to facilitate participatory processes, i.e. where appropriate they are to initiate or to accompany participatory processes.

Despite such a double role, the quantitative survey showed that researchers are rather skeptical regarding the question if they should initiate participatory processes. Two thirds of the scientists mentioned other groups such as members of the political-administrative system and the civil society to initiate these processes. Just 6 out of 15 projects attributed scientists the role to initiate participatory processes. This could be justified by the fact that scientists may not be accepted or legitimated to initiate the processes, especially in less democratic countries, amongst others.

Qualitative interviews further suggest that double roles of researching and facilitating can negatively impact participatory processes. Next to lacking hard and soft skills or deficient interests of acquiring these skills, negative aspects encompass the neutrality and degrees of acceptance of researchers in particular. In terms of neutrality, researchers have to handle conflicts of interests both between different participating actors and between scientific and stakeholder interests. Conflicts of interests between different participating actors are problematic as scientists may give up their neutral position as a legitimation to conduct participatory processes. Conflicts of interests between scientific and stakeholder interests are problematic as they can lead to a lack of result open processes: either researchers could tend to direct the participating group in a specific direction. Or researchers may not accept the results of participatory processes if the project does not allow changes in the process design.

Such problems in the context of a double role of researchers can be avoided by integrating professional participation experts into the project. This was for instance the case in the project in Mongolia. Here, the researchers included a professional consulting enterprise, which is specialized in participatory environmental planning. The same applies to the CuveWaters project where participation workshops were usually facilitated by a nationally well-known and acknowledged institution. That gave the members of the project team the chance to avoid double roles when attending these workshops.

In sum, researchers tend to agree with the required skills mentioned in the general debate on participation. However, we observed several specific characteristics for the research context. Most importantly, researchers have to adopt skills in addition to their core scientific work. Furthermore, they are not supported by funding institutions as regards cultural training, for instance. Moreover, some skills are specific to the research context such as handling the double role of researchers as scientists and facilitators of participatory processes. Such problems may explain why two thirds of IWRM researchers underline lacking skills as a basic obstacle to successfully facilitate participatory processes.

13.3.2 *Structural Conditions*

Next to specific skills of researchers, the benefits resulting from participatory processes may depend on specific structural conditions. In the following, we discuss such conditions in terms of both the political conditions within the host country and the frame conditions of research projects.

13.3.2.1 **Structural Conditions Within the Host Country**

Structural conditions within the host country encompass both political and socio-cultural aspects, in particular.

Political Aspects

In terms of political aspects, the respective democratic culture may be of particular relevance. Such culture can differ along democratic traditions, being rather open or closed, and may influence both the political support for participatory processes and the degree of active participation when conducting participation processes.

Group discussions among IWRM researchers suggest that democratic cultures have an influence on participatory processes indeed. In fact, IWRM researchers had various experiences along different political settings. In rather democratic settings such as Namibia, where especially in the rural areas decisions are often made by local village committees, participation processes are fairly easy to implement. In countries such as China, though, communication between researchers and stakeholders is perceived as being affected by a steady control of higher authorities.

Socio-cultural Aspects

Next to general political conditions, the composition of social groups is of relevance. Social groups can differ along their social status, this one usually being defined by the degree of formal education, income and profession. However, in some contexts it can also be influenced by aspects such as gender, age or family relations. Scholars assume that the status impacts the degree of participation: the higher the social status, the more active are people to participate (Fung 2006). Also, researchers suggest that in certain contexts men are more active than women in participating, at once underlying that this depends on the very specific circumstances (Cleaver 2001). However, researchers also emphasize that the selection methods of stakeholders as well as the concrete circumstances influence such connections, occasionally causing inverse relationships (Fung 2006).

Based on group discussions, researchers of the IWRM funding initiative especially made experiences relating to the connection between participation and gender issues. Here, researchers had differing experiences: while most traditional authorities in Namibia are male, those who are more active in participation processes are usually women. This causes a systemic gender bias: the ones developing concrete solutions at micro level are others than the ones making decisions at macro level.

13.3.2.2 Frame Conditions of German Research Projects

Research projects are subject to specific frame conditions. In the IWRM funding initiative, the projects are especially subject to the conditions of the funding institution BMBF. In the following, we discuss relevant conditions in terms of both temporal and financial aspects.

Temporal Aspects

In the literature, researchers emphasize the need for long-term cooperation between researchers and practitioners (Roux et al. 2006; Sigel et al. 2014). First and foremost, this implies adequate project durations, e.g. programs of at least five years for successful knowledge transfers (Roux et al. 2006). Second, this may also imply stable job tenures within the project to build continuity and trust among the participants.

The reality in third party funding is different from these suggestions. As Sigel et al. (2014) state, “research projects often have planning cycles of only 3–5 years.” In the BMBF funding initiative on IWRM, project durations are generally limited to pre-phases of 6 months to 1 year and main phases of about 3 years. In some cases, projects have several phases of 3 years. These limitations considerably impact the design, output and outcome of participatory processes: the shorter the project duration, the less time to build trust among the participating actors. Consequently, participation processes have to be adapted and expectations of outputs and outcomes have to be limited. For instance, in the CuveWaters project, an intensive participatory process of more than two years was necessary before the implementation could start. This was only possible with the project design of a two year preparation phase before a three year implementation phase started.

Next to limited project durations, researchers have to struggle with unclear and varying job tenures. This means that the duration of treaties does not always overlap with the project duration so that researchers that implement participation processes may change within the process. Such changes are particularly problematic since participation requires trust on the part of the participating stakeholder vis-à-vis the facilitator of participation processes.

Financial Resources

Next to temporal issues, financial resources are of relevance. These regard both the funding of the participatory processes and of the respective outputs. In terms of the processes, researchers especially emphasize enough funding, flexibility and incentives for participation. Above all, funders must provide appropriate financial means to ensure successful participatory processes (Rowe and Frewer 2000). Furthermore, researchers underline the necessity to create a flexible environment, e.g. to flexibly adjust participatory processes (e.g. Biggs 1989; Rowe and Frewer 2000; Korff et al. 2010; Webler et al. 2001). However, they also observe that such flexibility is not always given (Korff et al. 2010). This particularly applies to the funding flexibility. As Korff et al. (2010) state, for instance, researchers “often lack the funding flexibility to respond to communities’ requests for research”. Furthermore, researchers discuss funding as an incentive for participation. In this

regard, some researchers argue that stakeholders need incentives to participate in research (e.g. Cornwall and Jewkes 1995). Such incentives could be of financial nature. However, they can also consist of precise process descriptions, for instance (Barreteau et al. 2010). Finally in terms of outputs of participatory processes, researchers emphasize the need not to create “false hopes” (Cornwall and Jewkes 1995), in our terms to clarify which aspects can be funded and which not.

In group discussions among IWRM researchers, researchers emphasized that enough financial resources are to be secured for participation experts in the project, professional moderators, translators and locations, amongst others. Furthermore, flexible conditions are emphasized as a prerequisite to initiate and conduct adequate participation processes. However, researchers further criticize that participatory processes are often restricted by a rigid time frame. This is of particularly importance since researchers sometimes underestimate the required time and financial resources.

Furthermore, according to 10 out of 15 projects, there are indeed general needs to set incentives to participate. This is based on the fact that sometimes the benefit for participation may not be clear at the beginning of the process so that stakeholders may be less interested in participating. However, researchers tend to state that these incentives should rather not be of financial nature as it should be prevented that stakeholders participate for pure financial reasons. Thus, incentives such as further education, certificates or social events should be preferred to incentives such as financial aids or salaries.

During the implementation of the floodwater harvesting technology within the CuveWaters project, for instance, more than 40 people of the local community were involved in the construction process but only those who showed the most reliable commitment towards the project and participated in all accompanying capacity development measures were considered as future direct beneficiaries of the irrigation plots that are watered with the harvested floodwater. This incentive resulted in a very high commitment of the whole community towards the project and intense participation throughout the construction process as well as during subsequent project activities.

On the other hand, some researchers also underlined that insufficient financial means may negatively impact the participation process. If there are no funds available to honor the participation of stakeholders in terms of refunding travel costs and per diem allowances, people may not participate due to a lack of funding. This may be even more important when stakeholders from NGOs, public administrations or residents are part of the process.

In terms of the outputs of participation processes, 12 out of 15 research projects agreed that expectations regarding the funding are to be clarified. Within the IWRM research projects both scientific results and their implementation are pursued. However, whereas the scientific part is funded, the funding of implementation is restricted to subsequent implementation projects. Insufficient information on the respective funding may result in disappointments and losses of trust.

In sum, researchers have to handle both specific frame conditions of German research projects and the political conditions within the host country. Whereas practitioners face the same conditions in host countries, researchers might find it more challenging to adapt the relevant skills as described above. Furthermore, they have to act within the specific restrictions of the research context.

13.4 Conclusions and Recommendations

Based on quantitative and qualitative interviews, we have identified both possible benefits of participation for generating IWRM related research results and conditions to achieve these benefits. First, researchers emphasized the positive role of participatory processes on different levels, based on several participatory functions such as information exchange, learning, acceptance, legitimation, ownership and balancing of interests. Second, researchers underlined various prerequisites to achieve these benefits. These encompass skills of researchers and structural conditions. First, hard skills are important such as knowledge on who should be involved, to which degree, at which state of the research process, and the adequate method. Second, soft skills are of relevance like moderation techniques, cultural and language skills as well as handling the double role of scientists as researchers and implementers of participatory processes. Furthermore, the respective conditions within the target country such as political and social aspects are of relevance. Finally, specifics of the German research context such as temporal and financial restrictions have to be considered. Whereas many ideas of researchers are in line with the views expressed in the literature, some important differences exist with regards to the functions of participation, the skills and the frame conditions when comparing participation in general and participatory research in particular.

These results are based on quantitative and qualitative interviews within the specific research context of the IWRM funding initiative. The internal validity of results may be limited due to different understandings of the term participation, among others. Furthermore, the external validity is limited due to our reporting of IWRM results within the IWRM funding initiative only. We assume that different research contexts cause different problem contexts, e.g. in some cases a different cultural setting is more important than the double role of researchers as investigators and facilitators and vice versa. However, we argue that the results make a vital contribution to the debate on participatory IWRM research. Before, scholars discussed roles and prerequisites for successful participatory research in view of either IWRM in general or participatory research in general, related to other policy fields than IWRM, and usually based their discussions on “think experiments” or single case studies. We contributed to fill this gap by providing an analysis of roles and prerequisites for the IWRM research context, based on both a standardized survey and in-depth qualitative interviews and discussions.

Based on these results, we made some recommendations for further scientific practice and research. In terms of scientific practice, we suggest to further implement participation and participation experts in scientifically motivated IWRM projects. The formal integration of participation is based on the clear and well-founded role that IWRM researchers attribute to participation to generate IWRM related applied research results. The integration of participation experts in IWRM related research projects is based on the various prerequisites that may hinder the successful implementation of participation processes. Experts having hard and soft skills, that are able to adapt to the specific structural conditions of research projects, may promote to overcome problems, thus enabling participation to contribute to project success. If there is no possibility to include participation experts in the project, comprehensive participation units should support IWRM researchers in the different projects to plan, implement and evaluate participatory processes. This suggestion goes in line with the general idea expressed in the literature that the involvement of social scientists in research projects positively correlates with the degree of participation and the adaption of methods to specific circumstances (Biggs 1989). Further, such experts must be enabled to conduct participatory research processes in a highly flexible manner.

In terms of future research demands, we suggest to further analyze the respective conditions for successful participation processes in view of different research settings. These analyses should focus on the relevance of specific actors (e.g. specific stakeholder groups versus the broader public) and specific methods (e.g. different moderation techniques) for different research steps (e.g. research agenda setting, research processes and implementation of research results) and research goals (e.g. implementing technological innovations, river basin management plans or effective versus efficient solutions etc.). Such analyses could generate more in-depths theories on the role of participatory research designs, and thus improve the knowledge basis for societally and scientifically relevant problem solving. Based on such research, the potential of participation for IWRM related applied research project success can be fully exploited.

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Appendix: Project-Specific Survey on Participation in IWRM



This survey aims at generating lessons learnt on participation in IWRM. Lessons learnt comprise four aspects, amongst (1) the definition of participation in IWRM, (2) the relevance of participation to achieve an IWRM, (3) the relevance of participatory research, and (4) the design of participatory processes.

The questionnaire was prepared by an inter-project working group. The results will be part of a key issue paper which is meant to provide guidance for research projects, project executing organizations and the Federal Ministry of Education and Research.

This survey will last approximately 20 min. Please mark with a cross the relevant response fields and add relevant information where applicable. After having analysed the results of the survey, we will send you a draft of the key issue paper and you will have the opportunity to comment the results.

The information that is gathered by the survey will be treated confidentially as long as you do not agree expressly the inverse case. Please mark with a cross the relevant response field:

- I would like that the information is treated confidentially, meaning that the project name is not matched with the answers in the further process.
- I agree that the project name is matched with the answers in the further process.

We thank you for participating in this survey. In case of any questions, please do not hesitate to contact:

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Your Contact details

Name of the project:

Name of the sub-project:

Contact person:

Name:

Institution:

Phone:

Email:

(A) What does participation mean in the context of IWRM?

Please mark with a cross and add relevant information where applicable.

1. What do you understand by IWRM?

“a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems”. (GWP 2000: Integrated Water Resources Management. Stockholm: Global Water Partnership, p. 22)

Other definition:

2. What do you understand by the notion of participation?

Involvement of veto-players (persons that can circumvent or hinder decision-making or the implementation of decisions)

Involvement of directly affected people

Involvement of the wider public

Other:

3. Which actors should be involved in participatory processes in your project?

4. Is there further relevant information on the definition of participation in IWRM that you would like to share?

Yes, namely:

No

(B) Which role has participation in your project to achieve an IWRM?

Please mark with a cross and add relevant information where applicable.

5. Which role has participation in your project to achieve an IWRM?

High relevance

Middle relevance

Low relevance

No relevance

6. Which concrete functions does participation fulfill in your project in view of achieving an IWRM?

Further education of the wider public, e.g. in terms of how to handle technologies

Further education/information exchange between stakeholders

Integration and balancing of interests

Acceptance of decisions

Generating ownership

Other:

7. At which levels does participation foster a sustainable water resource management in your project?

- Meta level: Comprehensive, inter-sectoral solution of problems, e.g. in the context of decision support systems
- Micro-level: Specific technological solution
- Other:

8. Which role has participation in view of implementing IWRM related project results?

- High relevance (active involvement of all relevant groups in the implementation process)
- Middle relevance (active involvement of several relevant groups in the implementation process)
- Low relevance (observation of the implementation process by “participants”)
- No relevance

9. Is there any further information on the role of participation in IWRM that you would like to share?

- Yes, namely:
- No

(C) How relevant is participatory research to achieve an IWRM?

Please mark with a cross and add relevant information where applicable.

10. Is participation an independent research topic in your project?

- Participation is from the beginning an independent research topic in the project.
- Participation is an independent research topic in the project. However, this was not initially planned.
- Participation is not an independent research topic in the project.

11. Which specific research questions does the project address related to the topic of participation in IWRM?

- Specific research questions are
- The project does not address specific research questions related to participation.

12. What are vital lacks of research related to participation in your project?

- Specific lacks of research are
- There are no specific lacks of research related to participation in the project.

13. Is there any further information on the role of participatory research in the project that you would like to share?

- Yes, namely:
- No

(D) How should participatory processes be designed to achieve an IWRM?

Please mark with a cross and add relevant information where applicable.

14. Which degree of participation is generally necessary to achieve an IWRM?

- Low degree (e.g. information sharing with those that are affected by a decision)
- Middle degree (e.g. involvement in discussions and recommendations for decision-makers)
- High degree (e.g. common decisions with decision-makers)

15. Which degree of participation is necessary in the research project to achieve an IWRM?

- Low degree (e.g. public-oriented events/information on project results)
- Middle degree (e.g. stakeholder as users of tools/methods)
- High degree (e.g. co-design of research proposals by stakeholders/ stakeholder as equal project partner)

16. What are criteria for a successful participatory process in your project?

- All relevant actors/institutions are involved.
- There is a constant involvement of actors/institutions over the whole participatory process.
- The IWRM concept which was developed by participants is implemented in the long run.
- Comprehensive societal discussions are initiated at the relevant scale (local, national, regional or international).
- Other:

17. Is it necessary to set incentives for participants to enable participatory processes?

- No, because
- Yes, because

Incentives can be:

18. Which requirements have to be fulfilled for participation?

- High educational level of participants
- Transparency of information
- Enough time
- Clarifying the funding of measures which regard the participatory process
- Long-term involvement of actors in the project
- Involvement of seniors/experts
- Other:

19. Please specify the timeframe for participation for specific groups!

- Veto-player:
- Directly affected people:
- Wider public:
- Other:

20. Which processual conditions foster output-oriented participatory workshops?

- Skilled facilitators
- Specific facilitation techniques such as
- Other:

21. Which actors initiate or accompany participatory processes?

22. Are there any problems if researchers initiate or accompany participatory processes?

- Yes, namely
- No

23. Which kind of practical impediments and problems come up when implementing participatory processes?

- Language barriers, namely
- Cultural problems, namely
- Too little knowledge of how to design participatory processes on the part of the researcher
- Other:

24. Do you have further lessons learnt with regard to the design of participatory processes which you would like to share?

Thank you very much!

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