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THE REALITY OF PUBLIC PARTICIPATION IN WATER MANAGEMENT: CASE STUDY OF JORDAN AND SINGAPORE

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ABSTRACT

This study aims to explore the presence of applying public participation practices in water management context in two case studies; Jordan and Singapore. It uses grounded theory methodology to understand how the concept of public participation is perceived by different stakeholders and how it is affecting the currently applied participation practices in both case studies. The data used in this study was collected through conducting several face-to-face interviews with several key water experts and specialists working in the water sector in both cases including experts working for governmental and nongovernmental institutions, as well as interviewing experts working in two water projects that applies public participation the Water Users Association in the Jordan Valley and the Highland Water Forum for the case of Jordan. The findings of the first case showed that there is a distinct difference in the perception of public participation between two groups; the “officials” and “non-officials” which in turn has influenced other aspects of participation mainly the objectives and preferred type of participation, justification for implementing the participation and the characterization of currently applied participation practices. The results also showed that the two groups have contrasting opinions in their perception of the actual implementation of public participation compared with their desired definition of public participation. It was also found that Jordan has a unique water management structure in which international funding agencies play a major role and the interaction between officials and funding agencies influences the way water is managed and consequently influences the implementation of public participation in water projects. When it comes to the two projects that apply public participation in Jordan we found that the “officials” and “non-officials” have expressed different opinions regarding the place of public participation in water projects which was influenced by their understanding of “meaning of public participation”. The difference was also observed in the findings of the interview on actual projects regarding the involvement of the stakeholders in both projects especially in the planning stage. On the contrary, the results from the case of Singapore showed that interviewees have agreed on or shared almost similar view points on most of the key categories with two categories having most of the influence over the rest of the categories namely the meaning of public participation and the management structure. Most of the interviewees’ have expressed a more indirect view on participation approach by which they believe that public participation is more related to the issues of saving and protecting water. The interviewees have also distinguished between the

participation of the community which would be more related to the public involvement in education and awareness programs as well as arranging visits to different educational centres. The second participation is related to the industry involvement in terms of participation in DBO projects and technology development. The lessons that could be learned from both case studies is first of all the importance of having the support of the official authorities in order to ensure the success of any public participation initiatives as it has been demonstrated in both case studies as well as the necessity to have a legal recognition for any public participation within a clear legal framework to organize the participation. Another important point is having a more holistic water management structure, as in the case of Singapore, which allowed the government to carry out their responsibilities toward water management efficiently especially in terms of preventing any overlapping in tasks that could be caused by miscommunication that might occur among different departments. The case of Singapore also showed that the success of their water management structure allowed the government to succeed in building trust and establish its reliability among the people of Singapore which made securing the public acceptance for water related projects easier.

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LIST OF ABBREVIATIONS

EIA: Environmental Impact Assessment

EWI-COI: Environmental and Water Technology Centre of Innovation

DBO: Develop, Build and Operate

NGOs: Nongovernmental Organizations

JICA: Japan International Cooperation Agency

JVA: Jordan Valley Authority

GIZ: German Agency for International Cooperation

GTM: Grounded Theory Methodology

NEWRI: Nanyang Environmental and Water Research Institute

NRA: National Resources Authority

NWMP: National Water Master Plan

MOA: Ministry of Agriculture

MWI: Ministry of Water and Irrigation

PMU: Project Management Unit

PUB: Public Water Utility

UFW: Unaccounted for Water

USAID: United States Agency for International Development

USEPA: Environmental Protection Agency of the United States

WAJ: Water Authority of Jordan

WHO: World Health Organization

WWS: WaterWays Watch Society

WUA: Water Users Association

3PN: Private-Public-People Network

1. INTRODUCTION

1.1 PUBLIC PARTICIPATION IN WATER MANAGEMENT

There has been recently an increasing worldwide trend toward more involvement of the public in policy and decision making bodies which is frequently referred to as public participation. Unfortunately, however, the key concepts are not generally well defined; including the concept of public participation itself. A general definition of public participation could be the practice of involving members of the public in the decision and policy making activities of institutions responsible for policy development.

However, this could be considered as a broad definition amenable to different interpretations since the public may be involved in various ways at different levels. Thus, differences in interpreting the phrase “public participation” lead to misunderstandings among stakeholders (Arnstein, 1969; Rowe & Frewer, 2005; Wiedemann & Femers, 1993). The absence of a universal consensus on the meaning and definition of participation made the term subject to different interpretations by different groups of people in terms of the scope of activities.

These differences depend on the challenges the stakeholders face, their experience, and their role in the participation process, political power and concepts of democracy especially in terms of the representation and legitimacy of decisions on water (Feeny *et al.*, 1990). However, some basic requirements must be met to ensure the success of participation. These include, for example, the existence of a clear and reliable formal decision making process, a high tolerance of direct public debate and the wish of the community to reach through an open process, a certain level of agreement (Mermet, 1991).

The implementation of public participation has the potential to generate higher quality and more informed decisions since they would be responsive to public interests and values and help in resolving users’ conflict, build trust and educate the public about the environmental issue at stake (Kessler, 2004). The participatory approach is also useful in providing feedback to policy makers and promoting public acceptance since it encourages the public to give more feedback on formal decision making processes and make them actively involved in offering

solutions, thus creating a sense of ownership of decisions and actions (Kolokytha *et al.*, 2002; (Mermet, 1991).

It is argued that the long-term impact and sustainability of water resource planning and implementation will mostly depend on the effectiveness of public participation particularly in the full implementation of demand management. Examination done by the World Bank regarding the effect of public involvement on institutional sustainability showed that the high failure rate of projects can be reduced and performance can be enhanced through public participation in these projects thus increasing their success rates (Priscoli, 1996).

However, most of the literature on public participation is full of successful stories of case studies and focuses on problem solving with little attention given to the analysis of the problem and its definition (GWP, 2000, 2004; Ridder *et al.*, 2005; World Bank, 1993, 1996, 1998). Several studies have showed that the active involvement of the public or concerned stakeholders is a necessary condition for effective planning and sustainable management of water.

They further revealed that, most of the time, the policies that have been desired or chosen by the stakeholders have had the best effects on water management (Casteletti *et al.*, 2008; Mouratiadou and Moran, 2007; Paneque Salgado *et al.*, 2009; Dungumaro and Madulu, 2003). However, little is known about the stakeholders' understanding of the concept of public participation in terms of their preferred definition and type of participation. There are few studies that have compared between these issues among different stakeholders (Chilvers, 2008; Webler *et al.*, 2001).

Since implementing appropriate water management require including economic, environmental and social dimensions which are subject to different interpretations depending on a multitude of stakeholders' interests (Collins *et al.*, 2007), it is important to compare and contrast the meaning and definition of public participation as expressed by different stakeholders. Different perspectives will in turn affect other aspects of public participation such as the objectives and methods of participation.

Currently, the study area of public participation portrays an increasing combination of experimental knowledge with scattered theoretical literature (Webler, 1999) which recalls the need to clarify a number of definitional issues before research can meaningfully be directed toward the development of a model contingent utility of participation mechanisms (Rowe & Frewer, 2005).

This study reports the results of Grounded Theory Approach to investigate the perception of public participation in water management according to key stakeholders. It also seeks to define how much their perception affects currently implemented practices in two case studies: Jordan: a country with an acknowledged problem in terms of water scarcity and inability to meet the demand by the rapidly growing sectors, calling for the need to use a holistic approach based on stakeholders' needs in order to control competition over water and to define the prospective addressee to deal with the change (Ker Rault & Jeffrey, 2008; WorldBank, 2003).

1.2 LITERATURE REVIEW

Rowe and Fewer (2005) have argued in their study that having an imprecise definition for the key terms in the field of public participation have in fact been an obstacle in conducting any good research and consequently in the development and implementation of effective participation practices. Therefore, in their study, Rowe and Fewer attempted to define some of the key concepts related to public participation by first of all rephrasing the term public participation into public engagement and then identifying three significant activities within this field and define them as public communication, public consultation and public participation. The differentiation criteria were based on the nature and flow of information between the organizers and the participants.

The various forms of public engagement, as described in this study, is enacted through a large number of structured mechanisms which the authors pointed out that they are generally poorly defined as well. Thus to overcome these problem the authors have developed a typology for mechanisms of communication, consultation and participation types based on their similarities and differences on a number of key variables that might hypothetically

affect the effectiveness of participation. The resulting typology showed four classes of communication mechanisms, six of consultation mechanisms and four of participation mechanisms.

Additionally, Reed (2008) in his study have also pointed out that despite the increase use of public participation in policy and decision making related to environmental issues, the participants and stakeholders felt let down when the benefits promised to be achieved through the implementation of the participatory approach were not actually realized in reality. Even though there is evidence that the use of participatory approach can enhance the quality of the decisions taken, the quality added will strongly depend on the nature of the process of taking the decision.

The study then has performed a Grounded Theory Analysis on a body of public participation literature in order to identify the necessary features for the best practice participation. The study found that rather than using a “tool-kit” approach, the focus should be instead on the participation as a process which itself need to have clear objectives from the beginning. The study also argued that public participation needs to be institutionalized and organized in order to overcome some of the approach’s limitation.

In their study Rowe and Frewer (2000) have noted that despite having a wide variety of methods is being developed to implement public participation, ranging from public hearing to consensus meetings; there is, however, a general lack of any empirical consideration regarding the quality of the various methods used to apply public participation because of the absence of systematic comparisons between these different methods caused by the confusion regarding the appropriate standard for evaluation as well as the confusion as to what the meaning of “effectiveness” is.

Thus the authors have suggested in this study to first determine which of the participation process is desirable and then measure the quality of these aspects and accordingly two types of essential theoretical evaluation criteria were specified in this paper. The first one is the acceptance criteria which are regarding features that will make any participation method acceptable to wider public. The second one is the process criteria which in turn are related to the features of the method participation process that are reliable to make sure that it is applied

effectively. However, the authors pointed out that in determining the effectiveness of the participation, a variety of contextual environmental factors will interact with the specific characteristics of any participation method to determine its effectiveness.

Pahl-Wastl *et al.* (2007) argues in their paper that in order to implement and support an integrated and sustainable (socially, environmentally and economically) water management, it is important to have a process for social learning along with a kind of informal actor platforms. The paper argues against the claim that different objectives of water management such as stakeholder participation and decentralization would unlikely promote integration, rather it portrayed that integration is achieved by process of network of governance instead of bureaucratic hierarchies.

The paper also stresses the need for establishing the necessary requirements for processes of social learning to build the ability to achieve joint solutions thus ensuring the effectiveness of stakeholder participation in terms of achieving the goals of water management. The paper also showed the importance of continued processes of social learning in which stakeholders at different scales will be connected through flexible networks as well as the importance of developing a sufficient social capital and trust in order to collaborate in a wide range of formal and informal relationships from legal structures to voluntary agreements.

Additionally, Webler *et al.* (2001) have reported on a case study regarding the identification and characterization of a good public participation process. The study found that different people have expressed different ideas regarding the definition of a good public participation process. Based on their responses, five perspectives regarding good process have emerged; the first perspective stresses that acquiring and maintaining popular legitimacy through democratic process is required to have good participation process. The second perspective describes good participation as one that facilitate an ideological discussion, the third one emphasizes the fairness of the process with a specific focus on achieving participation by all segments of society.

The fourth perspective sees participation as a power play struggle among different actors and the fifth perspective stresses the need for leadership and compromise to have a good participation process. Having these different perspectives places serious challenges for those

responsible for the design and implementation of public participation since having different perspectives regarding the identification of a good participation process among different actors may cause conflicts to occur over the design of the public participation process.

1.3 JUSTIFICATION FOR SELECTION OF CASE STUDIES

We have selected two case studies for this research, Jordan and Singapore. Jordan is having a serious water problem; the country is facing a constant imbalance between the total water demands and the available supply of fresh water and based on early projections, Jordan is already dealing with a water crisis. Hence, dealing with such a problem requires adopting various actions and approaches including the development of non-conventional water supplies along with conservation, management and efficiency improvement measures in the water sector within the water sector (Mohsen & Al-Jayyousi, 1999).

Moreover, several water demand management options are now being considered as a way to address the water problem in Jordan. The government is giving a great attention to water demand management measures including water conservation programs and public awareness campaigns. The government in Jordan believes for it to achieve its objectives in the water sector in terms of conservation of limited water resources it needs to rely on involvement of the people through increasing their awareness regarding water conservation issues in Jordan (MWI, 2002). This shift of government focus to demand management measures that includes the introduction of public participation is mainly encouraged by the international donors who are the funding most of water projects in Jordan.

However, little is known about the understanding of public participation approach among the policy-makers and top management in Jordan as well as the nature of the implemented public participation. Therefore, this research aims at clearly understand the reality of public participation as it is applied in water management context in Jordan and how it is affecting the water projects in the field.

On the other hand, the case of Singapore gives us a unique perspective on the way water is managed in a country with limited water resources. The overall governance of water supply

and wastewater management has been considered as a model in terms of its performance. The authorities in Singapore have initiated several approaches to manage its entire water cycle; these approaches vary from innovative technological approaches to different water demand management approaches including public participation. We need to focus on example of Singapore since many of the approaches toward water management implemented there can be adopted in both developing and developed countries, after appropriate modification to each case, to improve their own water management systems (Tortajada, 2006). In this research we aim to study the case of Singapore to learn from their experience in water management in general and in applying public participation in particular.

1.4 CASE STUDY OF JORDAN: THE CURRENT SITUATION

1.4.1 The water problem in Jordan

Jordan is one of the most water poor countries in the world; as the water shortage problem in Jordan has intensified during the years to the degree that made it the second water deprived country in the world, location map of Jordan is shown in Figure (1). Meeting water demand for the different sectors in the country has therefore become a challenge (Batarseh, 2006). Jordan is more likely to face more water shortage in the near future due to the imbalance between the already scarce water resources and the growing demand that threatens to reduce the availability of water, which means that dealing with such scarcity problem is a major policy issue.

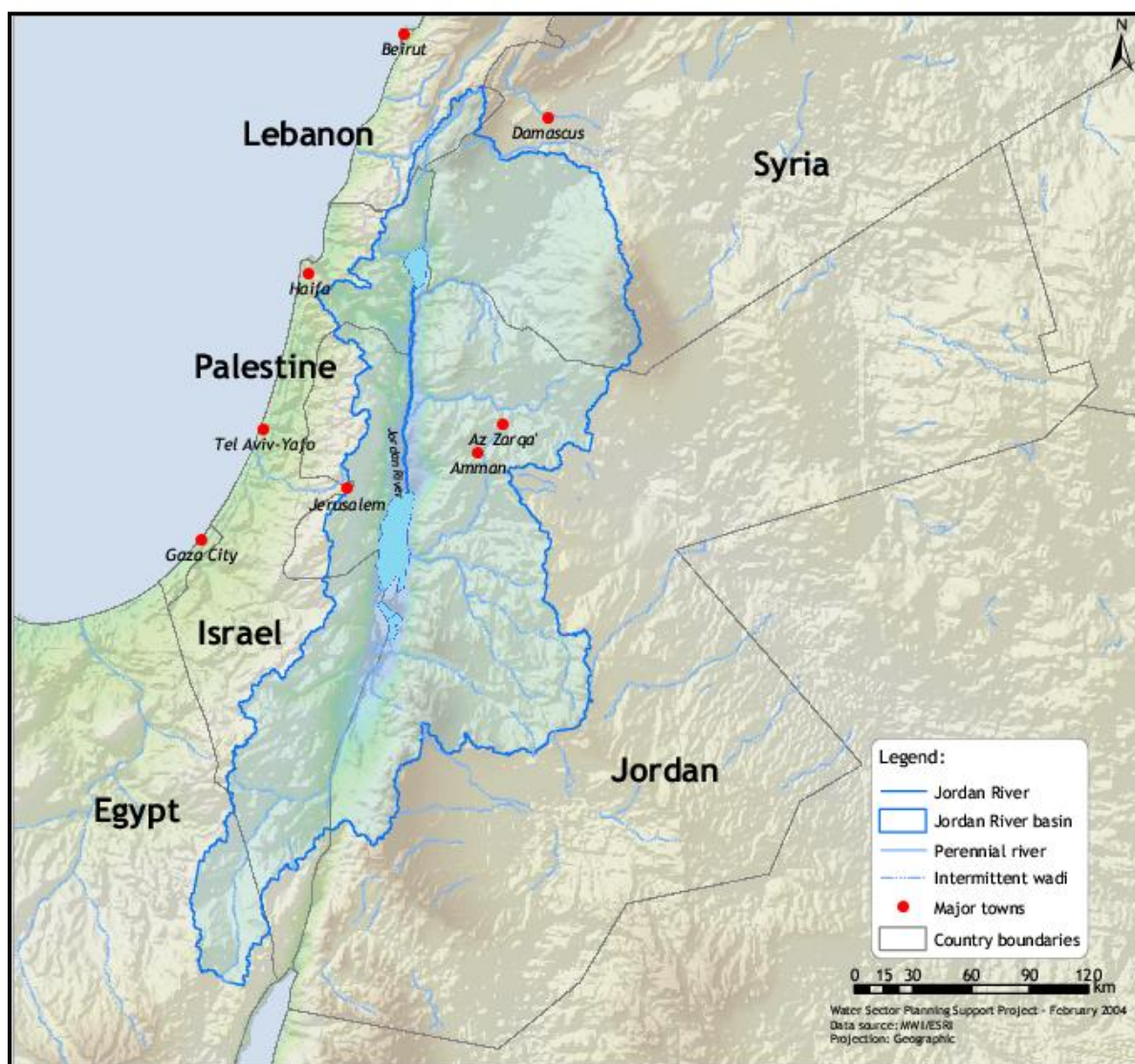


Figure (1): Location Map of the Hashemite Kingdom of Jordan (Source: MWI, 2004)

The water problem in Jordan is further intensified by ever-increasing in urbanization, industrialization and most importantly the overpopulation with a relatively high growth rate of 2.2%. The population in Jordan is expected to reach 8 million by the year 2025 (DOS, 2009, Phillips *et. al.*, 2009). This expected increase in population along with the growing economic activities, self-inflicted problems such as the allocation of water to agriculture and supply management bias in addition to regional politics will place even more pressure on the already limited water resources (Alkhaddar, *et al.* 2005).

The gap between the already limited water supply and the increasing demand threatens to widen significantly with time creating a serious water deficit, the projection for the water deficit is shown in Figure (2). If the current trends continue, it is expected that by the year 2025 the per capita water supply will fall from the current 144 lpd to only 64 lpd, placing Jordan among countries with absolute water shortage (MWI, 2007). Unfortunately, no single action can overcome this increasing gap between the limited water supply and growing demand because this kind of difficult water situation puts a number of serious challenges especially for water managers and government. This is particularly true in terms of determining criteria for water allocation and implementing policy. It requires careful policies and programs to be put in place to conserve and manage water properly (Al-Karablieh *et al.*, 2006).

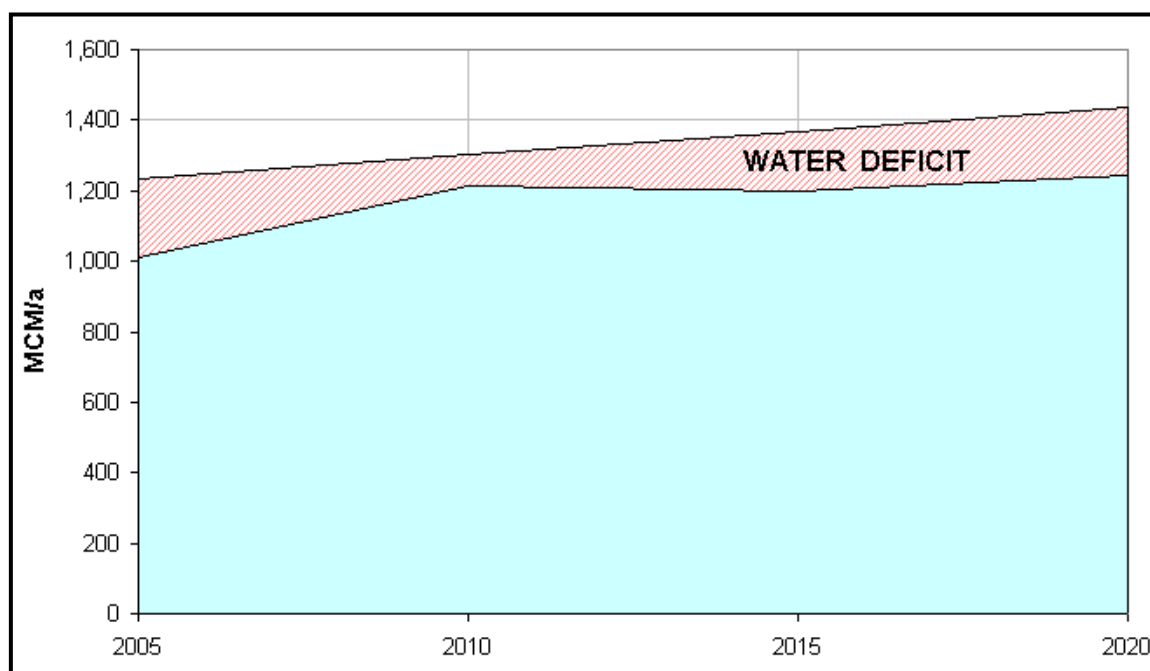


Figure (2): Projected Water Demands versus Water Resources for the Years 2005-2020 (Source: MWI, 2004)

The government authorities in Jordan have been active in addressing the country's water problems and have tried to alleviate the situation, with a tendency to concentrate investments more on the development of new water resources and supply side management. By early

2000s, however, the government changed this water policy to focus as well on the demand management, which is considered the cheaper and wiser alternative. These measures, as indicated in the National Water Master Plan (NWMP) of 2004 and in Jordan's Water Strategy 2008-2022, introduced in addition to the rationing of water services, a rehabilitation program of water supply network with the aim of reducing water leakage and a measure to reduce the agricultural water abstraction of groundwater.

It also introduced some financial instruments such as increasing water tariffs to persuade the consumer to reduce their water consumption. It further advocated for a public information policy campaigns with the help of local nongovernmental organizations (NGOs) to raise public awareness and participation and encourage the use of water saving technologies (MWI, 2009, Salman, *et al*, 2006). Nevertheless, despite these measures, water management in Jordan, as the case in other developing countries, is still usually characterized by a top-down decision making approach that does not usually involve stakeholders.

The responsibility for water management should not be vested solely with the governments. Water users, and the general public who may affect and be affected by water management decisions should be part of the decision-making process and their preferences should be taken into account when analyzing alternatives and economic effects. This is essential to minimize public resentment and gain public acceptance and support of future policies and projects (Kolokytha *et al.*, 2002).

Given the earlier described water scarcity problem in Jordan where all possible water supply options have already been explored including water reuse there is a need to shift the focus of water policy in Jordan towards the introduction of new water management approaches, including public participation. Despite the recognition of the Ministry of Water and Irrigation (MWI) in the Jordan's Water Strategy (2008-2022) for the need for private and public sectors to share responsibility for water management and identified primary issues of governance including stakeholders' participation, private-public sector partnership, and NGOs' involvement.

Initially, the role of central government in water and wastewater management was minimal by which this responsibility was in the hands of elected municipal councils, which

represented the stakeholders of water and wastewater services. But throughout the years, the central government was assuming more responsibilities. However, the government has recently adopted some new techniques for managing water and wastewater services especially private sector participation, which is somehow reflected in the composition of the Boards of Directors of some water authorities; namely the Water Authority of Jordan (WAJ) and Jordan Valley Authority (JVA).

Two members representing the stakeholders are appointed by the Council of Ministries for each authority, but the extent of stakeholder participation has been limited to this membership. Even though the extent of participation was meant to be expanded, no steps have been taken to translate such participation into action. Usually, a stakeholder's participation is the result of importing ideas from abroad since consultation in general is embedded in Arab culture, but eventually decisions are made by rulers.

The government has also included the execution of a contract with a private consortium to manage water services in Greater Amman Area since 1999. In addition to stakeholder participation in irrigation water management attempted in the Jordan Valley through the establishment of Water Users Associations (Haddadin *et al.*, 2006). Besides the recognition of the MWI for public participation has not reflected on the enactment of a law or legislation that regulates the participation of the public or stakeholders in water management neither did it provide for any guidelines for their involvement (Haddadin *et al.*, 2006).

Hence, in the absence of clear understanding of public participation applied in water management in Jordan, there is a need to elaborate on a descriptive framework to explain how key players in water management in Jordan perceive the concept. This is because they are the ones who are responsible for policy setting and implementation in Jordan including the inclusion of public participation in water management. The results of such study will be helpful in giving policy makers more insight on water management issues as well as improving the implementation of public participation in countries in arid and semi-arid regions who share similar cultural and managerial settings.

1.4.2 The water management structure in Jordan

The laws in Jordan decree that water is a “state property”; this policy is stated in Water Authority Law No. 18 of 1988: “All water resources within the boundaries of the Kingdom, whether they are surface or groundwater, river or internal seas, are considered to be state-owned property and shall not be used or transported except in compliance with the law”. In this sense, water is a right to which every member of the public is entitled, but at the same time, it is the property of no one (El-Naser, 1999).

Initially, and until municipal water shortages started to surface in the mid-1960s, water administration in Jordan was focused on municipal water supply, and the responsibility for water and wastewater management was assigned by towns in the hands of elected municipal councils, which represented the stakeholders of water and wastewater services. At the time, the role of central government was minimal and limited to offering help whenever needed, facilitating the implementation of projects guaranteeing the loans provided to implement these projects (Haddadin, 2006; Haddadin *et al.*, 2006).

However, some amendments were made to relevant institutional structures, giving central government more responsibilities, and in 1966, through the National Resources Authority (NRA), it took over the responsibilities from municipal councils. In an attempt to implement sound water governance, at that time the NRA considered involving the beneficiaries in water management, but the NRA’s law did not refer to any role of the beneficiaries. Water councils were supposed to be formed under different legislations; however, the formation of such councils was not honoured (Haddadin *et al.*, 2006).

The JVA was established in 1977 and was given a wide range of legal powers to oversee the development of the Jordan Valley, and in 1982 a new water authority, the WAJ, was established which took over the responsibility for distribution networks from the local councils all over Jordan. However, differences over the jurisdiction arose between these two authorities, which were resolved by an agreement in 1988 in which these two bodies were unified under the MWI; the two authorities hereafter reminded in charge of the water sector, where they remained autonomous, but each was supervised by a board of directors chaired by the MWI (Alkhaddar *et al.*, 2005; Haddadin, 2006).

As of today, there is one institution responsible for water in Jordan, the MWI, along with its branches, the WAJ, JVA, Ministry Secretariat and Project Management Unit (PMU), where the later created within the WAJ as a result of increasing investment in the water sector and in response to a request from donors. All these entities are responsible for the development, distribution and management of water resources as well as water and wastewater projects.

Coordination among these entities is ensured through the Minister and representation of different stakeholders, especially farmers, in the boards of WAJ and JVA is guaranteed (Haddadin, 2006; Haddadin *et al.*, 2006). The state, through the MWI, regulates water use and attempts to ensure that water use by some does not negatively impact the resources or cause appreciable harm to others. Jordan has only one water owner, the state, and the water infrastructure involves large investments, making an arrangement with many small sellers difficult to construct (Salman *et al.*, 2006).

The role that donors have been playing in the water sector in Jordan cannot be ignored. Donors have had a continuous interest in the governance of the water sector, trying to ensure that the objectives for which they provided grants are met. Hence, the high level of their involvement reflects the importance of donors in financing water development and management. The involvement of donors goes back as far as the early 1960s, when the World Bank drew attention to the need for Jordan to adopt a policy of cost recovery, and all other donors followed suit (Haddadin, 2006; Haddadin *et al.*, 2006).

The involvement of donors is mostly in organizing, which includes sub-functions related to securing funds for the water sector in addition to providing training for staff and raising awareness of water issues. Because donors usually provide the funds for water infrastructure projects in Jordan, they are influential in their development whereas many other institutions are not involved in projects at the same level (USAID, 2010). For example, as part of the economic restructuring program that Jordan has been implementing since 1990 and upon suggestions from and conditions imposed by donors, the management of the operation and maintenance of water and wastewater systems in Amman was awarded in 2000 to a private sector venture group of foreign and local companies (Haddadin *et al.*, 2006; Salman *et al.*, 2006).

1.4.3 Example of projects applying public participation in Jordan

Recently, there are some attempts by the government to adopt some new techniques for managing water and wastewater services by implementing some projects aiming at stakeholders' participation in irrigation water management in the Jordan Valley through establish the Water Users Associations and in the highland area by creating the Highland Water Forum (Haddadin *et al.*, 2006). Overview on the two projects will be discussed in the following sections.

1.4.3.1 The Water Users Associations in the Jordan Valley

The agricultural sector use of water makes up the majority share in water resources allocation; it uses about 63% of the country's fresh water resources, however its' contribution to the gross domestic product is comparatively little measured against its' water usage (MWI, 2007). Thus the irrigation water has been a major issue of concern for many years particularly in the Jordan Valley. Since the 1977, the JVA have achieved a great success in managing the bulk water, however, the retail irrigation water distribution faced a decline in its efficiency due to the maintenance cost and the deterioration of network in the late 1990's. As a result the farmers have lost faith in the ability of the JVA to operate the system efficiently and the situation become even more stressful due to the draught in recent years.

In addition the farmers become more distant from each other leading to a lack in cooperation among each other to deal with the problem of water resources availability in the Jordan Valley (Hayek, 2010). In order to reclaim the situation, the JVA in cooperation with German Agency for International Cooperation (GIZ) have decided in 2001 to implement a sustainable operational system to enhance the involvement of all concerned parties, basically the farmers and the JVA in managing the distribution of irrigation water in several districts in Jordan Valley through forming water users associations (WUA).

The main goals of the project were to enhance the transparency and efficiency in irrigation water use and distribution, decreased costs, reducing the number of JVA staff by involving the farmers in water distribution and maintenance in addition to building the trust among the farmers and between the farmers and the JVA (Haddadin *et al.*, 2006; Hayek, 2010).

The JVA and GIZ have adopted a stepwise approach to ensure the smooth implementation of the project. The first phase of the project have started in 2001 and completed in 2003, it concentrated at ice breaking and confidence building by creating trust between the two partners. The second phase was implemented between 2003 and 2006 by establishing the WUA into three progressive levels starting from water councils to water user committees up to water user cooperative which have a legal status under the Cooperative law. The third phase was conducted between 2006 and 2009 through task transfer of retail water distribution from JVA to the WUA.

The final phase of the project started from 2009 onwards aiming at sustaining the established WUA through preparing a bylaw for the WUA and developing an institutional framework for the WUA (Hayek, 2010). The main responsibilities of WUA in the Jordan Valley are: representing farmers before the JVA, managing the irrigation lines, locating and reporting system leakages, opening and closing water intakes along with controlling and reporting water theft (Haddadin *et al.*, 2006).

Despite the challenges and difficulties that the JVA and GIZ have faced in forming the WUA, the experience of these association is growing and resulted in a number of benefits and positive impacts. The illegal use of water as well as the amount of damage to the JVA system has dramatically declined, thus achieving fair water distribution and the level of confidence and trust between JVA and farmers has increased (Haddadin *et al.*, 2006; Hayek, 2010).

In addition the WUA and the JVA have established a form of partnership by which the WUA became recognized by JVA and the WUA that reached task transfer level signs a contract with the JVA by which they become responsible for the distribution of irrigation water (Hayek, 2010). But to ensure the sustainability of these associations in the long run, the final phase must be achieved through a bylaw to govern and regulate the relationship between the established WUA and the JVA and other stakeholders.

1.4.3.2 The Highland Water Forum

One aspect of the water scarcity problem is the growing competition over the distribution of water resources among the different sectors especially the industry and agriculture. Most of the groundwater basins in Jordan are exploited beyond their renewable capacities especially in the highland area used by irrigated agriculture leading to a yearly decline in groundwater levels and quality (MWI, 2004). Since groundwater aquifers are considered as a common pool resource that requires appropriate institutional arrangements as well as the participation of the stakeholder to ensure its sustainable management.

The MWI faces a lot of challenges in the highland such as the illegal acquisition of lands, the poor law enforcement and inequity if implementation and the law water tariffs that do not encourage users to conserve water. So in light of this situation, the MWI supported by the GIZ is trying to resolve the potential conflicts over the distribution of water resources and water management issues in a fair and peaceful manner, through a stakeholder dialogue namely the Highland Water Forum (Subah & Habjoka, 2011). The aim of the Highland Water Forum is to contribute to the elaboration of the MWI's groundwater Action Plan for sustainable groundwater management together with the stakeholders.

The Highland Water Forum consist of 60 stakeholders representing the main concerned stakeholders: farmers who were selected based on the use of Social Network Analysis, as well as stakeholders from governmental institutions, NGOs and academic and research institutions. The Forum is also supported by Secretariat, an Advisory Board and a Steering Committee Forum. The main components addressed by the forum and it's Action Plan are strengthening the governmental institution to better control any illegal abstract activities and to effectively enforce laws and regulations, on-farm water-use efficiency, offering alternative income opportunities for the farmers and community development including measures to raise awareness toward water efficient practices (Subah & Habjoka, 2011).

The donors will be involved in the forum through establishing of a fund for the forum to assure sufficient funding for the implementation of the Action Plan. The Highland Water Forum so far have conducted 7 consultations that yielded in a recommendation paper on groundwater control laws and regulations they have started as well the process of uniting

donors efforts and interest to implement the Action Plan. Implementing this approach through the Highland Water Forum will ensure having a more comprehensive approach and not individual projects, it will have a profound effect on improved decisions issued by the regulating authorities through the engagement and participation of the concerned stakeholders.

1.5 CASE STUDY OF SINGAPORE

1.5.1 The current water situation in Singapore

Singapore is an island and urban city state of a total land area of about 700 km² and the country is densely populated with a population of about 4.8 million. Singapore is considered as one of the most developed countries in Asia with a rapidly growing economy especially in industrial, business and financial services (Xie, 2006). Despite Singapore receiving an annual average rainfall of 2,400 mm, it is still considered as water scarce countries given the limited land area to capture and store the rainfall as well as the lack of any natural aquifers or groundwater (Tortajada, 2006).

Thus the government in Singapore is facing a constant pressure to provide water to support its growing economic and social development; it has also concerns to provide sufficient supply of water for its population which consumes around 1.4 million cubic meters (MCM)/day but the current domestic water resources meet almost 50% of the demand (Xie, 2006). This situation made the government of Singapore aware of the importance of a having sound water resources management need to develop adequate, long-term policies and strategies that would help it achieve the country's increasing development plans (Tortajada & Pobre, 2011; Xie, 2006).

Accordingly, during the 1980's and 1990's the government of Singapore have made huge efforts to set a sustainable water supply system as part of its water strategy as well as building a world class water and sewerage networks as well as treatment plants that covers the whole island. This has enabled Singapore to develop to a leading country in terms of water

management in space of just three decades and it is one of the very few countries that looks at its water supply in their totally (Tortajada, 2006; Xie, 2006).

To alleviate the water problem, Singapore has always been dependent on importing most of its water supply from neighbouring Malaysia under two long-term water agreements signed in 1961 and 1962 by which Singapore can transfer water for a price of less than 1 cent per 1,000 gallons until the years 2011 and 2061 respectively. In addition to importing water from Malaysia, Singapore also depends on water captured in local catchments around the city which covers about 50% of Singapore's total land area (shown in figure 3 below) but they can meet up only 60% of the daily needs. The main water consumers in Singapore are the domestic sector which consumes around 53% of the total water supply and the industrial and commercial sector that in turn consumes about 43% (Onn, 2005; Tortajada, 2006).

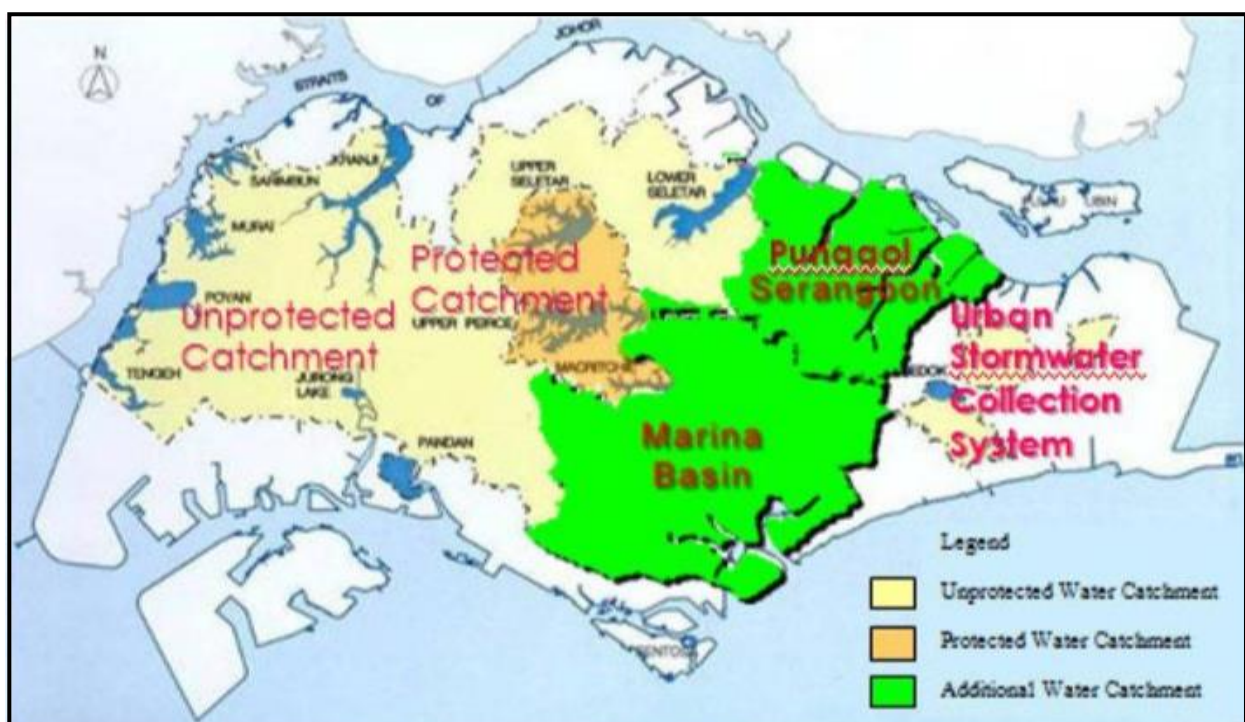


Figure (3): Water Catchment in Singapore

But in their quest for self-sufficiency, the government of Singapore have made serious attempts to increase its water availability and widen its sources of supply through the use of technology as well as improve both the quality and the management of water for the long run (Tortajada, 2006). They have adopted what is being called a “Four Taps Strategy” in which they will provide Singapore with sustainable and diverse supply of water from different sources: imported water from Malaysia, local catchments, recycled water or NEWater and desalinated water (Luan, 2010).

In this light, the water policy in Singapore have been moving toward reducing the country's dependence on the imported water from Malaysia and instead focusing on conserving and strengthening its own existing resources and capabilities by first of all trying to increase the size of the catchment areas to collect and store rainwater as well as reducing wastage and unaccounted for water (UFW). The authorities in Singapore namely the Public Utility Board (PUB) have managed to reduce the UFW from 9.5% in 1990 to about 4.5% in 2005 which is considered to be one of the lowest rates in the world (Onn, 2005; Tortajada, 2006).

In the past decade, the PUB has been working on developing new technologies to increase water supply from non-conventional resources; recycling and desalination. Hence the PUB decided to collect treat and reuse used water by first of all constructing two separate systems for drainage and sewerage to facilitate the reuse of used water on a large scale. This step was supported by the fact that Singapore is 100% sewered and unlike other South and Southeast Asian countries, it does not have any illegal connections to its water supply system (Tortajada, 2006).

As a part of the four water tap strategy, Singapore have adopted new technologies to produce water by focusing into the recycling used water, also known as NEWater, and treating its effluent properly instead of discharging them to the sea. The idea of NEWater was considered as early as the 1970s but due to high cost as well as the absence of reliable technology back then, the idea was abandoned but the idea of water reuse was reconsidered again in the 1990's especially with the rapid improvement in membrane technology (Khoo, 2009; Tortajada, 2006).

In 2000, the PUB and the Ministry of Environment have commissioned to construct a prototype plant to test the reliability of the membrane technology and to evaluate the quality of the reclaimed water carried out by leading water testing laboratories over a period of two years. The test results was regularly reviewed and audited by an independent international panel of expert who in 2002 have endorsed the safety of NEWater and the suitability of using it as a source of water for potable use. The expert confirmed that the quality of NEWater meets the water quality standards of the Environmental Protection Agency of the United States (USEPA) and the World Health Organisation (WHO). This has led to the production and the use of NEWater as an alternative source of water (Khoo, 2009; Tortajada, 2006). Since the quality of NEWater was found to be more pure than the potable water produced by the PUB, it made it ideal and suitable to be used for non-direct potable use in specific types of industrial manufacturing purposes such as semiconductors, water fabrication as well as in air-cooling for commercial buildings.

NEWater is considered as a cost-effective and economic option for these industries that require the use of high quality water and NEWater needs no additional treatment to improve its quality (Onn, 2005; Tortajada, 2006). While NEWater is safe to be drank on its own, the government of made the decision to pump a small amount of NEWater (less than 1% of the total raw water) into local reservoirs for indirect potable use with a plan to gradually increase the amount of NEWater pumped into the reservoirs to reach around 3.5% of Singapore's daily drinking water consumption in 2011 (Onn, 2005). In 2007, PUB has opened its fourth NEWater plant which together were able to meet about 15% of the country's demand and in 2011 their combined capacity were estimated to meet 30% of Singapore's demand (Khoo, 2009). This increase use of NEWater in industrial and commercial sectors will allow PUB to save more water to be used for domestic purposes which will contribute significantly in Singapore's water sustainability (Khoo, 2009; Tortajada, 2006).

In addition to policies targeted toward the expansion of water resources, the PUB is also adopting careful and comprehensive water demand management policies to go hand in hand with its policies toward the expansion of its water resources through their 3P approach which involves the community, business and civic groups. In terms of water tariffs for example, the government provides targeted help for lower-income families by which they receive higher rebates and social financial assistance from the government in hardship cases and difficult

economic times (Onn, 2005; Tortajada, 2006). If the PUB continued in implementing their current policies, by 2061 when Singapore's 1961 Water Agreement with Malaysia expires, Singapore can be totally self-sufficient in water if there is no new water agreement with Malaysia. Singapore has in the last decades alone made great efforts to implement an integrated and comprehensive water management policies and it will keep trying to adopt new ways to produce water with more advanced methods at cheaper cost (Khoo, 2009; Luan, 2010).

1.5.2 The water management in Singapore

The government of Singapore has given great consideration on the long-term water security for the country by developing a series of plans aimed toward increasing the country's water self-sufficiency through carefully thought and implemented water management strategies and practices. One of the main reasons for the ability of Singapore to achieve so much in terms of its water management is the development of a strong and holistic governance system which emphasis on both supply and demand water management policies as well as wastewater management, storm water management, effective institutional legislation and enforcement framework, physical infrastructure, water pricing, public education and research technology (Luan, 2010; Tortajada, 2006).

One of the key elements of water resource management in Singapore is to allocate all water related administrations under one umbrella. The entire water cycle in Singapore is managed by the PUB, a national water agency that oversee all water related functions and it was formed in 1963 as a statutory authority that took the responsibility of managing potable water as well electricity and gas from the then City Council. The Water Planning Unit was formed in the 1970s and the Water Master Plan was developed and in 2001, the PUB, under the PUB act, took over the responsibilities for sewerage treatment and sewerage system as well as drainage belonging to the government from the Ministry of Environment which gave the PUB a chance to develop Singapore's holistic policy towards water management that included the expansion of water sources, demand management, outsourcing to private sector and public education and awareness programs. The PUB was given the power to regulate the construction, maintenance and improvement of sewerage systems and to advise the

government on all issues related to collection and supply of water (Khoo, 2009; Luan, 2010; Tortajada, 2006).

In Singapore there is a good institutional framework where all relevant governmental agencies are clear regarding their respective role and responsibilities and this framework allow them to coordinate among each other to ensure an effective, integrated and successful water management with less conflict of interest between different agencies. Having PUB as the main governmental institution responsible for water issues, has wiped away any administrative barriers which exit in other countries. Under this institutional framework, the task of implementing the different water legislation is the responsibility of not just one agency. Water related legislations are being effectively implemented by a number of government agencies (Luan, 2010; Xie, 2006). One of the main problems affecting most utilities and in developing countries is the absence of autonomy which prevents achieving the desired levels of efficiency. This problem have been avoided in Singapore by giving PUB a high level of autonomy as well as political and public support which allowed PUB to perform their tasks efficiently (Tortajada, 2006).

PUB includes many major departments each with specific duties and responsibilities: the Water Supply department which is responsible for the production of public water and reused water, Water Reclamation department that handles the treatment and reclamation of water from municipal sewer system, the Catchments and Waterways department which deals with the planning, management and the maintenance of different water catchments, reservoirs and drainage systems in Singapore. The Private-Public-People Network (3PN) department which is mainly responsible for the involvement of public and private sectors in water infrastructure and management, the Policy and Planning department that handles the planning and development of water resources policy and pricing. The Best Sources department which is responsible for identifying new opportunities to outsource some of PUB's work to different private sector companies based on cost-effectiveness and finally the Technology and Water Quality department and it handles the planning, evaluation and testing of new technology and projects. This single agency management structure adopted by the PUB has ensured that the entire water cycle in Singapore is managed as a single system which enabled PUB to close its water loop (Luan, 2010; Xie, 2006).

Singapore is considered as an example when it comes to the overall water supply and wastewater management governance in terms of its performance, transparency and accountability. This came as a result of a strong political will, the efficiency of the management system as well as the efficiency of the staff that works in PUB, in addition to the overall social and legal environment in which the water system operates. The autonomy and other enabling environmental conditions given to PUB have allowed it to be financially viable and to perform their tasks efficiently. Singapore consistently ranks in the top 5% of all urban water utilities of the world in terms of performance regardless of the performance indicators being used to evaluate such as 100% of Singapore's population have access to drinking water and sanitation, 100% metering of the entire water supply and unaccounted for water of 4.5% of total water production in 2004. Such indicators show that Singapore's water management is one of the best in the world among developing and developed countries. They have managed to ensure an efficient use of the country's limited water resources as well as the production of new water resources through new technology and implementing various water conservation measures (Luan, 2010; Tortajada, 2006).

2. METHODOLOGY AND APPROACH

Despite the popularity of participation, there is little agreement about what it actually means in practice and the literature is full of inconsistencies (Thurston *et al.*, 2005). In fact, most of the literature comprises of a series of successful stories promoting a tool box attitude rather than a methodological approach to understand water management crisis. Currently experts are focusing on problem solving rather than on problem understanding. Their reports are descriptive of success and perspective with little casual analysis of the problem and problem definition. Abelson *et al.* (2003) noted an absence of precise evaluations available to those who are looking for generalized conclusions on public participation.

They call for the use of clearly defined and agreed upon criteria especially for effectiveness. Therefore, in order to conduct an evaluation research on public participation and build any generalized claims, it is important to establish consistency in theoretical framework that describes and specifies the techniques of public participation, the objectives pursued and the desired outcomes. A research based on such a framework can make the integration of findings more possible (Thurston *et al.*, 2005).

2.1 SUITABILITY OF USING QUALITATIVE APPROACH TO RESARCH

Given the absence of previous research that reveal quantitative data on the subject; a qualitative research design has been deemed appropriate. Hence, this study has used the Grounded Theory Methodology (GTM) to develop a theoretical framework for understanding public participation in the context of water management based on iterative data collection and analysis, which is an appropriate methodology to explore actors' perceptions and understanding of complex societal problem.

By using this approach, the researchers can widen the scope of study and examine more detailed aspects of the topic as well as the interaction between them (Ker Rault & Jeffrey, 2008). Using this approach will allow issues, which we might have not considered, to emerge from the data, which have not otherwise arisen by testing an already outlined hypothesis. This will help in making a better understanding of the research but not at the expense of flexibility and openness of using any type of data. It will also make a better understanding of the use of

multiple methods or appropriate techniques as needed, which will help in minimizing any influence of the researchers by allowing the principles to emerge from data themselves (Corbin & Strauss, 1990; Straus & Corbin, 1998).

However, grounded theory is not strictly limited to qualitative research since it is after all an approach to data gathering and analysis which encourages the research to have a high level of flexibility that involves an openness to use multiple methods and the use of appropriate techniques as needed. In another words, the grounded theory seeks to find rigorous, verifiable and explicit ways to draw conclusions (Knigge & Cope, 2006).

2.2 NATURE OF GROUNDED THEORY METHODOLOGY

The GTM is a qualitative research method. It was first presented by Glaser and Strauss in 1967 and is used to develop theories by analyzing systematically gathered data, where categories are developed and elaborated from interviews and participants' observations, inductively reaching conclusions from such data and building a general comprehensive description of the features under study (Corbin & Strauss, 1990; Moore, 1996). GTM has a number of distinctive features, including theoretical sampling and certain guidelines such as constant comparisons and the use of coding to organize the data aiming at identifying categories and patterns which will ensure conceptual development (Shannak & Aldhmour, 2009).

In GTM, important concepts emerge inductively during data analysis and the practice of coding; which is a way of evaluating and organizing the data aiming to understand the meaning in the texts and help identifying categories and patterns. It is applied by reading texts with specific questions in mind and using keywords to code passages as answers emerge. The data are categorized according to relevant similar characteristics in the coding process and at first; a relatively large number of categories are developed but through iteration these categories would be grouped into more abstract categories of conceptual relevance to the analysis and according to their relationship with each other.

In a way coding is a process of reduction and data analysis through the evaluation of the data and looking for consistencies and inconsistencies and identifying patterns (Knigge & Cope, 2006; Tuler & Webler, 1999). In this method, data collection, analysis and conceptualization generally take place simultaneously hence both the method and the theory are developed together (Glaser, 1978; Glaser and Strauss, 1967).

2.3 THE PROCESS OF GTM

GTM, as shown in Figure (3), has two basic phases in terms of data elicitation and analysis, open or inductive phase based on open questions through interviews of experts and it is consist of breaking down raw data into text units through coding according to relevant similar characteristics in the data. The coding exercise is followed by categorization using constant comparison. Then, the unitized data are organized into categories which, through iteration will be grouped into more abstract categories of conceptual relevance to the analysis and their relationship with each other. Categorization is based on “look-alike” characteristics. The second phase is a selective or theoretical phase where coding and sampling focus on the framework development.

The theoretical phase has been used to clarify the object of the investigation and therefore facilitate the understanding of the construction and interpretation of public participation as perceived by stakeholders. The advantage of using GTM is that it provides exact and explicit approach to data analysis. Analysis proceeds through overlapping stages of coding data, grouping initial concepts together into categories and outlining the properties and dimensions of these categories to simulate theory development. Various techniques such as memo writing and diagrams are useful additions to this process (Glaser and Strauss, 1967; Corbin and Strauss, 1990; Tuler and Webler, 1999; Knigge and Cope, 2006).

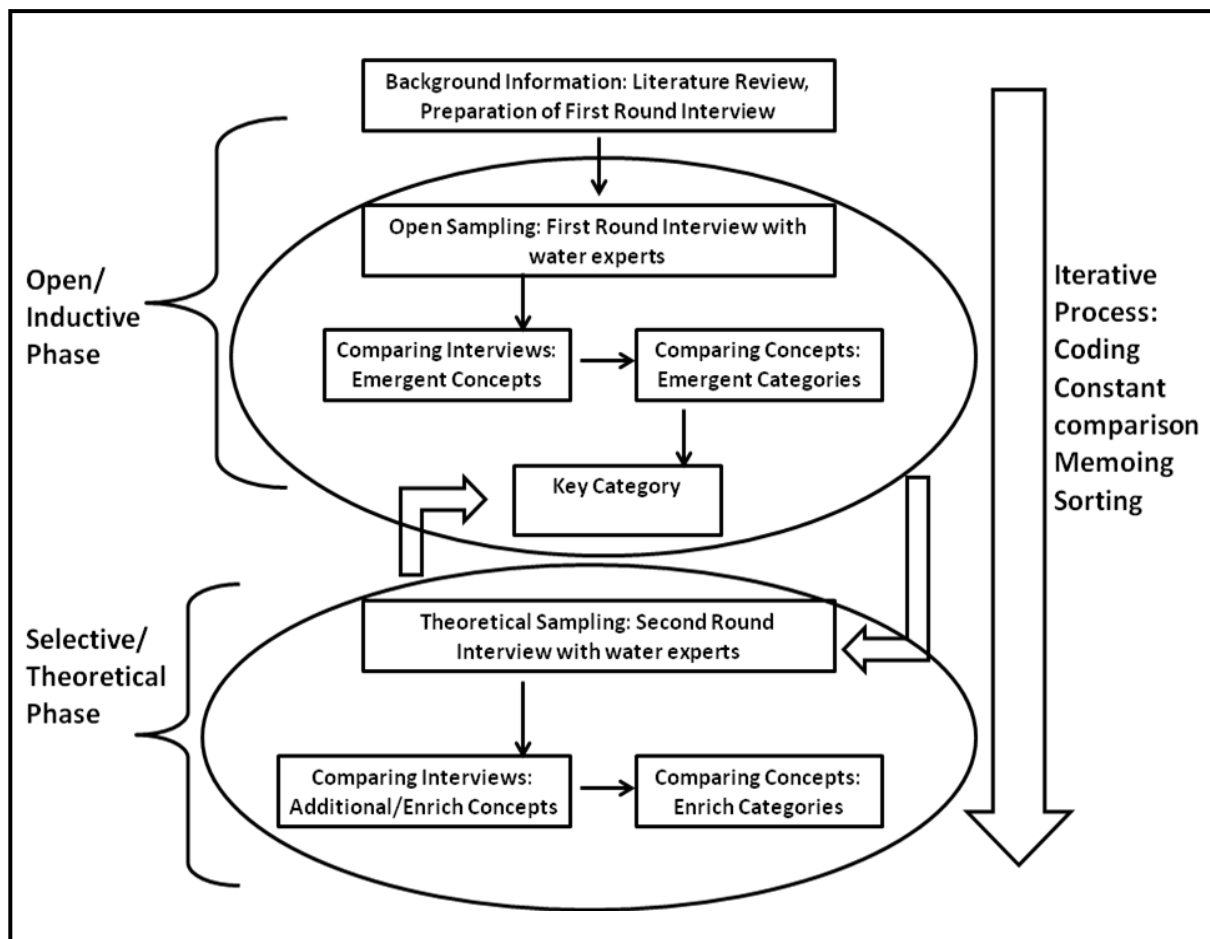


Figure (3): Process of Grounded Theory Methodology

The sampling in GTM starts by talking to informants who are most likely to provide us with early information. The aim of data sampling in grounded theory is to select participants who will help us in understanding the problem. The point is to choose a small number of cases that will result in elaborated data to construct the theory rather than use a random selection of large numbers of data, which will likely generate statistical information of an entire population (Creswell, 2003).

Analyzing the information provided by the selected participants will in turn help to identify explanatory concepts and guide us through further identification of samples and forms of data (Shannak & Aldhmour, 2009). This is an iterative process by which we keep collecting and analyzing data until data collection stops yielding any additional relevant insight into the research problem and all relationships between categories are validated.

2.4 APPLICATION OF THE GTM IN THE CASE STUDY OF JORDAN

2.4.1 First Phase of GTM: First Round of Interviews

In this study; the first phase started by conducting an individual face-to-face interviews with 14 key water experts in Jordan between August and September in 2010. The first-round interview included academics: two professors in the University of Jordan, senior officers in relevant authorities including two engineers working as units' directors in the MWI, senior officer in WAJ, two engineers working as units' directors in JVA in addition to three engineers working as head of their respective units in the Ministry of Agriculture (MOA). The interview also included experts working with different foreign development agencies; two experts working as project managers with the U.S. Agency for International Development (USAID), expert working as knowledge manager with the French Embassy as well as an engineer working as a head unit in private company that handles the water management.

The interviewees were selected based on their expertise and positions they hold in the water sector in Jordan which allows them to have insight into the water management issues in Jordan. These institutions and organizations are the main players in water management in Jordan, the governmental institutions taking the decisions related to water management and policies with consultation from international donning agencies that funds most of the water projects, so the experts selected for the interview are considered as representation for stakeholders working in key positions in water management.

The first round of interviews was conducted on a face-to-face basis by which the interviewees were asked to answer open end questions based on their experience on water sector. The aim of the first round interview was to get an initial description for the situation of public participation in Jordan as perceived by the interviewees; hence the interview covered three main themes starting with the meaning of public participation, the current participation practices and the actual public participation experiences.

All the interviews were audio taped, transcribed and analyzed by open coding according to the GTM. The process involved reviewing of transcripts and looking for the emergence of common themes over time. The collected data was broken down into distinct ideas and incidents. If an idea is repeated, it will be defined as a concept. After the open coding, the emergence concepts were grouped under distinct categories. To ensure the validity of the ideas and categories generated by the analysis, statement validity rules from Miles and Huberman (1994) were adopted in order to assess the relative value of information provided by the interviewees.

Such rules dictated that a statement is considered valid if it is mentioned by more than one informant or alternatively if mentioned by one informant and had not contradicted by others, if provided by an informant has been knowledgeable of and close to the reported event or if the idea is proven to be a hard fact as provided by an official document. This analysis has given us an initial explanation of the current situation. The use of GTM will help us in understanding the various aspects of public participation in water management according to different stakeholders and interaction.

Analyzing the information provided by the selected participants will in turn help to identify explanatory concepts and guide us through further identification of samples and forms of data (Shannak & Aldhmour, 2009). This is an iterative process by which we keep collecting and analyzing data until data collection stops yielding any additional relevant insight into the research problem and all relationships between categories are validated.

2.4.2 Second Phase of GTM: Second Round of Interviews

Based on the points, concepts and categories resulted from the first round of interviews; a second round of interviews was designed and conducted with the aim of further exploring the emergent categories and the concepts mentioned by the interviewees from the first round of interviews and further elaborate on the descriptive framework for the public participation practices in Jordan. The second round of interviews was conducted as a part of the second phase of GTM which was used to clarify and sharpen the objectives of the research. This

stage was directed by emerging concepts and involving more strategic selection of informants (Glaser and Strauss, 1967).

The second round of interviews was based on individual face-to-face interviews with 19 key water experts in Jordan between March and April 2011. The interviewees included same experts interviewed in the first round in addition to new experts including: academics; three professors in the University of Jordan, senior officers in relevant authorities including; a senior consultant and two engineers working as units' directors in the MWI, senior officer in WAJ, three engineers working as units' directors in JVA in addition to three engineers working as head of their respective units in the MOA.

The interview also included experts working with different foreign development agencies: one expert working as deputy chief program officer at Japan International Cooperation Agency (JICA), one experts working as project manager in the USAID, expert working as technical advisor with the French Embassy and three experts working as project managers in the GIZ. All the interviews were audio taped, transcribed and analyzed by open coding according to the GTM.

The process involved reviewing of transcripts and looking for the emergence of common themes over time. The collected data was broken down into distinct ideas and incidents. If an idea is repeated, it will be defined as a concept. After the open coding, the emergence concepts were either grouped under distinct categories or added to the previous categories emerged from the first round of interviews to enrich them after constant comparisons between the data until we reached saturation.

To ensure the validity of the ideas and categories generated by the analysis, statement validity rules from Miles and Huberman (1994) were also adopted. The analysis of the second round of interviews has given us an explanation of the current situation and helped in developing an interpretive framework. The use of GTM will help us understand the various aspects of the currently applied public participation in water management according to different stakeholders and interactions.

2.4.3 Second Phase of GTM: Interview on Real Projects Applying Public Participation

To test the descriptive framework on the field, an interview was prepared and conducted between March and April 2011 with 5 water experts working on two ongoing projects that apply public participation. The interviewees included experts working in governmental authorities responsible for the projects as well as experts working with the international funding agencies that provide the necessary fund for the projects, mainly the GIZ. The two projects are: the WUAs in the Jordan Valley and the Highland Water Forum. The interview covered several themes regarding the stages of each project have gone through and the public participation included in these projects.

2.5 APPLICATION OF GTM IN THE CASE STUDY OF SINGAPORE

2.5.1 First Phase of GTM: First Round of Interviews

For the basis of comparison, the first phase of GTM was also applied on the case study of Singapore by conducting the first round of interviews with 8 key water experts in Singapore during September in 2012. The first round interview included four senior officers working in different departments in the PUB namely: the technology department, C&W Marina Barrage, 3PN and Best Sourcing department. The interview also included academics: a Professor in the National University of Singapore as well as experts working in different research institutes: an expert working in Nanyang Environmental and Water Research institute (NEWRI) and an expert working in the Environmental and Water Technology Centre of Innovation (EWI-COI) and finally the interview included an expert working in a local NGO named the WaterWays Watch Society (WWS).

As in the case of Jordan, all the experts interviewed were selected based on the positions they hold in the water sector in Singapore in general that gives them insight into different water management issues in Singapore. All the interviews are working in the main institutions that play a role in water management in Singapore, the PUB which is the main governmental institution that is responsible for water management issues in Singapore and at the same time it works in coordination with the different university and research institutes as well as the

local NGOs. So in this sense the experts selected for the first round interviews are considered as representation for stakeholders working in key positions in water management.

In this case as well, the first round of interviews was conducted on a face-to-face basis by which the interviewees were asked open ended questions based on their expertise on water sector. The aim of the first round of interviews was to understand the concept of public participation in Singapore and the role of different stakeholders in water management in Singapore as seen by the interviewees. The interview has covered four main themes: the water management structure in Singapore, the meaning of public participation in water management context, the current participation practices applied in water management and the actual public participation experiences with the focus on the public acceptance of water reuse projects. All the interviews were audio taped, transcribed and analyzed by open coding according to the GTM, as explained previously in the case study of Jordan. The statement validity rules from Miles and Huberman (1994) were also adopted in the case of Singapore.

3. RESULTS AND DISCUSSION

3.1 CODING PROCESS FOR THE INTERVIEWS: EXAMPLE OF THE FIRST ROUND OF INTERVIEWS

The open coding process that was adopted for the interviews for both case studies was done by reviewing segments of the interview transcripts and labeling the common themes apparent in them into specific concepts as illustrated in Figure (4). Taking a certain section of one interview; *“the reasons are obvious, we have a problem with the issue of law enforcement...”* If we take a section from another interview; *“To achieve justice and efficiency and that is the most important reason...”* it becomes clear that the main theme or concept being discussed by both interviewees was related to the concept of “Management challenges”. In another instance, an interviewee said *“In order for your project to be accepted or for it to be applied on the real world you should establish a contact between you and the users or the public...”*

In this case, the main idea or concept related to the “Acceptance of decisions and projects”. The next level of analysis was marked by reviewing and drawing comparison or making contrast between the emergent concepts and grouping the close or similar ones into more general sub-categories. This included for example grouping the concepts of “Management challenges” with the concept of “Physical challenges” into a broader sub-category that we labeled as “Reasons for applying public participation”.

Similarly, the sub-category of “advantages of public participation” was the result of grouping similar concepts like “acceptance of decisions and projects” with “implementation”. The comparison process is iterative in GTM which will eventually leads to grouping of similar sub-categories into a more general “category” that holds similar sub-categories. So the grouping of the previously mentioned sub-categories has resulted in the emergence of the main category of “Justifications for applying public participation”. This constant comparison and the grouping process in the first phase have resulted in the emergence of nine major categories which are discussed in detail in the following sections.

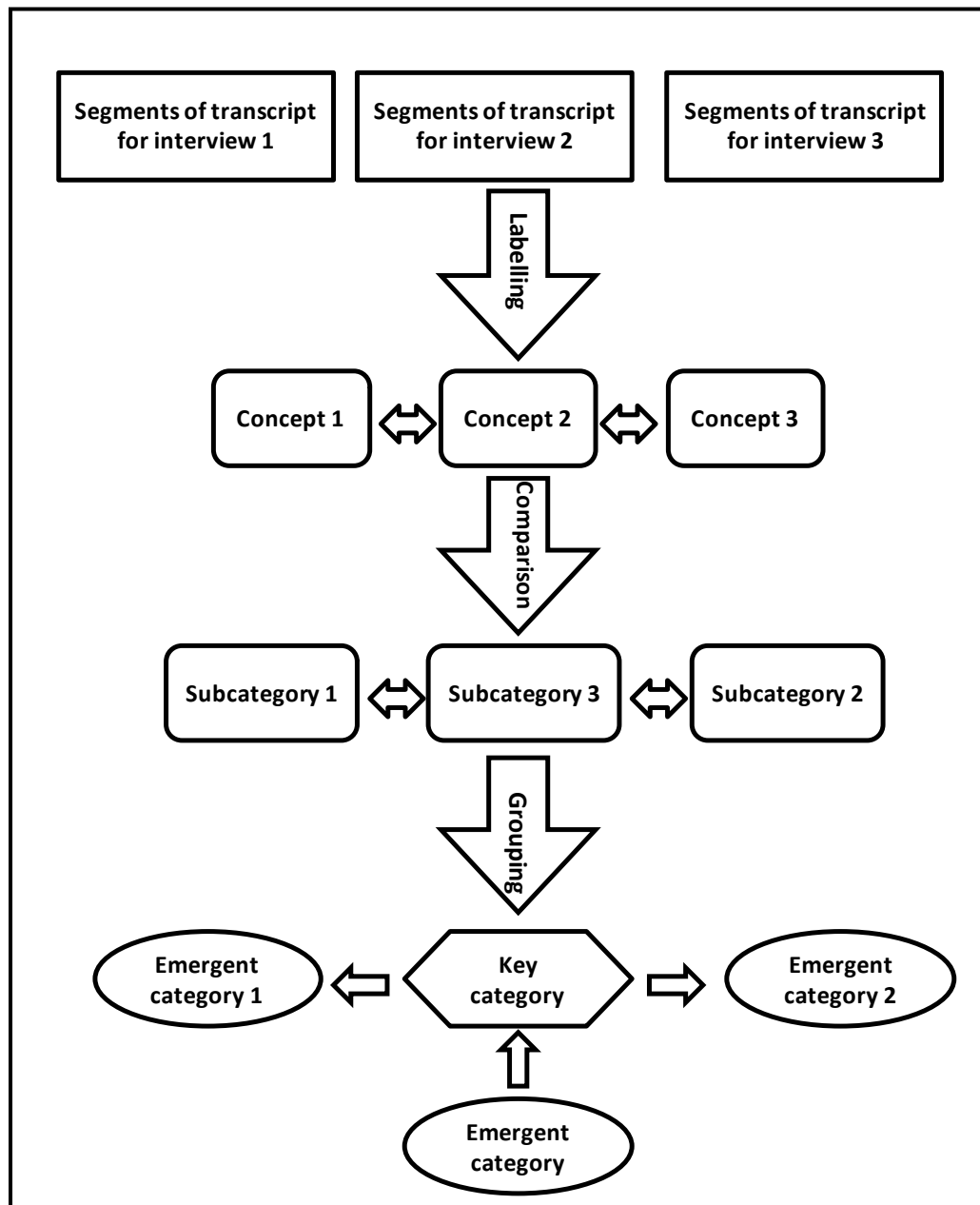


Figure (4): Logic Flow for the Coding Process of the First Round of Interviews

3.2 RESULTS FOR THE FIRST CASE OF JORDAN

3.2.1 Results of the First Round of Interviews

The information elicited from the first round of interviews has resulted in the emergence of nine main categories that describe the interviewees' general understanding and perceptions of public participation in Jordan. The interviewees were asked about their general understanding of public participation in water management context. Other questions covered other general aspects of public participation. The focus there was on the interviewees' knowledge, opinions, impressions and experiences of public participation as they have been working as experts in water management. After examining all the interviews and the emergent categories, the main observation that was detected throughout the analysis is the emergence of two distinct groups of interviewees.

The first one comprises of experts working in governmental institutions including the MWI, WAJ, JVA and MOA. This group has been labelled "officials" in this research. The second group has been labelled "non-officials" which included academics and experts working in universities and with funding agencies; namely the University of Jordan, USAID and the GIZ. The analysis showed that these two groups have different, and sometimes, opposite opinions of and responses to the understanding of public participation and its implementation in Jordan. The analysis and the discussion for the main emergent categories were structured around the difference in the opinions of those two groups.

3.2.1.1 Meaning or Definitions of Public Participation

The starting point towards understanding the public participation in Jordan is the "meaning" or "definition" of public participation. The interviewees were asked to give their own definitions and perceptions of public participation in the water management context. In this category, the difference in opinions of the two groups is clearly visible and the focus within the same group of interviewees is similar. The "non-officials" define public participation basically as "involvement in planning", "involvement in decision-making" or "involvement

in management” so the emphasis here is on the “involvement” of the public or the stakeholders in the process.

However, most of the “officials” see public participation as a form of “use water efficiently”, helping the public sector by showing “responsibility”, and “conservation” while for some it is the “privatization” of the management of the water sector. The focus here is clearly on the users’ end of the process and in a sense this group believes the public should be concerned with handling and managing water at their level rather than being involved in the decision making process. The “non-officials”, on the other hand, believe the current management of water sector is not enough and that it requires more involvement from the public.

3.2.1.2 Objectives of Public Participation

One of the important aspects of public participation related to the objectives of applying the approach. However, our analysis of this category revealed a concept that was mentioned in one way or another by almost all interviewees, that is the issue of “water scarcity” or the “water shortage problem”. Therefore, the desire to overcome this problem has turned out to be a main drive or objective for applying public participation in water projects especially when it comes to the “officials” group whose main objective for public participation is to “save water”, “increase efficiency” and “reduce water losses”. We labeled these sets of objectives “physical objectives”.

Even though the “non-officials” group showed concern about the “water shortage problem” and had a desire to save water through public participation, they still believe that applying public participation will help in the “implementation” of the projects and the “implementation” of the decisions made by decision makers. We labeled these objectives “practical objectives”. The analysis shows that this category is influencing the way the interviewees understand the “meaning of public participation”. For instance, the “non-officials” believe in the “involvement” of stakeholders in the process because they want to achieve the “practical objectives” for the approach. On the other hand, the “officials” are only concerned with the “physical objectives” in terms of saving water. As a result, it makes sense

for them to understand the “meaning of public participation” as “efficient use” of water and showing “responsibility”.

3.2.1.3 Affected Stakeholders

The types of “stakeholders” that the interviewees believe should be targeted in public participation are mostly classified into different levels starting from the “decision makers” to “professionals”, “donors”, “NGOs” and the “end users”. Both groups have agreed on this general classification, with more focus on “farmers” as end users for the “officials”. This focus is more apparent when we look at the main participation experiences in Jordan mostly related to farmers.

Despite this general agreement on the main classification, there is still some difference on the level of importance given to each group of stakeholders. The “officials” focus on involving the “decision makers”, the “donors” then the “end users”. While the “non-officials” believe in a different sequence of focus, which is the “professionals”, the “policy makers” then the “users”. So their focus affected by how they understand the “meaning of public participation” though this effect is restricted to the order for involving the “stakeholders” rather than their general classification.

3.2.1.4 Justification for Applying Public Participation

The “justification for applying public participation”, according to the interviewees, can be divided into two aspects: the “reasons for applying public participation” and the “advantages of applying public participation”. The reasons for applying public participation in water management are reflected in the nature of the challenges each group believe we can overcome by applying public participation. The difference is again apparent between the two groups of interviewees in respect of the “reasons for public participation”.

For the “officials” it is all related to the “water scarcity” problem and to the “physical losses”. So all they want out of the applying this approach is for it to be one of the ways to overcome what is called in this research the “physical challenges” with the hope that involving the

public in the process can help in raising the “awareness” of the water shortage problem, which will eventually help in making users feel responsible towards using water. “Non-officials”, on the other hand, believe that public participation should be applied to overcome the “management” challenges, because involving the public in decision making creates a level of trust and understanding that will help in “enforcing the law” and achieving “justice” and “efficiency” in management.

Therefore, we can clearly see that the “officials” focus here is more on the current general water shortage problem challenges while the “non-officials” believe that the focus should be specifically on the management level. Both groups share the belief that applying public participation in water management in general has advantages, with no major differences between the two groups. For the “non-officials” group we feel the focus was again on the “practical” issue in terms of “acceptance”, “success” and “implementation” of both decisions and projects and participation will also help in “reducing the gap” between the government and the public.

The “officials”, their focus has been placed more on the “management side” in terms of improving the management and creating a sense of “cooperation” between the public and private sector. It seems that the “justifications for applying public participation” is affecting the “meaning of public participation” given that the focus of the “officials” has been put on the “physical challenges”. They tend to understand public participation as “efficient use” and “responsibility”. The same can be said for the “non-officials” because as they focus on the “management challenges” they understand public participation as the “involvement” of stakeholders in the process.

3.2.1.5 Concerns about Applying Public Participation

Even though all the interviewees were excited generally about the participatory approach in general, they also expressed some concerns over applying this approach to water management. The “officials” showed concerns, in the first place over the implementation of the approach to begin with since they believe that the employees working in the governmental institutes are still not convinced of the approach. This concern, which creates

an obstacle when it comes to applying the approach, is perhaps because they feel that involving others will endanger their jobs. They were also concerned about the effectiveness of applying public participation in sectors other than agriculture because of the nature and the difference in water requirements for each sector.

Interestingly, however, the “officials” still consider public participation with the mind set of reducing water consumption and conserving water quantities so we feel that again their understanding of the “meaning of public participation” has affected the concerns they have shown about applying it in terms of doubting the effectiveness of this approach in other sectors. On the other hand the concerns of the “non-officials” group are more related to the nature of the applied participation as most of them believe what is being applied now is not “real participation” since it is usually applied to meet the “pre-requisites” of the donors and funding agencies in order to get the necessary funding for the respective project in addition to the “complicated” nature of the approach even when it is applied.

3.2.1.6 Type of Public Participation “Desired” vs. “Applied”

When it comes to the type of public participation, we noticed that the interviewees envisaged two different types of participation: one that they “desire” or think should be applied and another that is actually “applied” in water projects. The “non-officials” see that if participation is to be applied, it should be in the form of a “direct involvement” and that it should also be “shared” and “informed”. It is clear here that this “desired” type is influenced by their understanding of the “meaning of public participation”. On the other hand, because of their own understanding of public participation, the “officials” feel that participation should be “indirect” by using water saving tools and through the rational use of water.

Some of them further thought that it is better to apply such participation on a small scale. When it comes to the actual “applied” public participation both groups agree that what is applied is the “indirect” type of participation taking the form of holding seminars and workshops in addition of what is being applied as part of Environmental Impact Assessment (EIA) studies. So what the “officials” desire is what is actually being implemented while for the “non-officials” the applied participation does not extend to decision making process.

3.2.1.7 Characterization of Current Participation Practices

Coming to the practical side of implementing the approach in water projects and examining the responses we found that each group had different perceptions regarding the currently applied participation practices. For the “non-officials” public participation is not necessarily applied in all water projects and if it is applied it will be partially implemented usually just as a part of the EIA studies and does not extend to the decision making stage. What they consider as participation would moreover be usually implemented by either NGOs or foreign agencies. This observation seems to be influenced by the way this group understands the “meaning of public participation” and by their “desired” type of participation.

Conversely, the “officials” see that participation is being applied in most projects and that it is organized through local associations involving stakeholders in all stages of the project through participating in seminars and workshops. They also thought that the implementation of public participation has actually improved the level of water management. This view could also be explained when we look at the way they understand the “meaning of public participation” and the type of participation they “desire” to implement.

Accordingly, we can pick up some general “characteristics” of the currently applied public participation according to each group. For the “non-officials”, participation is mostly done “upon request” from the donors and funding agencies. This trend encourages this approach and gives preference to funding projects incorporating the approach making the strategy of each donor also affect the implementation of public participation. Therefore the reason for including these practices in the projects is to “get funds”. They also believe that participation is, most of the time, implemented only as a part of the EIA studies required for every project by law otherwise the project will not be allowed, which makes it look like a “compulsory” participation. According to the “officials”, each project has its own mechanism of implementing public participation.

However, when they decide to apply public participation, they only involve official institutions, donors and experts and such participation would be organized within cooperatives so it would be easier to control. At the same time, they said that the main obstacle facing the wider implementation of participation is the absence of strong or powerful

associations in Jordan to take up such responsibility. We can see that both groups agree that the currently applied participation practices are more of the indirect type; mostly focus on the management side and do not extend to decision making. They also show that the current participation is somehow subjective and depends on what the project is and who implements it.

3.2.1.8 Initiation of Public Participation

The two groups have varied in answering the question: How is public participation being initiated in water projects. For the “non-officials” the decision of applying public participation to water projects and hence the “initiation” of it is in the hands of the “official” side represented by the MWI, mainly because of its central planning management role and the power and authority that it has on the water sector and on what is to be implemented in general. Usually, participation is initiated either through the replication of other successful experiences or through the use of the media to encourage participation, influenced in some way by some foreign agencies. So, this group sees the whole process as being in the hands of the “official” side which is basically attributed to the nature of the decision making process especially regarding water issues in Jordan.

This point has been indicated several times through the interviews shedding light on such issues as central planning, which gives the official side the authority and power over water related decisions. The “officials” group seems to share the same view in terms of initiating and taking the decision to apply public participation depending on the nature of the project. What has been observed so far is that what both groups think is being applied in terms of public participation is in the way that the “officials” understand the concept since they are controlling the whole process from the outset.

3.2.1.9 Real Projects Applying Public Participation/General Evaluation

As for the actual water projects that currently apply public participation; the “non-officials” see that the projects that apply public participation are mostly directed towards the agricultural sector and are applied in some mega projects as a part of the EIA studies. The

“officials” also agree that most of the projects applying public participation are related to the agricultural sector and they believe that these experiences have been successful so far because of the involvement of concerned parties.

However, the “non-officials” showed some doubts over the participation practices implemented in those projects because they think that those practices though looking strong and successful are not real participation practices and would be applied just for cosmetic purposes. They feel that this is because “officials” or policy makers still do not believe in the approach and think that they are far experienced and knowledgeable than others so there would be no need to really involve anyone else in the process.

3.2.1.10 The Connection between All Categories: The Difference between the “Officials” and “Non-Officials”

As shown by the results above, a key point observed in the interviews is the presence of two distinct groups of interviewees: the “non-officials” and the “officials”. They showed different views regarding the general aspects of public participation. Overall, it is clear that the category of “meaning of public participation” is the key to understand the current situation. Such an understanding has directly or indirectly affected the other aspects of public participation. Figure (5) below illustrates the flow of interaction between them. So what we have here is the “involvement in planning, decision making and management” according to the “non-officials” and the “efficient use” and “responsibility” for the “officials”. This understanding is influenced by the “objectives of public participation” and the desire of each group to achieve these objectives: “practical objectives” for the “non-officials” and “physical objectives” for the “officials”.

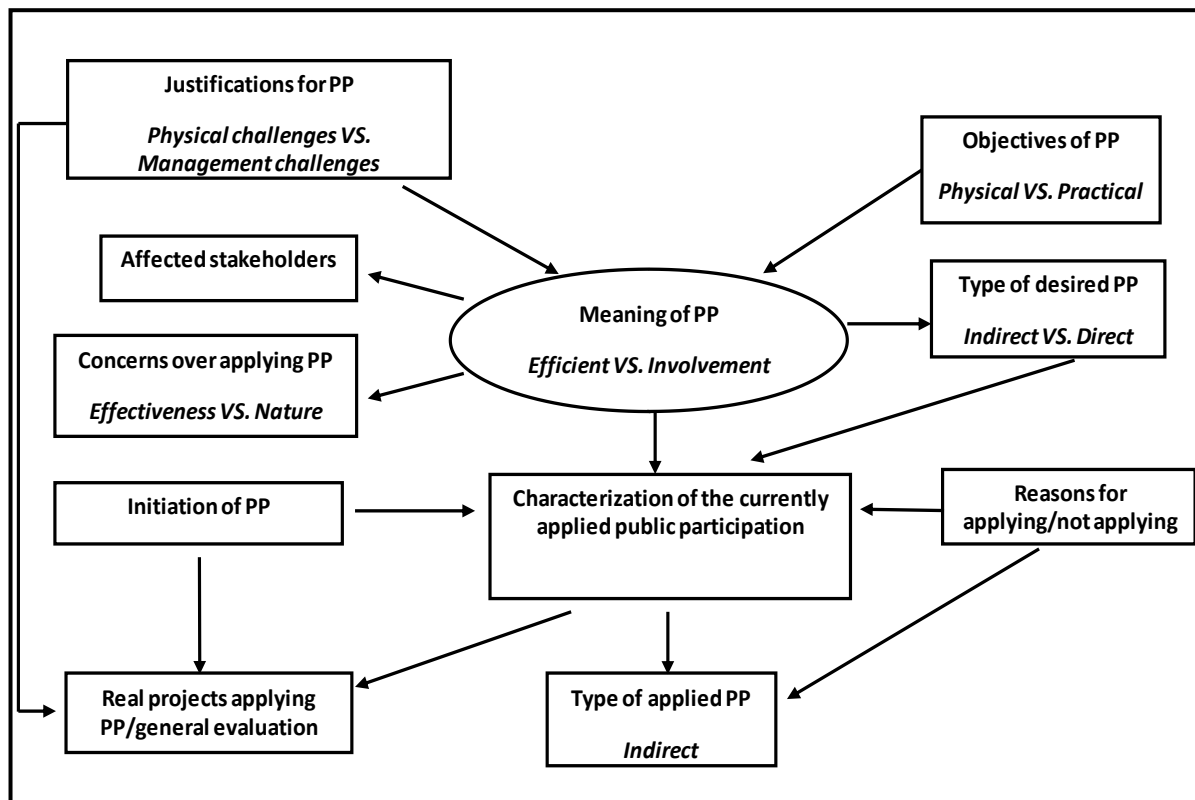


Figure (5): Structure of Public Participation as Perceived by Interviewees

Another main category that is effecting the “meaning of public participation” is the “justifications for applying public participation”, which for the “non-officials” is all about overcoming the “management challenges” and achieving “practical” in terms of “acceptance” and “implementation” of decisions and projects, while for the “officials” it is about overcoming “physical challenges” with the advantages focusing on the “management side”. Their respective understandings of the “meaning of public participation” in turn is affecting their “concerns over applying public participation” in which the “officials” doubt the effectiveness of the approach in other sectors and the “non-officials” showed concerns over the “nature of applied participation”.

Both groups also have different ideas about their “desired type of participation”. The “officials” prefer “indirect” participation while the “non-officials” preferred the “direct involvement”. This is clearly affected by each group’s understanding of the “meaning of

public participation” but when it comes to the “applied type of participation”, both groups agreed that what is being currently applied is the “indirect type” of participation.

3.2.2 Results of the Second Round of Interview

To understand the concept of public participation in water management applied to Jordan, the first phase of GTM was carried out through conducting the first round of interviews with several key water experts working in Jordan. The information elicited from the first round of interviews, as described previously, resulted in the emergence of nine categories that describe the interviewees’ general understanding and perception of public participation in Jordan. The analysis of this interview resulted in the emergence of two groups of interviewees, “officials” meaning experts working in governmental institutions, and “non-officials”, including academics and experts working with funding agencies.

The analysis also showed that these two groups have different perceptions when it comes to their understanding of public participation in Jordan. Given this difference among the key players who influence the way water is managed in Jordan, which will in turn affect the understanding and hence the implementation of public participation in water management, we considered it important to further explore these differences and their extent regarding the implementation of public participation.

Based on the categories resulted from the analysis of the first round of interviews, a second round of interviews was prepared and conducted as a part of the second phase of GTM aiming at further exploring the differences among the key players and what is the extent of their possible effect regarding the implementation of public participation. The interviewees were asked to give their knowledge, opinions and impressions based on their experience working as experts in water management.

This second round of interviews has two main focus themes; the first one was the interviewees’ perception of public participation in water management; the interviewees were asked several questions related to definition of public participation as well as questions focusing on the specific aspects of the approach including the type of public participation to

apply and objectives of public participation. The second theme of the interview focused on the role of different organizations in water management in Jordan in general and in the implementation of public participation in particular, the questions asked in this theme was related to describing the role of different organizations including the level, the extent and the way of their involvement.

The difference in opinions of the two previously recognized groups of interviewees was also observed in the second of round interviews. The discussion of the results of the second round of interviews in the following sections will focus on the differences between these two groups in connection with the previously emergent categories, leading to the finalization of a general framework explaining the current of public participation in Jordan.

3.2.2.1 Perception of Public Participation: the Currently Applied Public Participation

One of the main findings of the first round of interviews was the emergence of the category “meaning of public participation” where the two groups of interviews had expressed different understanding for public participation as a concept. Thus to further understand the situation of public participation in Jordan, the interviewees were asked to give their “perception” of the “currently applied public participation”. They were asked to choose from a list of seven definitions of public participation the one definition that they believed describes and best represents the “currently applied public participation” in Jordan.

The list was based on the ladder of citizen participation with eight types of participation arranged in a ladder pattern, each rung corresponding to the extent of a citizen’s power expressed in three main levels: “nonparticipation”, “tokenism” and “citizen power” (Arnstein, 1969). When examining the answers from the interviewees, a difference in the opinions of the two groups was clearly visible and the focus within the same group of interviewees was similar.

The “non-officials” thought that the “currently applied public participation” in Jordan could be described through the first two levels of the ladder of citizen participation. It starts from the “nonparticipation” level, namely it is an exercise involving the public that is organized by

authorities to either gain support or for people to state their concerns with no intention of the authorities to address them. The next level is “tokenism”, which includes providing people with information about current or future projects and using surveys to gather information from the people. The “non-officials” consider the highest level of participation in Jordan to still be at the level of “tokenism”, meaning that the public are allowed to give advice to the authorities and even propose solutions but have no implementation power.

On the other hand, the “officials” described the “currently applied public participation” as a mix of all the options presented in the interview meaning that the participation varies from the lowest level of “non-participation” to the highest level on the ladder of “citizen power” by which the authorities share the planning and decision-making with the public and that plans are executed through a planning committee, or even reaching the very top rung, that people have a certain degree of power in decision-making in certain programs and that they are in full charge of policy and some aspects of management and the mentioned the two main projects in Jordan that include public participation as an example of the extent of public involvement in water management in Jordan.

It seems that the “non-officials” see that so far, the participation in Jordan could be described as being in the early stages where the public have any implementation power, while the view of the “officials” is mainly based on two projects involving public participation, which they are trying to imply, is the general situation. So if we compare the “definition” of public participation that the interviewees gave in the first round of interviews with their “perception of the currently applied public participation”, we observed some differences between these two concepts. The “non-officials” defined participation as full “involvement” in the planning, decision taking and management, but they see that the “currently applied participation” has yet to meet this definition.

While the “officials” defined public participation as about achieving the “efficient” use of water, they thought that the “currently applied public participation” in Jordan could reach the highest possible level. This difference could be explained by the purpose of “citizen power” according to each group; for the “officials” it is about achieving “efficient” water use and for the “non-officials” the purpose of “citizen power” is full “involvement” in the decision-making process.

3.2.2.2 Role of Donors and Local Non-Governmental Organizations (NGOs) in Applying Public Participation

One observation made from the first round of interviews was mentioned specifically by the “non-officials” group where they described current public participation in Jordan as being implemented “upon request” from donors and funding agencies, and they also pointed out that as an alternative the local NGOs could be involved in the participation process as a form of representation for the stakeholders in water management. Thus, in the second round of interviews we tried to have more focus on this issue by exploring the interviewees’ perception regarding the current role of both the donors and local NGOs in public participation and the extent of their influence over the process. The starting point was asking the interviewees to describe the role that both the donors and local NGOs generally play in water management as they see it.

When describing the role of donors, both groups thought that in general the donors play a major role in the water sector, especially in providing “financial support” and funding the various projects the government wants to implement in the water sector because of the limitation of local finances. The “officials” insisted that the donors have no influence over the way water is managed in Jordan, they see that the donors have a very “positive role” but it is just limited to providing financial support, experts and ensuring the transfer of knowledge and technology.

However, the “non-officials” thought that the role of donors in the water management in Jordan extends to proposing projects and sometimes even helping the relevant authorities to “set the priorities” for water projects. On the other hand, both groups thought that the local NGOs play a “very limited” role in water management in Jordan. The “officials” described them as being “followers” of the donors, and whatever little role they have is usually initiated by donors in the projects they fund, and it is mostly related to raising the public awareness of water issues and the effectiveness of their role basically depends on their leader.

The interviewees thought that the reason for the local NGOs playing such a “limited” role is basically their limited finances, which prevents them from having a larger role in water management. But the interviewees believed that the local NGOs have a potential to play

bigger role in water management since they are closer to local communities as well as the flexibility they have in their rules which can allow them to form effective partnerships with the authorities and local communities. When it comes to the implementation of public participation, both groups thought that most donors encourage the implementation of the approach in water projects, but they expressed different views on the extent of the donors' role.

The “officials” thought that this encouragement as being done in coordination with the government because they are interested in Jordan “implementing a participatory approach”. In contrast, the “non-officials” see donors as being “better” than the relevant authorities at implementing this approach and they usually include public participation as a “precondition” of funding for the project. As for the role of local NGOs in implementing public participation, both groups described their role as being “limited” and still in its “infancy”.

Again the “officials” believed that local NGOs do not initiate participation due to the lack of their finances, but whatever role they have in implementing public participation is usually in cooperation with the government and they might probably implement public participation in some aspects of projects “if they are asked to”. On the other hand, the “non-officials” described local NGOs as being like “subcontractors” for donors, carrying out some of the project activities. They considered that it is hard for these organizations to have a larger role because of the absence of strong local NGOs and the lack of their local capabilities and if they ever to achieve their potential they will require financial support.

Currently in Jordan there are two main projects that represent an example of applying public participation in water management, the High Land Water Forum and the WUA, by which both of these projects have been initiated and encouraged by the donors and have been implemented with the help of the relevant authorities. Further details on the role of donors and local NGOs in water management and their approach to public participation is given in the following section.

3.2.2.3 Level of Involvement: Involvement in Decision-Making Process

So to what extent donors and local NGOs are actually involved in water management in Jordan? The “non-officials” generally believed that donors are usually involved at all levels of the water management structure reaching all the way up to the top level of decision makers and top management. To demonstrate the seriousness of their proposal, the donors will usually contact the top management directly and after the initial agreement they will move down the management structure from the relevant ministries down to the grass-roots, although the specific procedures depend on the policy of each funding agency. On the other hand the “non-official” believed that the local NGO are not usually involved with the decision-making level of the water management structure instead their involvement would be at the lowest levels of the structure, namely the community or grass-roots level.

While the “officials” stated that in order for the donors to get involved in water management, they have to go through the clearly established official channels which starts at the decision-making level then move down the management structure accordingly. As for the local NGOs, the “officials” believed that their involvement would be at the lowest level basically in implementation level and technical matters, since they are only the receivers of funding therefore they are not involved in decision-making process for the projects. However, when the interviewees were asked about the level of donor involvement in the decision-making process related to water projects issues, the two groups expressed different opinions.

The “non-officials” thought that the donors have a major and direct influence over the decision-making process regarding water projects; which they thought that it is exercised through the “preconditions” that donors usually place on the funds they provide for water projects. They explained that the donors try to exert some pressure on the relevant authorities and influence decisions related to water projects. But at the same time the “non-officials” expressed that placing such “preconditions” as not a bad thing necessarily; they saw it as a way for the donors to ensure that the funds are spent appropriately.

On the other hand, the “officials” believed that the donors have rather an indirect influence on decision-making process regarding water projects they can give advice and suggestions and it would be up to the relevant authorities to make the decisions. The role of donors, according

to the “officials”, is simply to provide the funds and the relevant authorities would set priorities and devices strategies. At the same time, the “non-officials” did not believe that the local NGOs have the same involvement or influence on the decision-making process as the donors because of their limited finances and range of activities that will not even allow them to establish contact with the top management level. Although the “officials” had the same view that local NGOs do not have the same influence on decisions related to water projects, they thought that these organizations to have some indirect influence on decisions by giving their opinions and recommendations at the managerial and technical levels, mainly through EIA studies.

What we observed here, is that both groups generally see that donors play a major role in water management in Jordan in general and in applying public participation in particular. However, they had different view on the extent of their role and the influence they have on the decision-making process regarding water projects. The “non-officials” see that donors have a direct influence on decisions through the “preconditions” they impose on the funds they provide. In contrast, the “officials” downplay their influence, saying that donors only provide the funds. It also seems that local NGOs do not have a major role in water management in Jordan and in implementing public participation according to both the “officials” and “non-officials” because these organizations are weak and lack finances.

3.2.2.4 Involvement of Donors and Local NGOs in Water Projects: Planning, Implementation and Follow-Up

To obtain a full picture of the role of donors and local NGOs in water projects, the interviewees were asked about the involvement of these two types of organization in the different stages of water projects, namely the planning, implementation and follow-up. Starting with the planning stage, both the “officials” and “non-officials” believed that donors are usually heavily involved in the planning stage of projects from the very beginning in cooperation with their governmental counterparts. However, the same cannot be said for the involvement of local NGOs in the planning stage; according to “non-officials”, they do not have any role whatsoever in this stage, while the “officials” believe that even though local NGOs do not have a role in the early stage of planning they might be involved in the later

stage as one of the stakeholders, but such a role would mainly be in a form of attending the meetings conducted as a part of the EIA.

Regarding the role of donors in the implementation stage of projects, the “officials” thought that the implementation of projects would be mainly carried out by the relevant authorities and the role of the donors in this stage is mainly would be mainly in “consultation”, “monitoring” and “following up” through progress reports to make sure that the project is being implemented according to plan since they are the ones who provide the funds for the projects. The “non-officials” generally shared the same view; although they pointed out that in some cases the donors would step in and implement some aspects of the projects because of the lack of resources on the counterpart side that could delay the progress of the project. The two groups of interviewees have different views regarding the role of local NGOs in the implementation stage.

The “non-officials” thought that local NGOs have a slightly more important role in the implementation stage since they might be “subcontracted” by donors to implement some aspects of the project depending on the project. However, generally this group believed that local NGOs have the potential to be more involved in this stage since they can act as a link between donors and the local community. On the other hand, the “officials” thought that the role of local NGOs in the implementation stage is still limited in its nature unless the project is being implemented in their area; but some officials pointed out that the implementation is better left to the government side because they are “specialists”.

Regarding the follow-up stage of projects, both groups expressed mixed opinions on the role of donors and local NGOs in this stage. The “officials” thought that the extent of the donor’s involvement in this stage depends on their respective policy, but generally most donors have a role in this stage in the form of evaluation and conducting impact assessment reports after the project ends as a measure of ensuring that the objectives of the project were achieved. In contrast, the “non-officials” believed that donors generally do not follow-up the projects they fund and their role would mostly ends when the project and subsequently the funding ends.

It seems that the “non-officials”, unlike the “officials”, do not see the evaluation and the assessment reports collected after the end of the project by donors as being sufficient when it

comes to ensuring the sustainability of projects in the future which they believe to be the reason for the failure of some projects. Regarding the role of local NGOs in this stage, both groups agreed that they do not have a role in following-up projects unless they have been involved in them from the beginning.

3.2.2.5 Type of Public Participation the Donors and Local NGOs in Water Management

The interviewees were asked then to express their views on the type of public participation that is currently being implemented by the donors in the water projects they usually fund. In this regard, both groups thought that it basically depend on the objective of the project itself as well as the group of stakeholders they are targeting in the project, but at the most time they pointed out that mostly the donors would resolve to the use of workgroups and workshops as a means of participation. The “non-officials” however, thought that in some cases the donors would transfer their successful experiences in other countries and try to apply them in Jordan without modification to adapt to the specific conditions of Jordan.

On the other hand, both groups believed that the type of public participation the local NGOs use would be basically to implement whatever they are asked to by whoever is funding the project which would be either the government or one of the donors. Again it is apparent here that local NGOs are simply not strong enough to implement any type of participation in water management without the support of either the government or foreign funding agencies.

3.2.2.6 Interaction between the Emergent Categories from the Second Round of Interviews

The analysis of the second round of interviews resulted in the emergence of the new categories, described earlier, in addition to the ones emergent from the first round of interviews. These categories were mainly related to the role of donors and local NGOs in water management in Jordan in general and their role in implementing public participation in particular. Both groups thought that local NGOs either have no power or very limited influence and involvement whether it was in water management or public participation

because of the absence of “strong” or “powerful” local NGOs that can handle or share some of the responsibilities of water management.

On the other hand, both believed that donors generally play a major role in water management and implementing public participation in Jordan, but they expressed different opinions on the extent of their role and influence over the management structure and decision-making process regarding water projects. The “officials” believed that donors just provide the funds for projects and sometimes give “consultations” and technical support, but the “non-officials” feel that donors have more influence over decisions related to water projects basically through the imposition of “preconditions” before providing the funds for projects.

3.2.3 Framework for Public Participation in Water Management: Connection with Categories from the First Round of Interviews

The aim of conducting the second round of interviews was to get more insight on the initial understanding of public participation applied in water management context in Jordan which has been obtained from the results of the first round of interviews as emergent categories. Since the second round of interviews, as shown above, have resulted in the emergence of some additional categories as well as providing more details on the key categories resulted from the first round of interviews and clarifying the relationships between the categories. Despite having the interviews and expressing views on some of the categories, but they have generally agreed on the flow of interaction among these categories.

The relationship and interaction between all the emergent categories is illustrated in the interpretive framework in Figure (6). The previous results showed that the “meaning of public participation” is the key to understanding the current situation since it has an important influence over the other aspects of public participation in Jordan. The interviewees were asked to describe or define the “currently applied public participation” in Jordan, while the “non-officials” described it as still being in the early stage by which the public having no direct involvement in the process or have any implementation power. This perception

however, is very different from the way they defined public participation as “involvement in planning, decision making and management”.

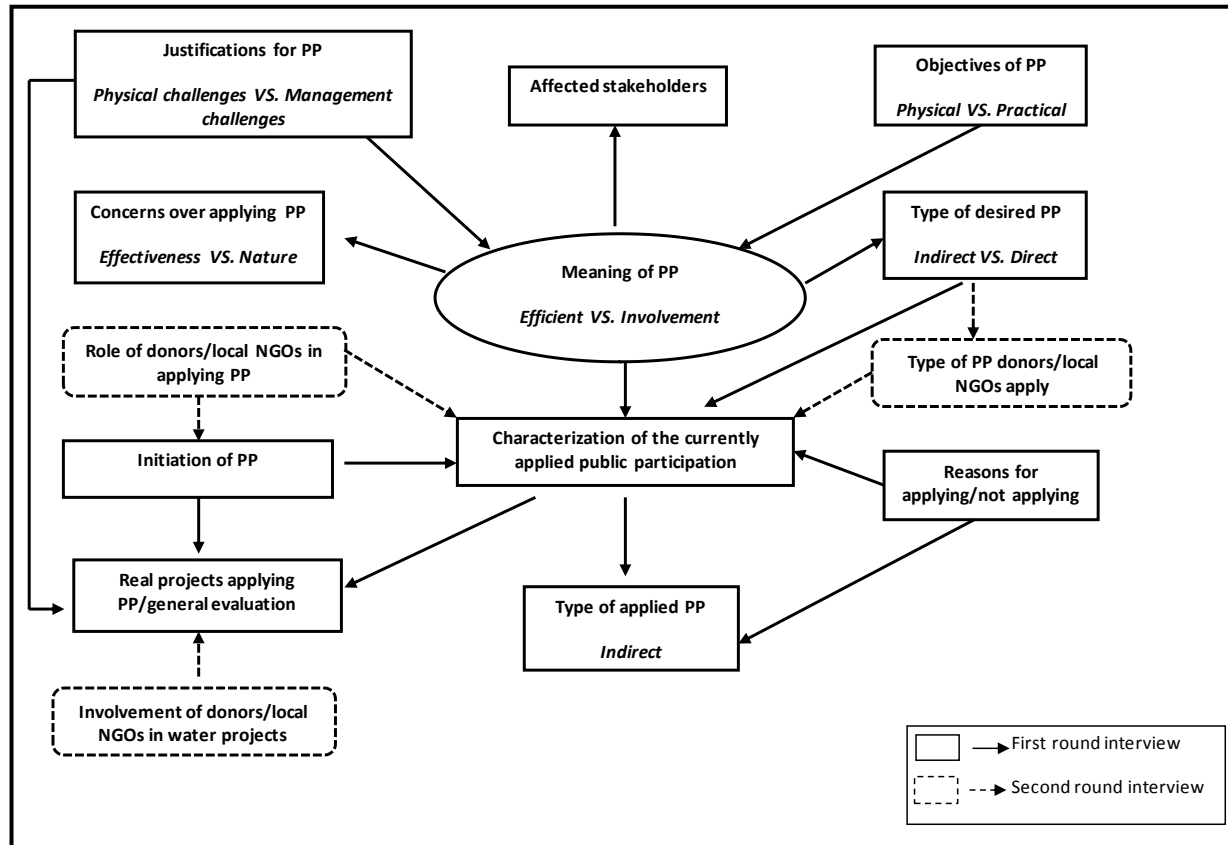


Figure (6): Framework for public participation as perceived by interviewees

On the other hand the “officials” thought that the public in Jordan have some power over the decision-making process, in contrast to their definition of public participation as the “efficient use” of water and “responsibility”. Thus a contrast was observed between the “desired” public participation as defined by each group and what they believe is being “actually implemented” in water management in Jordan. The contrast between the views of the two groups can be explained by the purpose of power given to the public, for the “non-officials” it is about full involvement of the public in the decision-making process regarding water management, while for the “officials” this power is about achieving the “efficient use” of water.

The additional categories that have resulted from the second round of interviews were mainly related to the role of both the donors and the local NGOs in water management and in the implementation of public participation. Placing these categories within the interpretive framework and connect them with the rest of the categories, we noticed that the nature and the extent of the role of these organizations, especially in the implementation of public participation, have a direct effect on the “initiation of public participation” and the “characterization of the currently applied public participation”. The “non-officials” believed that public participation in Jordan is being “initiated” and implemented “upon request” from donors because of the influential role they have through the conditions they impose on funding.

On the other hand, the “officials” see that whatever influence the donors have on water management and public participation would be usually exerted in cooperation with the official side. The “type of public participation that donors and local NGOs apply” according to the interviewees seems to be affected by the “type of desired public participation” expressed by the interviewees in the first round of interviews. Both groups have agreed that donors would usually implement the “indirect” type of public participation, which is the type “desired” by the “officials”.

This could be an indication that the donors might be making some compromises with the authorities by implementing the type of public participation the authorities’ desire and not pushing more toward extending public participation to the decision-making process. What we can observe from the interpretive framework for public participation as perceived by the interviewees is that the views and opinions of donors have some influence on the understanding and of public participation as a concept and its implementation.

3.2.4 Results of the Interview on Real Projects

Based on the GTM a descriptive framework for the understanding public participation in water management in Jordan was developed. The analysis of this framework had revealed some unique features for the water management in Jordan as well as the understanding of public participation. It showed the emergence of two groups of interviewees, the “officials”

and the “non-officials”. The analysis has also showed that these two groups have different opinions when it comes to their understanding of public participation in Jordan, as described in previous sections.

Additionally the analysis showed the importance of the role of the donors in water management in general and in the implementation of public participation. We found that it is important to examine case studies of actual water projects that apply public participation and compare their experience against our developed framework to see whether the interaction and the difference in opinions between the key players had actually influenced these projects.

The interview prepared for this purpose was aimed at actual projects applying public participation in terms of planning and implementation stages and the place of public participation with each stage. The interviewees were asked to give their knowledge, opinions impressions based on their experience working as experts in water management in general and in these projects. The difference in opinions of the two previously recognized interviewees was also observed in this interview. The discussion of the results of the interview would be focused on the differences between these two groups and in connection with the descriptive framework in order to get a clear explanation for the application of public participation in Jordan.

3.2.4.1 General Flow for Water Projects and Place of Public Participation Within it

Before discussing the actual water projects that apply public participation in Jordan we first need to explain the general flow for the stages that water projects usually go through starting from the planning stage, to the implementation stage and up to the follow up stage. This flow was obtained from the responses of the interviewees in the first round of interviews, they were also asked to place public participation within each stage. Although both groups of interviewees agreed on the general stages and steps within that water projects usually go through, they have expressed different opinions on the place of public participation within these stages.

The planning stage for the project generally starts with identifying the problem then compares it against the priority setting of the projects and then specify the area that is in need of the project. After that they will start collecting the necessary data required for the project and after securing the sufficient fund for the project the concerned authorities will conduct the visibility and EIA studies that will lead to making the final decision regarding the project. When it comes to the place of public participation within the planning stage, the “non-officials” believed that public participation should be applied in all these steps even in the decision making step. While the “officials” saw that the public should only be involved in certain steps within this stage mainly in specifying the area of need and helping in data collection and the EIA studies.

The next step will be the implementation of the project which can take several forms; either executed by the private sector, the stakeholders applying the results of the project or by using the water itself in a rational way. The “non-officials” believed that the public should be involved in all of these forms of implementation, but the “officials” see that the public participation could only be in a form of execution by private sector or in the efficient use of water. But when it comes to the follow-up and maintenance stage for the project whether it was in a form of paying the bills or helping in overseeing the maintenance, both groups agreed that public should be involved in this stage.

What we noticed that the opinion of both groups was affected by the way they define the “meaning of public participation” since the “non-officials” believed in full involvement of the public in all stages of the project while the “officials” saw that the public should be involved in specific aspects of the project according to the way to understand the “meaning of public participation” as “efficient use of water”. The interviewees view on the general flow for water projects and the place of public participation within it is shown in Figure (7) bellow.

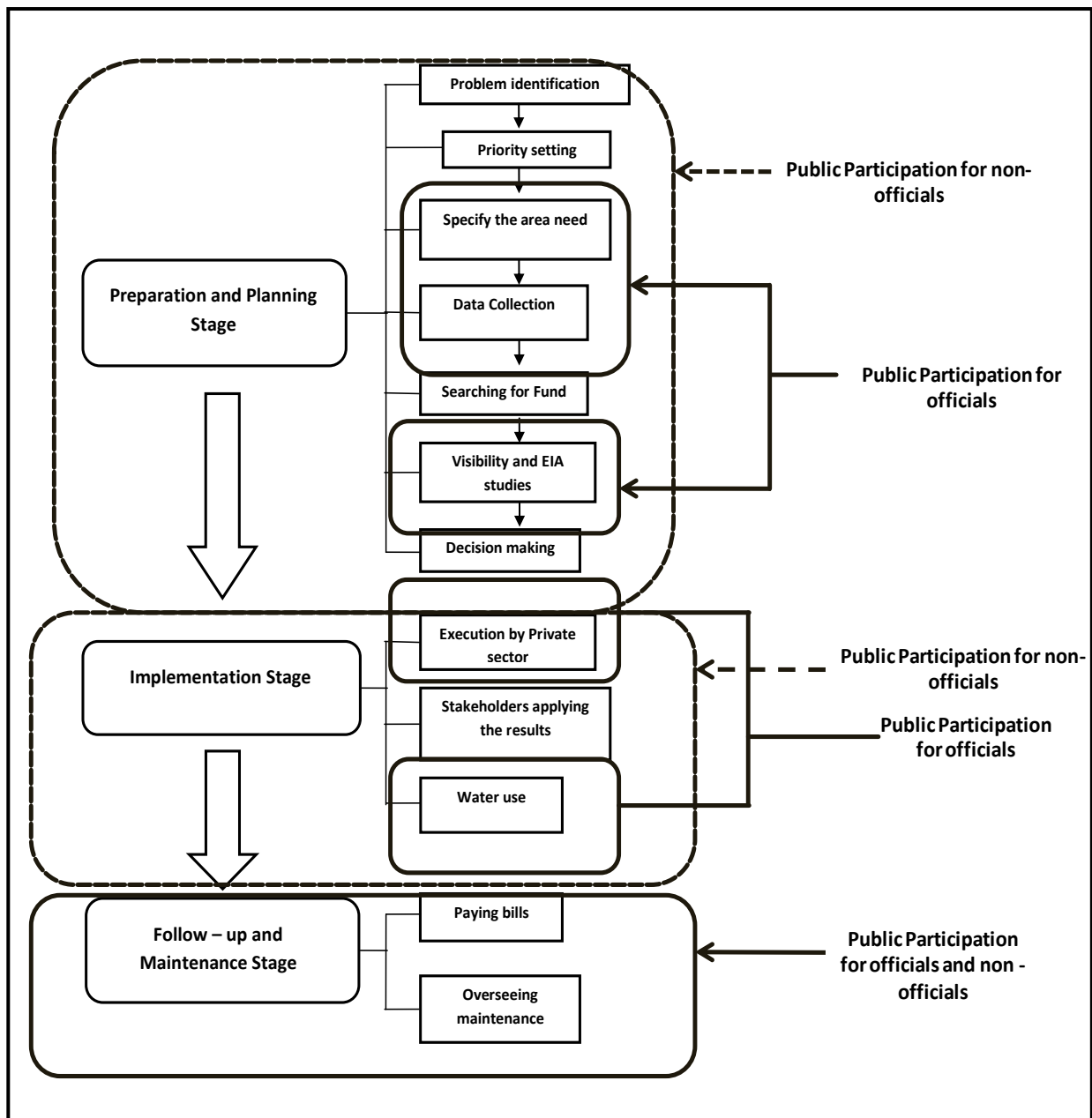


Figure (7): Interviewees View of the General Flow for Water

3.2.4.2 Flow for the Actual Projects: Highland Water Forum

We applied the same general flow described by the interviewees to the two projects we chose as an example for water projects that apply public participation in water management in Jordan. Starting with the Highland Water Forum, the main problem that this project wanted to address is the over-abstraction of the groundwater in the highlands area which is mainly used for irrigation. In the beginning the project was within the responsibility of the MOA but because this ministry is very low in the hierarchy and that would have slowed down the process for the project, therefore the project was moved to be under the responsibility of the (MWI. The discussions to secure sufficient fund for the project was done mainly between the MWI and the GIZ until they reached to an agreement. The data collection for the project was done by conducting stakeholders' analysis in order to choose their representatives in the forum. Then moving to the implementation process, the execution started by having the farmers, who are the main stakeholders, and the policy makers setting on the same table in order to conduct meetings and gave discussion sessions between them, then they moved into introducing the stakeholders and justifying the reason behind their presence in the forum.

The next step was to determine which topic they want to tackle first with the presence and help of a facilitator and the results of these discussions sessions will be summarized into recommendation letters to be sent to the high rank policy makers to take into consideration while making their decisions. The final step in this stage will be the elaboration of an action plan aims at managing the groundwater resources in the Highland and the suggestions of this action plan will carried out by first establishing a fund for the forum that will be responsible for financing the action plan. The project is still in the early stages of implementation therefore there are no activities related to the follow-up stage.

We asked the experts working on the Highland Water Forum to place public participation in each stage of the project. The “non-official” admitted that the stakeholders were not involved at all in the planning stage, while the “officials” see that the stakeholders were involved in the data collection step which is similar to what they have described in the general flow. On the other hand, both groups agreed that the stakeholders were involved in the whole stage they even described the stakeholders as being the “essence of this stage”. The interviewees view on the general flow for this project is shown in Figure (8) bellow.

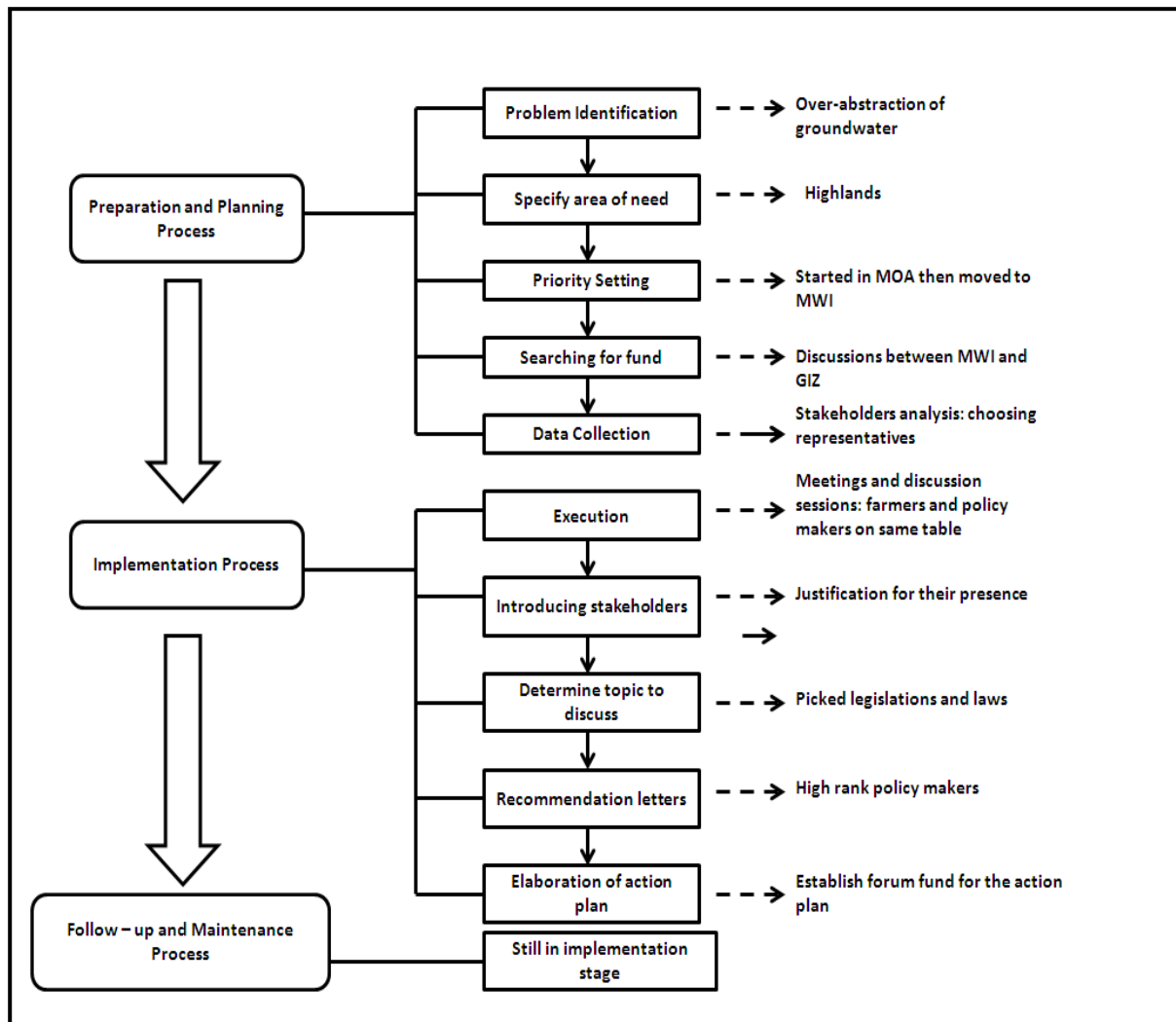


Figure (8): Interviewees View of the General Flow for the Highland Water Forum Project

3.2.4.3 Flow for the Actual Projects: WUAs

For the second project that applies public participation in Jordan which is the WUA whose main concern was the mismanagement of the irrigation water as well as the lack of trust between the farmers and the governmental authorities in the Jordan Valley area. The priority for this project was to start its' activities in the "most difficult" area in terms of social setting and that was to prove and demonstrate to the rest of the farmers in the Jordan Valley the effectiveness of the approach used by the project. Here as the well the funding for the project was provided by the GIZ and the planning stage was finalized with determining the project phases which started by trust building, establishing the associations, transfer the tasks to these association and finally ensuring the sustainability of the project.

The implementation stage started with contacting the farmers and checking the willingness of each group of farmers to participate in this project and how ready they are to form an association, once they make sure of that, they would move on and establish these associations by providing them with a simple fund first. An important step to ensure the success of this project was to secure the legal recognition of the established associations from the JVA, but for up to now what they managed to get is getting the established associations recognized under the cooperative law. This recognition would be in active once the established associations sign an agreement with the JVA that will also allow the JVA to hand over the responsibility of water management after the pump station to the recognized associations.

Since the project have been implemented for 9 years now, the project organizers is considering handing over more responsibilities to the associations like the network maintenance which would be based on the results of performance indicators that will be used to assess whether these associations are ready to handle such additional responsibilities or not. To ensure the sustainability of the association especially after the end of the fund of the project it need to secure two points, first get a legal recognition of the association under the MWI regulations instead of JVA and to find a way to support the established associations after the end of the GIZ fund.

As for the place of public participation in these stages; the “non-officials” admitted that the stakeholders were not involved at all in the planning stage unlike the “officials” who see that the stakeholders were involved in determining the outline or phases of the project. But they both agreed that the stakeholders were fully involved in the implementation stage of the project that was mainly concerned with establishing the associations. The interviewees view on the general flow for this project is shown in Figure (9) bellow.

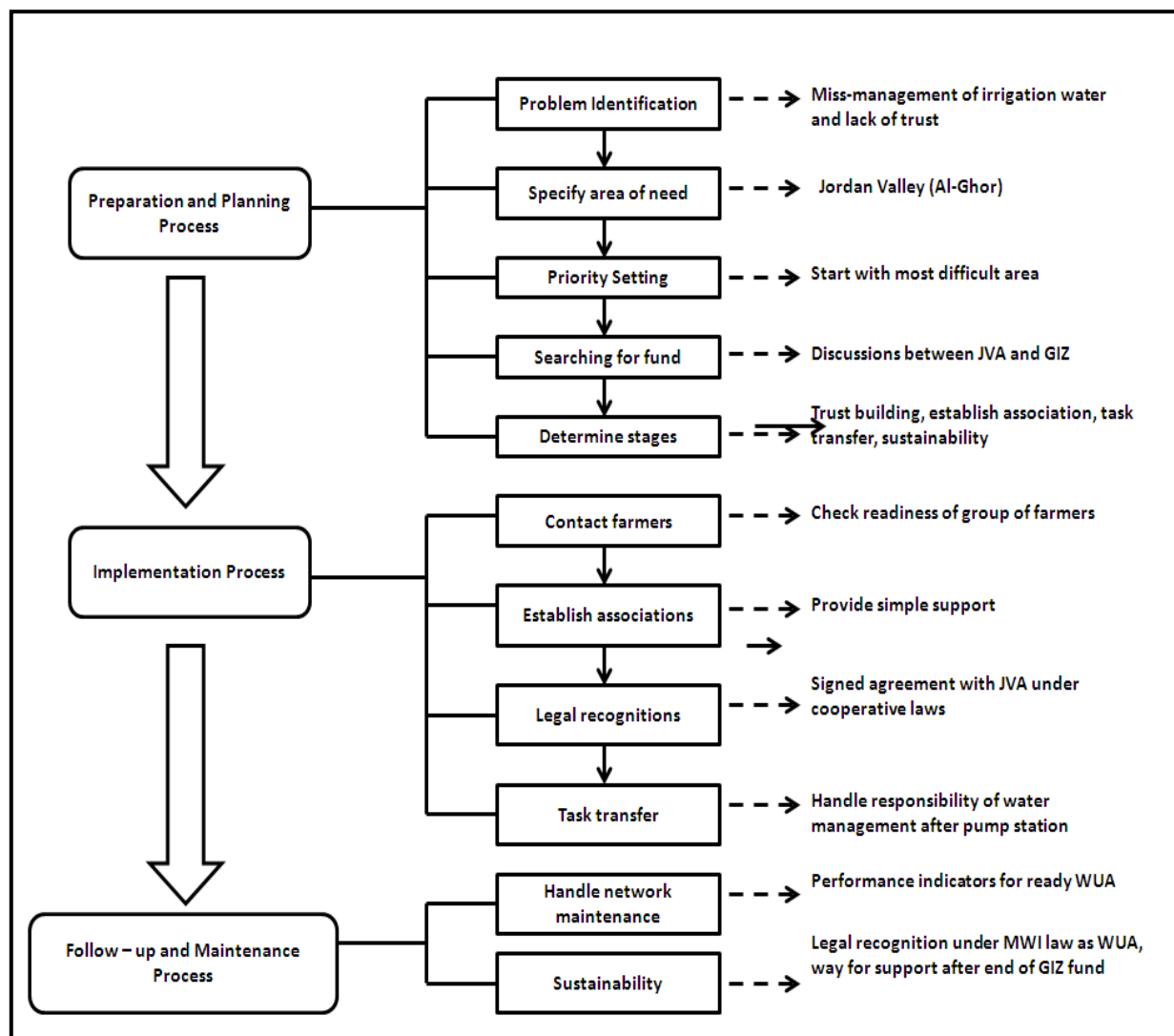


Figure (9): Interviewees View of the WUA Project

3.2.5 Influence of the Descriptive Framework on the Actual Projects

The interviewees have described the general flow that the usually water projects go through and where they place public participation within each stage of the project as shown by Figure (7). Then the views they have on the place of public participation in water projects was connected with the developed framework for understanding public participation in Jordan in figure (10). We noticed a clear difference in the views of the two groups of the interviewees. The “officials” see that the public can be involved in certain steps within each stage except on the follow-up stage where they see that public can be involved in it. This view is clearly influenced by the “meaning of public participation” given by the “officials” as “efficient use” of water which makes the “officials” believe that the public is better being involved in certain aspects of the project especially in the follow-up stage. While the “non-officials” believe that

public participation should be applied in every step within each stage which is in compliance with the understanding of the “meaning of public participation” as “full involvement” in decision making, planning and implementation.

If we compare their views on the place of public participation in the general flow with what have been applied in the actual projects we again notice a difference between the views of the two groups of interviewees especially when it comes to the planning stage in both projects. The “non-officials” admitted that the stakeholders were not involved at all in the planning stage in both projects, which is in contrast with what they have expressed earlier in the place of public participation in the general flow. This could be due to the fact that the final decisions related to planning stage of the projects when it comes to involving the public in this stage would be in the hands on the related authorities. On the other hand the “officials” see that the stakeholders were involved in some aspects of the planning stage in both projects, the ones more concerned with data collection, which is actually similar to what they have described in the general flow for the planning stage.

We noticed that this difference of the view on public participation among the two groups has caused some disagreement to occur in these projects. In the Highland Water Forum, a disagreement had occurred between the two groups in selecting the stakeholders that will participate in the forum, the “officials” wanted to appoint some persons in the forum without going through the selection process and the “non-officials” had to compromise in some aspects in order not to lose the support of the official side. On the other hand the influence of the donors or international funding agencies was apparent in the implementation stage in both projects, in which their views on public participation was mostly what have been implemented in both projects and in this case the official side have compromised in this regard in order not to lose the funding for the project.

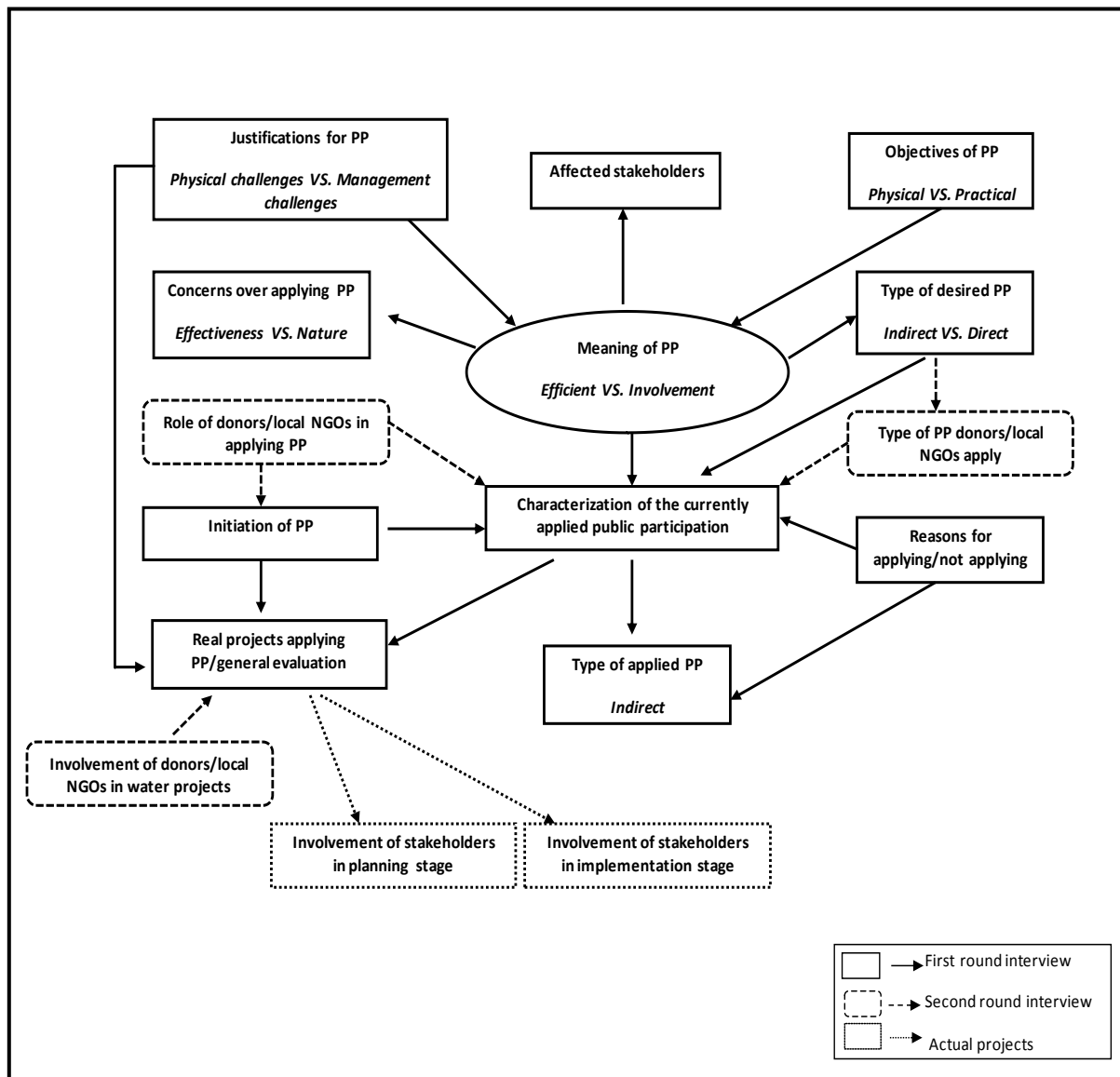


Figure (10): Framework for Public Participation as Perceived by Interviewees with Involvement of Stakeholders in Water Projects

3.2.6 Lessons Learned from the Experiences of the Actual Projects

The experts working on both projects have expressed some difficulties or challenges that they face in their projects. For the Highland Water Forum the main concern for them is to actually achieve some tangible results on the field in terms to the objective of the project which what was lacking in other similar projects and was the reason behind the failure of these projects. In addition to attract the different donors to finance the action plan that will be elaborated in the project.

As for the WUAs their main concern was the doubt that the farmers have regarding the success of the approach used in the project since they have not been involved in the

management process for 30 years, which slowed down the progress for the project. Based on our study for the two projects, we have noticed some important points that were crucial in the success of these projects.

For the Highland Water Forum it was clear that the success that this project have achieved so far was hugely due to securing the official support by including high rank policy makers in the forum a step that gave the project more credibility and made the rest of the stakeholders sense the seriousness and importance of the project which was lacking in previous initiative. While the experts working on the WUAs believe that in order to ensure the sustainability of the project they have to secure legal recognition for these associations that will help in organizing the work of these association as well as their relationship with the concerned authorities.

3.3 RESULTS FOR THE CASE STUDY OF SINGAPORE

3.3.1 Results of the First Round of Interviews

The information elicited from the first round of interviews has resulted in the emergence of twelve main categories that describe the interviewees' general understanding and perceptions of public participation in Singapore. The interviewees were asked to give their general opinions, knowledge, impressions and experiences of public participation based on their position as experts in the water sector and water management in general.

The first round of interviews has four main focus themes; the first one was the interviewees' opinions regarding the water management structure in Singapore focusing on the institutional and functional structure. The second theme is the interviewees' understanding of the meaning of public participation in water management; the interviewees were asked several questions mainly related to definition of public participation as well as different aspects of participation such as the objectives and type of participation to apply. The third theme was focusing on the aspects and the general characteristics of the current participation practices implemented in water management contexts in Singapore. The final theme was related to real examples on

the actual participation practices applied in Singapore with a special focus on the public acceptance of water reuse projects. The emergent categories of the first round of interviews will be discussed in details in the following sections.

3.3.1.1 Water Management Structure in Singapore

In this interview an important point of focus was the water management structure in Singapore in terms of different agencies involved in the process and their responsibilities. All the interviewees agreed that the management structure in Singapore is basically a government driven approach, they pointed out that currently only one institution handles all water management issues in Singapore namely the PUB. The main responsibilities that the PUB handles, according to the interviewees, are water supply, reclamation and wastewater treatment. The interviewees have also expressed the advantages of having such a form of management structure; which they have described as “unique” and “unusually holistic”, because they think that having all water concerned departments located under one roof prevents overlapping of tasks and prevents miscommunication among these departments.

At the same time, all the interviewees admitted that there is no involvement of any nongovernmental agencies or institutions whether they were local or international in water management in Singapore. The interviewees have pointed out several reasons for the lack of involvement of nongovernmental agencies in water management: first of all there are not so many local NGOs working on water issues. The second reason is that the government basically covers the whole water issue so there is no need for other organizations to be involved, in addition to the fact that water is a sensitive issue that is better be handled by the government.

The interviewees have pointed out however that there is some involvement of the water related industry in several aspects: in Develop, Build and Operate (DBO) projects, carrying out and implementing the plans made by the PUB in addition to developing new technologies. The interviewee thought that what little role that the local NGOs have in water management it would be mainly related to promoting the water issues and spread the education and the level of their involvement would depend on how efficient they are. In terms of water issues

that the government and the PUB usually focus on is to fulfil their mission which is all about efficiency and sustainability in addition to the focus on the technology, water supply and quality. The focus of the local NGOs is to conserve water and keep it clean as well as education and engaging the people, while the focus of the industry is to promote their products and developing technologies.

3.3.1.2 Meaning or Definition of Public Participation

In order to understand public participation as an approach in Singapore it's important to explore the "meaning" or "definition" of public participation. The interviewees were asked to state their own understanding and perception of public participation in water management context. Here the interviewees seems to agree to a certain level on the "meaning of public participation", they described it as getting the affected people to "help" in water management, "save water" and "keep it clean" through "good behavior", "being responsible" and the use of "education".

The interviewees have specified the "meaning of public participation" for water related industries which is to have them being involved in water management as "partners in projects" and in "technology development". It is apparent here that the interviewees agree on a more indirect "definition" of public participation that does not extend to the decision making process itself. It is apparent here that the interviewees have distinguished between two definitions for participation: one related to the participation of the general public by which they are asked to "help" the relevant authorities in water management and "save water". The other definition is concerned with the participation of water related industries in water management through "technology development". However it seems that on both sides, public participation in water management context is more on the implementation side of the equation and does not extend to the decision making process.

3.3.1.3 Objectives of public participation

One of the important aspects of public participation is related to the objectives of applying the approach. We found through the analysis of this category that most of the interviewees were concerned about the water availability in general in Singapore, therefore the desire to deal with this issue was the main derive toward applying public participation in water management. According to the interviewees, the “objectives of public participation” are closely related to what we call “physical objectives” in terms of “protection of water”, “not wasting water”, “increase awareness”, “public education” as well as “help the PUB to fulfill their mission”. The interviewees believe that having these “physical objectives” for public participation will help in overcoming the water availability issue they face in Singapore.

The analysis show here that this category, as perceived by the interviewees, is influenced by the interviewees’ own understating of the “meaning of public participation” since they since they see public participation as being all about saving and not wasting water. Hence, the objectives of applying such approach are more of “physical” nature which are focusing on achieving this understanding in terms of increasing awareness of water problem and protecting it.

3.3.1.4 Reasons for applying Public Participation

Another important aspect of public participation is the “reasons” for wanting to apply this approach especially in water management. The interviewees have pointed put several “reasons for applying public participation” which were basically focusing around two main issues. The first one is to “protect water” and the wish of government to overcome the “physical challenges” in terms of “reducing demand on water” which in turn will reduce the cost of water treatment.

The other issue is related to the government’s desire to achieve “technology development” which is more concerned with engaging the water related industry by encouraging theses industries to develop new technologies that will in turn help in saving water and offering new water supply options. The interviewees also believe that public participation, if done properly, will be a “win-win” situation for the PUB and the water related industries, as well

as increasing people's awareness regarding the water situation in general which adds to the government's effort in technology development and preventing it from going to waste. What we can observe here therefore, is the interviewees' focus on the part of public participation related to the industry involvement and technology development.

3.3.1.5 Planning and Participation Process

The interviewees were asked to describe the planning process regarding water management in general and the related to participation process specifically. Most of the interviewee agreed that the planning is mainly the responsibility of the PUB and usually the public will not be involved in the initial or earlier stage of planning. Mostly if there is any involvement of the public it will be mostly involved in the execution or implementation stage on a volunteer basis as well as their involvement in the education aspects of the participation process.

Therefore it is apparent here that the interviewees' see that the whole planning and participation regarding water management issues is solely controlled and handled by the PUB and any involvement of the public or stakeholders would come after initial stage and in the execution stage.

3.3.1.6 Affected Stakeholders and Sectors to Apply Public Participation in

When it comes to the classification of "stakeholders" that should be targeted in public participation, the interviewees did not give a specific classification they believe though that all people should be involved or targeted as "affected stakeholders". However, most of them thought that a special focus should be directed toward two main groups: the young kids since they represent the next generation. The next group considered by the interviewees is the water related industries because they think that it will be easier to engage or regulate the water related industries than engaging or monitoring many households.

On the other hand, all interviewees believe that it is important to apply public participation in all relevant sectors and the priority will be based on the consumption and demand level of each sector and the approach should be applied first in the sector with the highest water

demand. It seems here that the focus of the interviewees is more on the industrial and the domestic sector which might be basically due to the special sitting of Singapore since they do not have any agricultural activities. Also it is also clear that the main issue here is the water demand and how to reduce the demand possibly by applying public participation.

3.3.1.7 Nature of Engagement

When the interviewees expressed the “nature of engagement” for the different stakeholders in water management; they have described two sides of stakeholders’ engagement. The first one is related to the engagement of the general public but their involvement would not be extended to the initial steps of water related projects and most of their engagement would be in education program and on volunteer basis, as explained previously. The other side of engagement the interviewees described was the involvement of the water related industries which would be through their involvement in open tenders to secure contracts for the different water projects.

Hence, the interviewees see the public participation in Singapore represented in two aspects; the engagement of the general public on one hand and the engagement of the water related industries on the other. Interestingly, some of the interviewees have described the attitude of the general public in Singapore as “nanny state” where people have decided to leave all matters, especially those related to water issues, in the hands of the government because general public generally trust the government since they believe the government has done a good job so far.

3.3.1.8 Initiation of Public Participation: Decisions and Process

The interviewees agree that the implementation of public participation in new water projects would basically depend on the nature of the project itself since it is not yet mandatory and is not required by law. The decision for applying public participation or the “initiation of public participation” however is usually done by the governmental bodies specifically the PUB. The PUB decision to apply public participation in water projects will be based on what they call “best value” which means that the PUB will award the implementation of new water projects

to the any side, whether it was governmental or any other water related industry, that provide the best value for money. Additionally, some interviewees see that all water projects in Singapore include some aspect of public participation in one way or other, either in a form of awarding contracts to water related industries or having different exhibitions related to water projects for the public.

Additionally, both groups agreed that so far in Singapore there are no formal guidelines for public participation. Such a thing, as mentioned earlier, would depend on the project itself so there will be general guidelines to implement the project but with no specific details. The reason for not having such formal guidelines according to the interviewees is that it is difficult to generalize and it should be dealt by case by case and because the participation in Singapore is usually on volunteer basis. So in a sense they see the fact the there is no formal guidelines for public participation in Singapore is as it should be since.

Again, the interviewees here are distinguishing between the participation or involvement of the water related industries and the involvement of the general public. The opinions of the interviewees working in the governmental bodies were more related to the involvement of the water related industries by awarding water projects contracts based on best value. On the other hand, the opinions of the interviewees working in the nongovernmental institutions were more related to the involvement of the general public in the participation process starting with education programs especially in schools. This might be because the PUB is the side that mainly organize and oversee the involvement of the water related industries, while the nongovernmental usually deals more with the general public through organizing several educational programs

3.3.1.9 Way of Engagement

When it comes to the methods or “ways” of engagement” related to public participation, the interviewees have described the engagement of two main groups of stakeholders. Those working in governmental institutions distinguished between the engagements of water related industry and the engagement of the community. They see that the engagement of the water related industry would usually start after the PUB call for new water projects tenders.

Another way of engagement for the water related industries, according to the interviewees, would be through demonstrations for the different technologies they have developed and then the government will decide accordingly whether to adopt and apply these technologies in the new water projects or not.

In this sense, this group of interviewees sees that the engagement of the water related industries would be through giving their offers for the different water projects proposals as well as in technology development. As for community engagement, this group of interviewees thought that it would usually be through their participation in education programs and arranged visits to the different visitor centers that PUB have established in various water projects.

On the other hand, interviewees working in nongovernmental institutions have only described the engagement of community in water projects. They thought that the community engagement would be again through their participation in education and awareness programs as well as including the different water issues and new developed technologies in school curriculum and having these issues discussed in the media as well. They have also pointed out that if the issue that the new water project dealing with is considered sensitive, the community will then be engaged through public hearing. Seems that this group of interviewees is focusing more on the engagement of the community because it is more tangible to them and they are more familiar of how this way of engagement is being organized and done, unlike the engagement of the water related industry which is mainly the responsibility of the government or PUB.

3.3.1.10 Securing Public Acceptance

Giving the increasing trend in water reuse projects especially in Singapore, we wanted to see how the interviewees feel about the issue of securing public acceptance regarding reuse projects. In this regard all interviewees agreed that it is quite important to secure public acceptance because they believe that without securing the acceptance, people will not use the products of the projects otherwise.

But they pointed out that giving the importance of water reuse projects as the key to save water, securing acceptance for water reuse projects will make people more willing to save water. The interviewees have also pointed out that securing the acceptance for reuse projects will help in further increasing the confidence in the quality of water.

Moreover, the interviewees described different ways to secure public acceptance for water reuse projects that were used and adopted in Singapore. It seems that the interviewees believe that the most important way to secure public acceptance is having “transparency” especially terms of handling the results of the water quality testing. This transparency combined with providing the public with all the information related to water projects through holding several educational programs before implementing the projects, in addition to the use of media in advertising and marketing.

Another way the interviewees considered crucial for securing public acceptance for reuse projects in Singapore was the “political endorsement” and the government “support” that have been given for the water reuse projects and products. This seems to have worked in the case of Singapore because the general public in Singapore has confidence in the government so when high political figures endorse and support water reuse projects and products this increased the public’s trust in these products and will increase their acceptance of these projects and products.

3.3.1.11 General Evaluation of Public Participation in Reuse Projects: Public Influence and Satisfaction

When it comes to the general evaluation of the public participation practices applied in Singapore, most of the interviewees believe that these practices are being “successful” so far. The interviewees based their evaluation on the fact that most people in Singapore are already consuming the product of a water reuse project mainly the NEWater. They see this fact as a clear evidence for the success of the variously applied participation practices as well as an evidence for the efforts done by the government to reach the public.

On the other hand, the interviewees described the level of the public satisfaction regarding their own participation; those working in governmental institutions believed that generally people do not feel left out of the participation process due to the efforts done by the government to reach out to the public. While the interviewees working in nongovernmental agencies believe that people are generally quite satisfied with the current situation in terms of the way water is managed in Singapore and the level of their participation in the process and as long as the situation stays as it is with no problems, the people will not demand any more participation.

The reason behind this attitude, according to the interviewees is that, generally speaking, the people in Singapore usually have huge confidence in the government and they trust it to do what is best for them since the government have built so much good well with the people, but some interviewees went even to the extent of saying that the currently people in Singapore are letting the government do the thinking for them. This point regarding the people's attitude was mentioned more than once in different occasions.

This issue could be also linked to the extent of the “public influence over reuse projects”, the interviewees have pointed out an interesting point here that they cannot recall any previous case in Singapore that required the government to have any public influence or input for water reuse projects. So this fact would make it harder to give an accurate judgement on the extent of the public influence over these projects. They also pointed out that there are hardly any objections from the public when it comes to the reuse projects and things usually “go smoothly”. What would mostly happen is that the people will gave their input and feedback regarding different water projects to the government, but the final decision is basically in the hands of the relevant authorities because they believe that these kind of projects are part of the water strategy that have to be decided by the government.

3.3.1.12 The Connection Between all Categories: Preliminary Framework for Public Participation in Water Management

Several observations could be drawn from the results of the first round of interviews. The main observation was the general agreement amongst the interviewees on almost all of the

emergent categories and that they have expressed more or less the same views on most of the key categories. The second observation noticed from the results of the first round of interviews is the unique water management system that Singapore has adopted which puts the responsibility of water management in the hands of one governmental entity (PUB) which help in preventing any overlapping of responsibilities and any miscommunication that could happen among different department.

At the same time it seems that in Singapore there is no involvement of any other organizations, local or international, in water management because first of all there are not so many local organizations working on water issues in Singapore to begin with and since the government covers the whole water loop there is no place or role for any local organization to play in water management. Another observation was related to the views of the interviewees regarding public participation by which most of them have indirect view of the approach in terms of focusing more on saving and protecting water rather than on having the public being involved in decision making and the interviewees have clearly distinguish between community and industry participation with different way to engage each group of them.

Now to connect all the previously emergent categories together based on their mutual relationship. Based on the results above, the main observation noticed here is that there are two main categories which have directly or indirectly affect the rest of the categories: “the meaning of public participation” and “the management structure”. These two categories are influencing the rest of the categories almost at the same extent. Examining the effect of the meaning of public participation on the rest of the categories, it mainly affects the “objectives of public participation” which most of the interviewees considered them to be of “physical” nature like saving water, protecting water and reducing demand as well as the use of education and awareness programs to is all done to achieve the physical objectives of “saving water”. When we look at the way most of the interviewees defined the meaning of public participation as the involvement of public in order to reduce water consumption. So in this sense their understanding of public participation has affected the way the interviewees see the objectives of the approach itself.

The meaning of public participation has also affected the ‘reasons for applying public participation’ in the same way. The reasons for applying the approach, according to the

interviewees, were mainly to overcome the different physical challenges in terms of reducing demand and consumption as well as to achieve technology development. The last part is more concerned with the involvement of the industry by encouraging them to develop new technologies that will help in saving water and offering new water supply options. This category is clearly affected by the way the interviewees understand the meaning of public participation as explained earlier. As for “the affected stakeholders and sectors to apply public participation in” is affected in turn by the reasons to apply public participation by which the group of stakeholders and the sectors to apply public participation in will be selected based on the reasons the interviewees gave for applying the approach itself.

Of course the meaning of public participation affects the way the selected stakeholders are being selected. Basically the interviewees have described two separate ways: one for the industry in terms of getting them participate in DBO projects. The other way of engagement is regarding the community which would be through education programs, volunteer work and arrange public visits to different centres. The meaning of public participation has also affected the way they plan the public participation process itself because based on the understanding of the meaning of public they will plan the process of public participation and involve the people accordingly and in of course the planning affect the way they engage the different groups of stakeholders.

Examining the effect of the other main category, the water management structure, on the rest of the categories we found that it affects the nature of the engagement, which the interviewees described having two main groups to engage: the general public or the community and the industry. The nature of each groups’ engagement is different according to the interviewees since it is decided based on the management structure and eventually the PUB will be the party responsible for deciding how they will engage each different group of stakeholders. The same thing could be said for the initiation of public participation because the process is mainly controlled by the government and public influence over reuse projects is directly affected by the management structure. In addition the same flow of effect could be seen in the way public acceptance being secured, because it is all done through PUB so all these aspects of participation and acceptance are directly affected by the management structure so in this case these two are playing very key roles in applying public participation

in Singapore. The relationship and the interaction between all the emergent categories are illustrated in the preliminary interpretive framework in Figure (11) below.

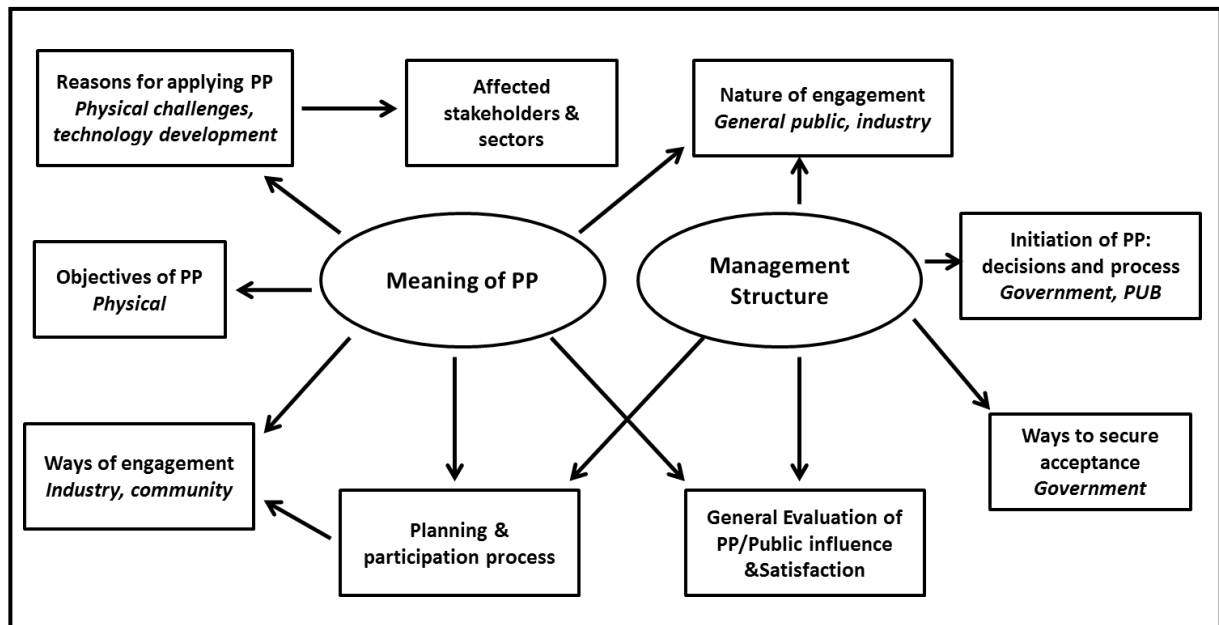


Figure (11): Preliminary Interpretive Framework for Public Participation as Perceived by the Interviewees

3.4 COMPARING THE RESULTS OF THE TWO CASE STUDIES

Now to compare the results from both case studies we noticed that the two cases have some differences expressed in various aspects. The first difference was in the water management structure adopted in each case study; in Jordan there are several governmental entities that oversee the water management namely the MWI, the WAJ and the JVA which sometimes cause some miscommunication and overlapping in their tasks and responsibilities. Moreover, in Jordan there are some international funding agencies that play a major role in water management in Jordan. If we look at the case of Singapore, as explained previously they have a more holistic approach when it comes to water management since they have decided to have only one entity, the PUB, which handles the responsibility of water management thus eliminating any chance of overlapping in tasks and at the same time there is no involvement of any other organizations in water management.

The next point of difference between the two case studies was related to the interviewees' view on public participation. First we have to point out that the implementation of public participation in Jordan is still in its early stage, but the results showed that the interviewees have expressed two different views on most of the key categories by which the officials have expressed an indirect view of public participation while the non-officials have a more direct view on the approach. But in Singapore the results did not show any major differences among the views of the interviewees and in fact most of them have shared the same view on most of the key categories which was more on the indirect side of the approach.

The interesting point regarding the case of Singapore is that the government and the PUB have managed to secure or gain the public's trust which enabled PUB to implement many of its policies and projects especially water reuse projects, while in Jordan the implemented water projects are highly influenced by the conditions of the international donors and most of the projects that have some public participation aspects in them are directed toward agriculture.

4. CONCLUSIONS AND RECOMMENDATIONS

Starting with the first case of Jordan, the analysis of the first round of interviews has resulted in the identification of two groups of experts: the “officials” and the “non-officials” who influence the way water is managed in Jordan. The analysis has clearly shown the differences between their respective views. The main difference was apparent in the way they define public participation; “Officials” see it as the efficient use of water while the “non-officials” believe participation should involve people in decision making. This difference has in turn influenced and shaped the other emergent categories, especially the desired type or form of participation from the indirect type preferred by the “officials” to the direct form of participation that meets the definition given by the “non-officials”. Both groups had different perceptions of what participation “should” be vis-à-vis what is “currently” being applied.

This concern is especially expressed by the “non-official” group which believes that there is a gap between the participation that should be applied to improve the management and the actual practices being implemented in Jordan. Thus, to further explore the effects of those different perceptions of the key players on the implementation of public participation in water management a second round of interviews was carried out in accordance with the process of GTM on the basis of the results of the first round of interviews. The analysis of the second round of interviews showed that the two groups of interviewees established; the “officials” and “non-officials” also had different opinions and perceptions in some aspects.

The main difference in their opinions was related to the “meaning of public participation” in water management. According to the second round of interviews the interviewees’ “perception” regarding public participation was more about the “actually applied” public participation in Jordan in contrast to the previously expressed meaning which could be considered to be closer to the “desired public participation”. The “non-officials” see the “actually applied” public participation as in the early stage with the public having no implementation power. The “officials”, on the other hand, believe that the public currently have some power over the decision-making process regarding water management.

This contrast can be explained by the purpose behind the power given to the public; for the “non-officials” it is about full involvement in the decision-making process regarding water

management, while for the “officials” this power is about achieving the “efficient use” of water. Another point that was observed in this interview was the interesting structure of water management in Jordan in terms of the relationship and interaction between the government and international funding agencies or donors. The interaction between these two main parties plays a major role in the way water is managed in Jordan and consequently affects the implementation of public participation in water projects. Both groups acknowledged that donors have a major role in water management and in implementing public participation but they had different opinions regarding the extent of their influence on the whole process.

The “non-officials” see donors as having huge influence exercised through the imposition of “preconditions” they place on funding, while the “officials” insisted that donors only provide the funds and technical training and whatever role they have in cooperation with the official side. In contrast, local NGOs do not have a notable role in water management and in implementing public participation in Jordan, but the two groups agreed that local NGOs have the potential to carry out a major role in the future, especially in implementing public participation, since they are closer to the communities. So to further study the influence of the descriptive framework on the actual implemented public participation on the field an interview aimed at actual projects in Jordan that applies public participation was conducted.

The analysis of this interview had shown once again that the “officials” and “non-officials” have expressed different opinions regarding the place of public participation in the general flow usually adopted for water projects by which the “officials” see that the public should be involved in certain steps within each stage while the “non-officials” believe that the public should be involved in all stages. Their view was clearly influenced by the way each group understand the “meaning of public participation”. This difference was also observed when we analyzed the findings of the interview on actual projects between the “officials” and “non-officials” regarding the involvement of the stakeholders in both projects especially in the planning stage and this difference had caused some conflicts to occur between these two groups in certain aspects of each project.

But despite these differences between the “officials” and the “non-officials”, both groups have compromised when it comes to the implementation of public participation in actual projects: the “officials” to secure necessary fund for the projects and the “non-officials” made

some compromises as well to gain the support of the official side which is essential to the success of the projects. Another important point was the lessons learned for each experience of the actual project and how it can be used to ensure the success of any attempt to implement public participation in any future project. The first point is the necessity to have a legal recognition for any public participation within a clear legal framework to organize the participation as well as securing the support of the official side for any public participation attempt by involving policy makers in the project from the beginning.

We found in this study that having different understanding of the meaning of the concept of public participation among the main players in water management sphere in Jordan is a key factor that influenced the way public participation as an approach is being implemented in Jordan as it has been apparent in the projects that applied public participation. The case of Jordan is quite unique in terms of the water situation itself and the nature of the water problem along with a water management structure and setting by which the international donors play a major role in the management itself and in encouraging the inclusion of public participation in water management and in water projects. Nonetheless, the implementation of public participation in Jordan is still in its early stages and still needs further efforts to reach its potential.

For the second case of Singapore, the analysis of the first round of interviews has shown that unlike the case of Jordan, the interviewees in the case of Singapore have agreed on or shared almost similar view points on most of the key categories with two categories having most of the influence over the rest of the categories namely the meaning of public participation and the management structure. Most of the interviewees have expressed a more indirect view on participation approach by which they believe that public participation is more related to the issues of saving and protecting water. The interviewees have also distinguished between the participation of the community which would be more related to the public involvement in education and awareness programs as well as arranging visits to different educational centers. The second participation is related to the industry involvement in terms of participation in DBO projects and technology development.

The lessons that could be learned from both case studies is first of all the importance of having the support of the official authorities in order to ensure the success of any public

participation initiatives as it has been demonstrated in both case studies as well as the necessity to have a legal recognition for any public participation within a clear legal framework to organize the participation. Another important point is having a more holistic water management structure, as in the case of Singapore, which allowed the government to carry out their responsibilities toward water management efficiently especially in terms of preventing any overlapping in tasks that could be caused by miscommunication that might occur among different departments. The case of Singapore also showed that the success of their water management structure allowed the government to succeed in building trust and establish its reliability among the people of Singapore which made securing the public acceptance for water related projects easier.

REFERENCES

- Abelson, J., Forest, P.-G., Eyles, J., Smith, P., Martin, E., & Gauvin, F.-P. (2003). Deliberations about deliberative methods: issues in the design and evaluation of public participation processes. *Social science & medicine*, 57(2), 239-251.
- Al-Karablieh, E., Salman, A., & Al-Omari, A. (2006). *Thematic: Water Resources Policy The Residential Water Demand Function in Amman-Zarka Basin in Jordan*. Paper presented at the The Third International Conference on the Water Resources in the Mediterranean Basin WATMED3, Tripoli, Lebanon
- Alkhaddar, R. M., Sheehy, W. J., & Al-Ansari, N. (2005). Jordan's water resources: Supply and future demand. *Water International*, 30(3), 294-303.
- Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of planners*, 35(4), 216-224.
- Batareseh, M. I. (2006). The quality of potable water types in Jordan. *Environmental monitoring and assessment*, 117(1-3), 235-244.
- Castelletti, A., Pianosi, F., & Soncini-Sessa, R. (2008). Integration, participation and optimal control in water resources planning and management. *Applied Mathematics and Computation*, 206(1), 21-33.
- Chilvers, J. (2008). Environmental risk, uncertainty, and participation: mapping an emergent epistemic community. *Environment and planning. A*, 40(12), 2990.
- Collins, K., Blackmore, C., Morris, D., & Watson, D. (2007). A systemic approach to managing multiple perspectives and stakeholding in water catchments: some findings from three UK case studies. *Environmental science & policy*, 10(6), 564-574.
- Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology*, 13(1), 3-21.
- Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*: SAGE Publications, Thousand Oaks, CA.
- DOS. (2009). *Population estimates 2009*. Department of Statistics, Jordan Retrieved from http://www.dos.gov.jo/dos_home/dos_home_e/main/index.htm Retrieved 12/1/2009.
- Dungumaro, E. W., & Madulu, N. F. (2003). Public participation in integrated water resources management: the case of Tanzania. *Physics and Chemistry of the Earth, Parts A/B/C*, 28(20), 1009-1014.
- El-Naser, H. (1999). Water resources management policy reforms for the Hashimate Kingdom of Jordan: Country case study. Second Regional Seminar on Policy Reforms in Water Resources Management Middle East/North Africa/Mediterranean Water Initiative, 1999.

- Feeny, D., Berkes, F., McCay, B., & Acheson, J. (1990). The Tragedy of the Commons: Twenty-two years later. *Human Ecology*, 18(1), 1-19. doi: 10.1007/bf00889070
- Glaser, B. (1978). *Theoretical sensitivity: Advances in the methodology of grounded theory*: Mill Valley, Ca.: Sociology press
- Glaser, B., & Strauss, A. (1967). The discovery of grounded theory. *New York, Aldin*.
- GWP. (2000). Integrated water resources management *Global Water Partnership TAC 04 Stockholm*.
- GWP. (2004). Integrated water resources management and water efficiency plans by 2005-why, what and How? *Global Water Partnership TAC10, Stockholm*.
- Haddadin, M. (2006). Evolution of water administration and legislation. In M. Haddadin (Ed.), *Water resources in Jordan, evolving policies for development, the environment and conflict resolution* (pp. 28-51). Washington DC: Resources for the Future.
- Haddadin, M., Ra'ad, D., & Helena, N. (2006). Water and wastewater management: governance and policy framework. In M. Haddadin (Ed.), *Water resources in Jordan, evolving policies for development, the environment and conflict resolution* (pp. 184 – 210): Washington DC: Resources for the Future.
- Hayek, B. (2010). Water Users Association (USA) the story of participative irrigation management in the Jordan Valley. report prepared for the Deutsche Gesellschaft für Technische Zusammenarbeit (GIZ).
- Ker Rault, P. A., & Jeffrey, P. J. (2008). On the appropriateness of public participation in Integrated Water Resources Management: some grounded insights from the Levant. *Integrated Assessment*, 8(2).
- Kessler, B. L. (2004). *Stakeholder participation: A synthesis of current literature*: National Marine Protected Areas Center.
- Khoo, T. C. (2009). Singapore water: yesterday, today and tomorrow *Water Management in 2020 and Beyond* (pp. 237-250): Springer.
- Knigge, L., & Cope, M. (2006). Grounded visualization: integrating the analysis of qualitative and quantitative data through grounded theory and visualization. *Environment and Planning A*, 38(11), 2021-2037.
- Kolokytha, E., Mylopoulos, Y., & Mentis, A. (2002). Evaluating demand management aspects of urban water policy—A field survey in the city of Thessaloniki, Greece. *Urban Water*, 4(4), 391-400.
- Luan, I. O. B. (2010). Singapore water management policies and practices. *Water Resources Development*, 26(1), 65-80.

- Mermet, L. (1991). Participation, strategies and ethics: roles of people in wetland management. *Landscape and urban planning*, 20(1), 231-237.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*: Sage, Thousand Oaks, CA.
- Mohsen, M. S., & Al-Jayyousi, O. R. (1999). Brackish water desalination: an alternative for water supply enhancement in Jordan. *Desalination*, 124(1), 163-174.
- Moore, S. A. (1996). Defining “successful” environmental dispute resolution: Case studies from public land planning in the United States and Australia. *Environmental Impact Assessment Review*, 16(3), 151-169.
- Mouratiadou, I., & Moran, D. (2007). Mapping public participation in the Water Framework Directive: A case study of the Pinios River Basin, Greece. *Ecological Economics*, 62(1), 66-76.
- MWI. (2002). *Jordan's water strategy and policies*. Ministry of Water and Irrigation, Amman, Jordan.
- MWI. (2004). *National Water Master Plan* Ministry of Water and Irrigation, Amman, Jordan.
- MWI. (2007). *The water budget for the year 2007*. Ministry of Water and Irrigation, Department of Planning and Water Resources, Amman, Jordan.
- MWI. (2009). *Water for life: Jordan's water strategy 2008-2022*. Ministry of Water and Irrigation, Amman, Jordan.
- Onn, L. P. (2005). Water management issues in Singapore. *Water in Mainland Southeast Asia*, 29.
- Pahl-Wostl, C., Craps, M., Dewulf, A., Mostert, E., Tabara, D., & Taillieu, T. (2007). Social learning and water resources management. *Ecology and society*, 12(2), 5.
- Paneque Salgado, P., Corral Quintana, S., Guimaraes Pereira, A., del Moral Ituarte, L., & Pedregal Mateos, B. (2009). Participative multi-criteria analysis for the evaluation of water governance alternatives. A case in the Costa del Sol (Malaga). *Ecological Economics*, 68(4), 990-1005.
- Phillips, D. J., Jägerskog, A., & Turton, A. (2009). The Jordan River basin: 3. Options for satisfying the current and future water demand of the five riparians. *Water International*, 34(2), 170-188.
- Priscoli, J. D. (1996). *Public Participation in Designing Our Environmental Future: DTIC Document*.
- Reed, M. S. (2008). Stakeholder participation for environmental management: a literature review. *Biological conservation*, 141(10), 2417-2431.

- Rowe, G., & Frewer, L. J. (2000). Public participation methods: A framework for evaluation. *Science, technology & human values*, 25(1), 3-29.
- Rowe, G., & Frewer, L. J. (2005). A typology of public engagement mechanisms. *Science, technology & human values*, 30(2), 251-290.
- Salman, A., Al-Krablieh, E., Wolff, H.-P., Fisher, F., & Haddadin, M. (2006). The economics of water in Jordan. In M. Haddadin (Ed.), *Water Resources in Jordan. Evolving Policies for Development, the Environment and Conflict Resolution. Resources for the Future* (pp. 116-149). Washington D.C: Resources for the Future.
- Shannak, R., & Aldhmour, F. (2009). Grounded Theory as a Methodology for Theory Generation in Information Systems Research. *European Journal of Economics, Finance and Administrative Sciences*(15).
- Straus, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Handbook of Qualitative Research. Thousand Oaks, CA: Sage.
- Subah, A., & Habjoka, N. (2011). The Highland Water Forum: an experience in participatory water demand management *Economics of Water Demand Management in Jordan Workshop, 1-3 December 2011*.
- Thurston, W. E., MacKean, G., Vollman, A., Casebeer, A., Weber, M., Maloff, B., & Bader, J. (2005). Public participation in regional health policy: a theoretical framework. *Health Policy*, 73(3), 237-252.
- Tortajada, C. (2006). Water management in Singapore. *Water Resources Development*, 22(2), 227-240.
- Tortajada, C., & Pobre, K. (2011). The Singapore–Malaysia water relationship: an analysis of the media perspectives. *Hydrological Sciences Journal*, 56(4), 597-614.
- Tuler, T., & Webler, S. (1999). Voices from the forest: What participants expect of a public participation process. *Society & Natural Resources*, 12(5), 437-453.
- USAID. (2010). MENA regional water governance benchmarking project country profile-Jordan. United States Agency for International Development, Washington, DC. USA.
- Webler, T. (1999). The craft and theory of public participation: a dialectical process. *Journal of Risk Research*, 2(1), 55-71.
- Webler, T., Tuler, S., & Krueger, R. (2001). What is a good public participation process? Five perspectives from the public. *Environmental management*, 27(3), 435-450.
- Wiedemann, P. M., & Femers, S. (1993). Public participation in waste management decision making: Analysis and management of conflicts. *Journal of Hazardous Materials*, 33(3), 355-368.

- WorldBank. (1993). *Participatory evaluation: tools for managing change in water and Sanitation*. World Bank Technical Paper 207: The World Bank, Washington D.C.
- WorldBank. (1996). *The World Bank participation sourcebook*. The World Bank, Washington D.C.
- WorldBank. (1998). *Participation and social assessment: tools and techniques*. The World Bank, Washington D.C.
- WorldBank. (2003). Better governance for development in the Middle East and North Africa. Enhancing Inclusiveness and Accountability *MENA Development Report* The World Bank, Washington D.C.
- Xie, J. (2006). Dealing with Water Scarcity in Singapore: Institutions, Strategies, and Enforcement. *China: Addressing Water Scarcity Background Paper*(4).