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Public Participation in Water  
Management: The case of Turkey

by

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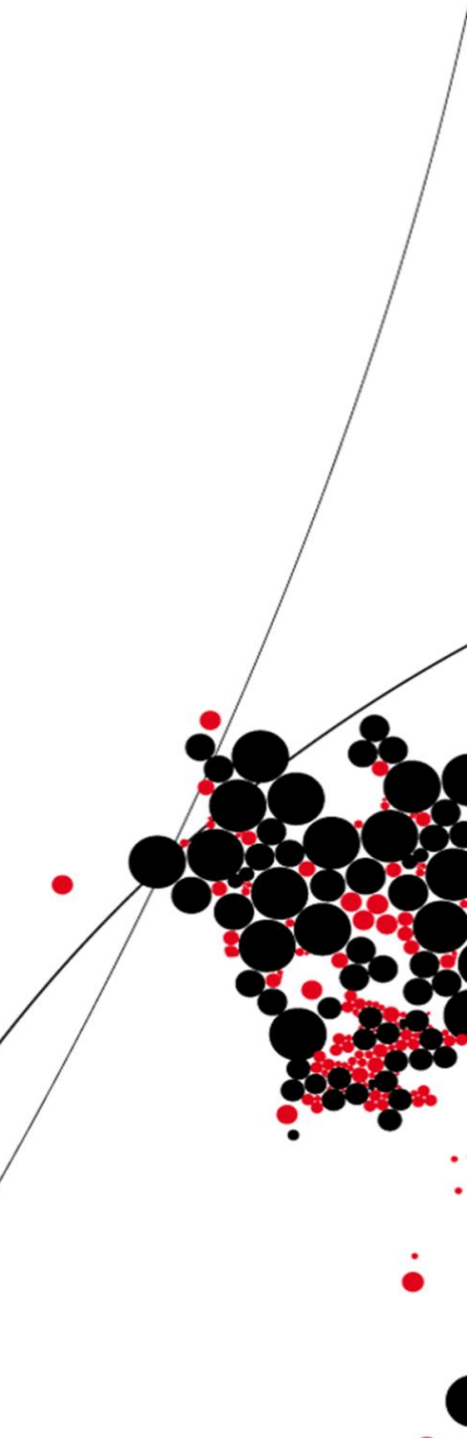
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## Abstract

Public participation has been one of the principal topics in water management for decades. As sustainable water management urges the countries, involvement of community into the matter is considered as the basic need of water management as well as making better policies towards it. Although it is an important aspect of water management, implementation of public participation mechanism is a challenging task for administrations, as a number of elements needs to be considered.

The objective of this researcher is to create empirical and methodological insights on participatory water management in Turkey. The research methodology involved a qualitative analysis and a systematic in-depth review process for peer-reviewed publications available on Scopus database. Implementations have been made towards meeting of WFD requirements are promising changes in the country. However, the findings of this thesis indicate that participatory water management in Turkey lacks a comprehensive application, and suggests improvement of engagement activities for practicing participatory mechanisms at community level and capacity building of the institutions.

**Keywords:** Public Participation, Water Management, Water Framework Directive, Turkey

## Abstract in Turkish (Öz)

Su yönetimine halkın katılımı yıllardır başlıca konular arasındadır. Sürdürülebilir su yönetimi, ülkeleri su yönetiminin temeline halkı yerleştirmeyi gerekli kılıyor. Su yönetiminin önemli bir yönü olmasına rağmen, halkın katılımı mekanizmalarının uygulanması yönetim için zorlayıcı bir görevdir, çünkü bir dizi unsurun göz önüne alınması gerekmektedir.

Araştırmacı Türkiye’de su yönetimi üzerine ampirik ve metodolojik bilgiler oluşturmaya çalışmıştır. Araştırmada, Scopus veri tabanında bulunan hakemli dergilerde yer alan yayınlara niteliksel ve sistemli bir analiz yapılmıştır. Araştırma bulguları Su Çerçeve Direktifinin (WFD) gerekliliklerinin yerine getirilmesine yönelik gerçekleştirilen uygulamaların ülkedeki umut verici gelişmeler olduğunu gösteriyor. Bununla birlikte, ülkedeki katılımcı su yönetiminin kapsamlı bir uygulamadan yoksun olduğu, yerel düzeyde halkın katılımı için etkili mekanizmalar uygulaması gerektiği ve kapasite geliştirme faaliyetlerinin artırılması öneriliyor.

**Anahtar Kelimeler:** Halkın Katılımı, Su Yönetimi, Su Çerçeve Direktifi, Türkiye

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## List of Abbreviations and Acronyms

<b>Abbreviations / Acronyms</b>	<b>English</b>	<b>Turkish</b>
EU	European Union	AT (Avrupa Topluluğu)
EC	European Commission	Avrupa Komisyonu
WFD	Water Framework Directive	SÇD (Su Çerçeve Direktifi)
CIS	Common Implementation Strategy	
GDWM	General Directorate of Water Management	SYGM (Su Yönetimi Genel Müdürlüğü)
SHW	State Hydraulic Works	DSİ (Devlet Su İşleri)
TWI	Turkish Water Institute	SUEN (Su Enstitüsü)
GAP	South-eastern Anatolia Project	GAP (Güneydoğu Anadolu Projesi)
IWRM	Integrated Water Resources Management	
PIM	Participatory Irrigation Management	
IMT	Irrigation Management Transfer	
WUA	Water User Association	

## **Author's Declaration**

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

## **Dedication**

I dedicate this thesis to my beloved family...

# Acknowledgments

Writing these lines make me remember the journey throughout the memorable times I spent here in the Netherlands, both good and bad. The former is going to accompany me for long time. Therefore, I would like to offer my sincere appreciation to the people who have been a part of that.

First and foremost, Dr. Gül Özerol, I do owe a special gratitude to you! With your continuous guidance, I could complete writing this thesis and with your unsurpassed support, I could get to grips with other matters that took place. Your expertise considerably contributed to my thesis. I think of I am lucky to be a student supervised by you!

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# Chapter 1: Introduction

## 1.1. Introduction

Water and its management has been one of the front runner matter in the governance context. Governments, non-governmental organizations, companies, experts, scientists and citizens across the world have been taking actions towards sustainable water management. Each actor is a part of water management through different roles and those roles come across as the process goes by, constituting a participation mechanism.

The well-known consensus such as Dublin Statement (1992), The Hague Declaration (2000) and Aarhus Convention (1998) greatly emphasized the importance of public participation (Mostert, 2003). The second principle of Dublin statement<sup>1</sup>, one of the very first conference addressed water related problems, states that “Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels” (ACC/ISGWR, 1992). As such emphasis addresses, it would not be denied that no effective and comprehensive water management rely on involvement of relevant sides.

## 1.2. Problem Statement

In 2000, Member States of European Union, Europe Commission and Norway came together to take a policy document, the Water Framework Directive (WFD) (EC, 2003). Establishing a coherent and harmonious implementation, the Directive aims at protection and reaching a ‘good water status’<sup>2</sup> of all waters including transboundary waters in the EU.

While many member states of European Union are in developed status for water resources, the development of water resources in Turkey, a candidate country since 1999 and been in the accession period since 2005, could only reach 40% level of development (Akkaya et al. 2006). Since Turkey has a significant portion of water resources, fulfilling the requirements of the WFD brings means a hard work for Turkey and its policy instruments on water because of the wide scale of actions to be taken (Sümer, 2013). Public participation in water management is

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<sup>1</sup> The Dublin Statement on Water and Sustainable Development, also known as the Dublin Principles, was a meeting of experts on water related problems in 1992 in Dublin, Ireland.

<sup>2</sup> The Directive aimed at achieving ecological ‘good water status’ for all waters in Europe by 2015.



one of such requirements of the WFD, which has also been on policy agendas in the past decades. The importance participation concept is acknowledged at the policy-making level but policy implementations and the activities through the implementation process experiences a considerable lack of participation mechanisms in practice in Turkey (Sümer, 2013).

### **1.3. Research Objective**

The research objective of this thesis is to create empirical and methodological insights on participatory water management in Turkey. In the course of the examination, 25 publications published and available on Scopus have been reviewed using a systematic, in-depth review process. Eventually, related to the research objective of this study, the results from the analysis are utilized to make recommendations to the interested bodies, organizations and citizens for their future practices in participatory water management.

### **1.4. Thesis Structure**

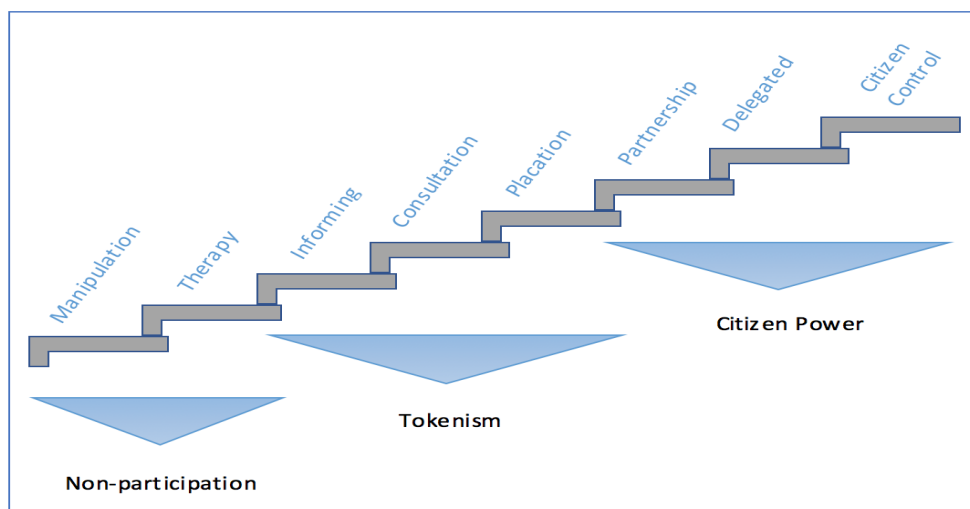
The thesis consists of five chapters. *Chapter One* provides an introduction of participation approach within water management, which is followed by a problem statement explaining the current state of Turkey surrounding the implementations of WFD. The research objective clarifies the goals of this research, along with the structure of the thesis. *Chapter Two* focuses on the literature review regarding participation theory, WFD practices in general and implementations in Turkey. Moreover, it explores legal and institutional settings of water management in Turkey with respect to watershed based approach. *Chapter Three* describes the methodology used to reach the research objective, including a description of data collection. *Chapter Four* presents the findings and discusses the approaches of participation in water management of reviewed publications, the challenges of participation in water management and the gap between theory and practice. *Chapter Five* presents the recommendations on improvement of policy and engagement activities, and the conclusions. It also includes a discussion into the significance of this research and a research gap for future studies.

## Chapter 2: Literature Review

### 2.1. Participation

Participation<sup>3</sup> is a broad concept that refers to the processes within which different individuals and organizations take part in decision-making. There are a number of existing typologies to define the level of influence that the citizens make in the decision-making process. A very well-known typology is the one that used a “ladder” metaphor, which has been developed by Arnstein (1969). As the Figure 1 below depicts, eight rungs are demonstrated in a ladder, each of which indicates the extent of citizen’s decision-making power.

Figure 1 Arnstein's Ladder of Citizen Participation



Arnstein (1969) places the first two rungs of the ladder (manipulation and therapy) into the category of non-participation, which has the objective of ‘not to participate but to be educated by powerholders’. Then the next three rungs (informing, consulting and placation) into tokenism category by indicating that ‘citizens are able either to hear what is happening and to reflect their voice’, and finally the last three rungs (partnership, delegated power and citizen control) are placed under the category of citizen power specifying that ‘citizens are capable to negotiate and to obtain keeping decision-making seats’.

In the past three decades, a series of declarations and policy documents touched upon citizen involvement for the decision-making steps such as the Dublin Conference from 1990 and the Aarhus Convention from 1998. Giving the right to the citizens to be informed of concerns and

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<sup>3</sup> The term of participation will be used as a general term covering public participation.

taking part in the processes, participatory mechanism reflects an indispensable step, inter alia, in decision making (Özerol, 2013). As it refers to a general process of involving any relevant sides i.e. officials, experts, plain individuals, participation mechanisms have been occurred in water management processes as well as some other processes such as urban planning and Environmental Impact Assessment. The realisation of considering extensive values and knowledge that contained affluence of new techniques and ways proposed to aid water resources planning and management (von Korff et al., 2012).

## **2.2. Participation in EU Water Policy**

Over the past decades, there has been an increasing interest in participation mechanism by supranational organizations, such as European Commission, considering stakeholders primarily while making policies. Water regulations has been largely legislated subject as being one of the oldest concerns of the community in the environmental responsibility. Thus, while important implementations had been taking place, it experienced lack of policy effectiveness, on the other hand (Wright & Fritsch, 2011). With the aim of reaching a reliable objective for water bodies throughout Europe, the EU Water Framework Directive 2000/60/EC was entered into force on December 22, 2000 as a milestone in the history of water policies in Europe (European Commission, EC, 2000) and has brought a sound focus to be effective on understanding all aspects of the water environment, as a consequence of negotiation series between experts, stakeholders and policy makers from a variety of topics (EC, 2003).

According to the WFD, involving the public is initially needed because without their contribution (of information), it is not likely to achieve the environmental goals and to achieve the benefits. In addition to these requirements of the Directive, this beneficial means is not only to improve decision-making mechanism but also it ensures the environmental objectives of water management are effectively implemented and achieved (EC, 2003). It essentially helps authorities to define a comprehensive framework and consider possible outcomes. As shown in Table 1, the Preambles 14 and 46, and the Article 14 of the WFD attribute a significant importance to public participation (EC, 2000):

Table 1 Relevant text of the WFD on participation

**Preamble 14**

*The success of this Directive relies on close cooperation and coherent action at Community, Member State and local level as well as on information, consultation and involvement of the public, including users.*

**Preamble 46**

*To ensure the participation of the general public including users of water in the establishment and updating of river basin management plans, it is necessary to provide proper information of planned measures and to report on progress with their implementation with a view to the involvement of the general public before final decisions on the necessary measures are adopted.*

**Article 14**

*Public information and consultation*

*1. Member States shall encourage the active involvement of all interested parties in the implementation of this Directive, in particular in the production, review and updating of the river basin management plans.*

As can be seen, *Preamble 14* clearly emphasizes that participation of any stakeholder will ultimately contribute to the success of the Directive, and *Preamble 46* points out the importance of informing the public in order to facilitate and benefit their participation in the planning process. Indicating the two basic requirements of public participation (informing and consultation), *Article 14* urges Member States to involve all parties actively for the preparing, reviewing and updating processes of the plans in the course of implementation of the Directive.

It can be concluded that the public participation requirements constitute the vital element of the WFD, and they need to be implemented effectively by observing possible negative effects such as inadequacy of the institutions, lack of financing and ineffective communication with community. Because no single actor knows all the necessary information regarding projects that will be implemented, learning together will lead to managing together.

Since the WFD came into force in 2000, the member states of the EU have been taking actions and implementing plans. A number of projects have been implemented and documents have been published with regards to the public participation requirements of the WFD. For instance, a project entitled “Harmonizing Collaborative Planning” (HarmoniCOP) started in 2005, targeting learning together compromises recognizing each other’s points of view and concerns (HarmoniCOP, 2005). In order to achieve the target successfully, a crucial constituent of public

participation is the social learning process, which is based on the following elements. (HarmoniCOP Team, 2005);

- Recognition of stakeholder interdependence,
- Interaction between all stakeholders,
- A minimum degree of openness and trust,
- The development and critical assessment of potential solutions,
- Joint decision-making, based on reciprocity (give and take) and commitment,
- Arrangements to promote implementation of decisions,
- Critical self-reflection by all participants as to (1) their goals and interests, (2) their assumptions about the system to be managed and (3) how their actions affect the other participants.

Nones (2016) argued that active involvement is not defined in all its scope in the Directive. He attributed this to a ‘discretion’ that has been given the member states about participation. The member states are able to secure a comprehensive acceptance for the consultation and (transparent) involvement by any interested subjects. Having a greater transparency in setting the legislative goals, further added Nones (2016), is likely to have in broader efforts and thus also puts the states in a position in which involving experts and citizens might be interpreted with absolute freedom manner. In order to cope with these problems, a better exchange of data and knowledge of both technical and political levels is a necessity, suggested Nones (2016), and concluded that even though public participation is a very important means in water management, there are a few experiences available in which the results are mostly site specific.

Teodosiu et al. (2013) reviewed how public participation functions with regard to the WFD in Romania by three case studies. The River Basin Committee at basin and local level was set by the Government and ensures either the public involves and an efficient cooperation between regional water management authorities and local authorities. Teodosiu et al. (2013) said at river basin level consultation processes remain limited although an organizational structure is available, and revealed the low interest for the participatory processes caused by lack of capacity and awareness on management issues of water resources, with a result of total 270 questionnaires sent to different governmental bodies, industry and NGOs. Further, they emphasized a scepticism raised at regional and local levels regarding the follow-up of issues; the public and stakeholder think even the opinions of them are cared, the plans would not be used at all or the authorities would probably make changes on the plans. Teodosiu et al. (2013)

also found out that relevant scientific community's involvement is limited in participatory process due to being not recognized by the authorities as relevant stakeholders, which they attribute to insufficient scientific experience and knowledge. There is still limitation in the role of public participation, and public participation is seen as an ordinary requirement by the authorities, concluded Teodosiu et al. (2013).

With a focus on the instrumental value of public participation, Özerol & Newig, (2008) developed five constituents of public participation settings that can be applied to and evaluated the success of these settings. They identified manageable and practical criteria which help to find out the achieved benefits public participation processes and saw a challenging task not only for multitude of objectives but also for multitude of levels and instruments. For instance, they argue that with the current conditions, the tools and techniques used before might vary from each other and the lack of clear-cut procedures under every specific context in the Directive is evident. They identify three major resources that public participation requires: (a) time, (b) human) and (c) financial sources, and examined them using five constituents, namely 'Scope of participants', 'Communication with the public', 'Capacity building', 'Timing of participation', and 'Financing participation'. The problems that they extracted from the of analyses regarding the constituents are as follows:

- Scope of participants: unclear definition of stakeholders, unequal opportunities for involvement, especially on the side of environmental NGOs;
- Communication with the public: inaccessible, unclear, insufficient, too much or too technical information; delay or absence of response from the competent authorities; opaque decision-making processes; lack of trust;
- Capacity building: lack of knowledge on the part of the public, lack of institutional capacity;
- Timing of participation: late involvement of the public, involvement at the end of the decision process;
- Financing of participation: lack of financial support for participants.

Özerol & Newig (2008) concluded that for successful results, these constituents should be effectively implemented in the period of participation.

van der Heijden & ten Heuvelhof (2013) discussed a solution of European Commission among the member states, pointing out the public participation in the implementing processes with an

example case study; the implementation of the WFD in the Netherlands. They questioned how the corporate approach of member states suits the requirements by raising several concerns for the member states with their corporate systems. According to the authors, public participation is not only a challenge for the member states, but it would also clash with one of traditional approaches while involving citizens and stakeholders in the processes of policy making and implementation. They also argued that the institutional structures of the member states have might lead to a ‘lack of meaningful participation’, and concluded their paper with four key observations; (1) the corporate system in the Netherlands allowed the country met the requirements and did not clash with public participation extensively, (2) a considerable amount of opinions of public and stakeholder draws involvement of them was unsuccessful, (3) getting used the new settings of institutional structure has caused a waste of time for the participant, and (4) attending by citizens lacking awareness is a weak aspect of implementation.

### 2.3. Legal and Institutional Settings of Water Management in Turkey

A general picture of administrative system in Turkey consists of three levels, namely national (policy-making), provincial (executive) and local (users) level. While ministries, top authorities and some NGOs<sup>4</sup> constitute the national level, provincial level involves general directorates of ministries and other governmental organizations. Local level is made up with involvement of municipality, head of districts, NGOs and individual members of public.

*Figure 2 Illustration of Turkey's administrative structure*



Ministry of Forestry and Water Affairs is the primary organization domestically to take action and manage water resources. Thus, a number of important governmental bodies work under

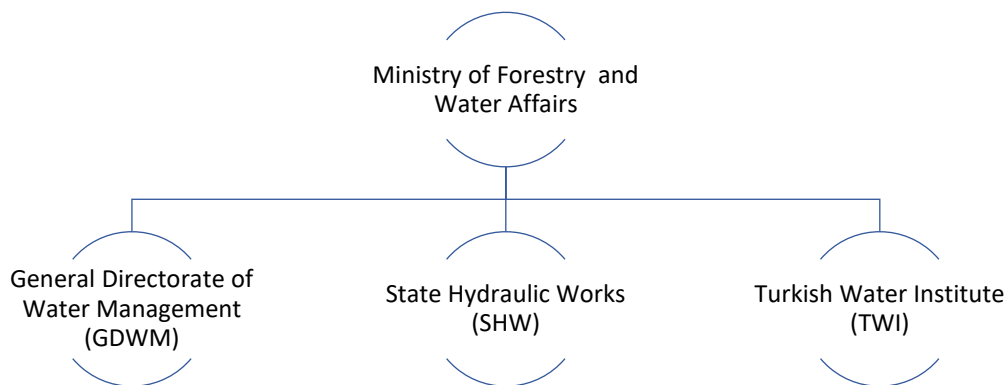
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<sup>4</sup> For instance, WWF Turkey, TEMA (The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats), TMMOB (Union of Chambers of Turkish Engineers and Architects).

this ministry. There are a number of ministries involved in water management by their routine tasks (see Appendix 1 for the roles of the ministries and other institutions in water management).

The chart below demonstrates the hierarchy between three main authorities carry out the water related tasks under the ministry, namely General Directorate of Water Management, General Directorate of State Hydraulic Works and Turkish Water Institute (TWI, 2014).

*Figure 3 Hierarchy between main water authorities*



In order to meet the increasing demand on water resources at basin level which also means adoption of EU Legislation, proposal of relevant regulations and integrated water resources management was an important need for the country. Therefore, national and international efforts in concerning Turkey have been accelerated since 2009 and establishment of such regulations and institutions; arranging basin organizations at national, basin boundary based and provincial level have been done (Delipinar & Karpuzcu, 2017).

### **2.1.1. General Directorate of Water Management (GDWM)**

The GDWM was established in July 2011 to carry out substantial tasks such as “determining policies regarding water resources, coordination of water management, preparing river basin management plans, coordinating the allocation of water resources on a sectoral basis, building a national water information system, running activities regarding treatment facilities of drinking and utility water and conducting research on the effects of climate change on water resources”<sup>5</sup>.

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<sup>5</sup> Official Gazette on Organization and Duties of The Ministry of Forest and Water Works, <http://www.resmigazete.gov.tr/eskiler/2011/07/20110704M1-2.htm>



As well as carrying out substantial tasks, the GDWM has been a pioneer of important regulations on water resources after establishment. As such, a number of legislations has been prepared by the authority, which constitute ground of the activities required by the Directive. Table 2 shows the relevant regulations in the context of meeting the requirements of the Directive prepared by the GDWM.

*Table 2 Water resources regulations*

<b>Title of Regulation</b>	<b>Publication Date and Number<sup>6</sup></b>
Protection of Water Basins and Preparation of Management Plans	17.10.2012 - No. 28444
Protection of Groundwater Against Pollution and Deterioration	07.04.2012 - No. 28257
Water Management Coordination Committee Prime Ministerial Notice with numbered 2012/7	20.03.2012 - No. 28239
Composition and Working Procedures and Principles of the Basin Management Boards	18.06.2013 - No. 28681
Regulation on Setting Up Basin Based Management	20.05.2015 - No. 29361
Update on Protection of Surface Water and Preparation of Management Plans	28.10.2017 - No. 30224
Water Law	Sent to Prime ministry for approval

As can be seen from the Table 2, the regulation on Preparation of Management Plans was updated recently, it is likely because of a modification need after the preparing some river basin plans, for instance, Büyük Menderes River Basin Management plan. Similarly, the regulation on Setting Up Basin Based Management includes an update on Basin Management Boards, specifying a better management approach.

To be able to meet the requirements of effective water management, there has been a need of systematically working mechanism for water resources planning and management in Turkey. Thus, GDWM has taken the actions towards setting up the arrangements that ensure a well-managed water resources planning, from provincial and basin-based management to centralised coordination at the national level. In the context of this setting up, Water Management Coordination Board (centralised), Basin Steering Committee (centralised), Basin Management

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<sup>6</sup> Official Gazette, <http://www.resmigazete.gov.tr/default.aspx>

Committee (basin-based) and Provincial Water Management Coordination Board (province based) have been created<sup>7</sup>. Additionally, National Basin Management Strategy and Action Plan have been prepared for the coordination and integrated implementation of basin-based works.

#### *Water Management Coordination Board (WMCB)*

The Board established on 20 March 2012 is committed to establishing measures to protect water resources within the framework of an integrated basin management approach, to ensure inter-sectoral coordination for effective water management, to accelerate co-operation and water investments, to develop strategies, plans and policies for achieving the objectives set out in national and international documents, to evaluate the implementation of the issues that should be fulfilled by the institutions and organizations and to cooperate at the highest level with the coordination and cooperation. The board, under the Undersecretary of the Ministry of Forestry and Water Affairs will consist of the high-level representatives from Ministry of Environment and Urban Planning, Ministry of Interior, Ministry of Foreign Affairs (MoFA), Ministry of Health, Ministry of Food Agriculture and Livestock (MoFAL), Ministry of Science, Industry and Technology, Ministry of Energy and Natural Resources (MENR), Ministry of Culture and Tourism, Ministry of Development, Ministry of European Union, and the representatives of General Directorate of Water Management (GDWM), State Hydraulic Works (SHW), Turkish Water Institute (TWI), General Directorate of Meteorology (GDM), General Directorate of Combating Desertification and Erosion (GDCDE).

#### *Basin Steering Committee (BSC)*

Basin Steering Committee, a central establishment coordinating the studies carried out in the basin, has been set up to ensure (a) short, medium and long-term applications in basin protection action plans are realized (b) coordination between the institutions in the preparation and implementation of the basin management plans and to follow the practices (c) coordination within the scope of National Basin Management Strategy. The Committee is composed of undersecretaries of Ministry of European Union; Science Industry and Technology; Environment and Urbanization; Energy and Natural Resources; Health; Transport, Maritime Affairs and Communications; GDWM, SHW, TWI, Provincial Bank and GDCDE.

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<sup>7</sup> Watershed Management in Tukey (GDWM, 2014),  
[http://www.suyonetimi.gov.tr/Libraries/su/Turkiye\\_de\\_Havza\\_Yonetimi.sflb.ashx](http://www.suyonetimi.gov.tr/Libraries/su/Turkiye_de_Havza_Yonetimi.sflb.ashx)

### *Basin Management Committee (BMC)*

For each basin, BMC evaluates the actions taken towards the implementations of the plans with regard to the WFD, presents the results of the reports prepared by the relevant organizations as a report to the BSC, ensures access and active participation of public in the process of preparing, reviewing and updating the basin and records monitoring results related to water quality and quantity in a common database to be created by GDWM. The coordinator governor specified in the enactment leads the committee. Members of BMCs are the neighbour governors in the basin or deputy governor, general managers of water and sewerage administrations, provincial mayors, representatives of GDWM and SHW, the regional coordinator of SHW, representatives from universities, organized industrial zones and non-governmental organizations in the basin.

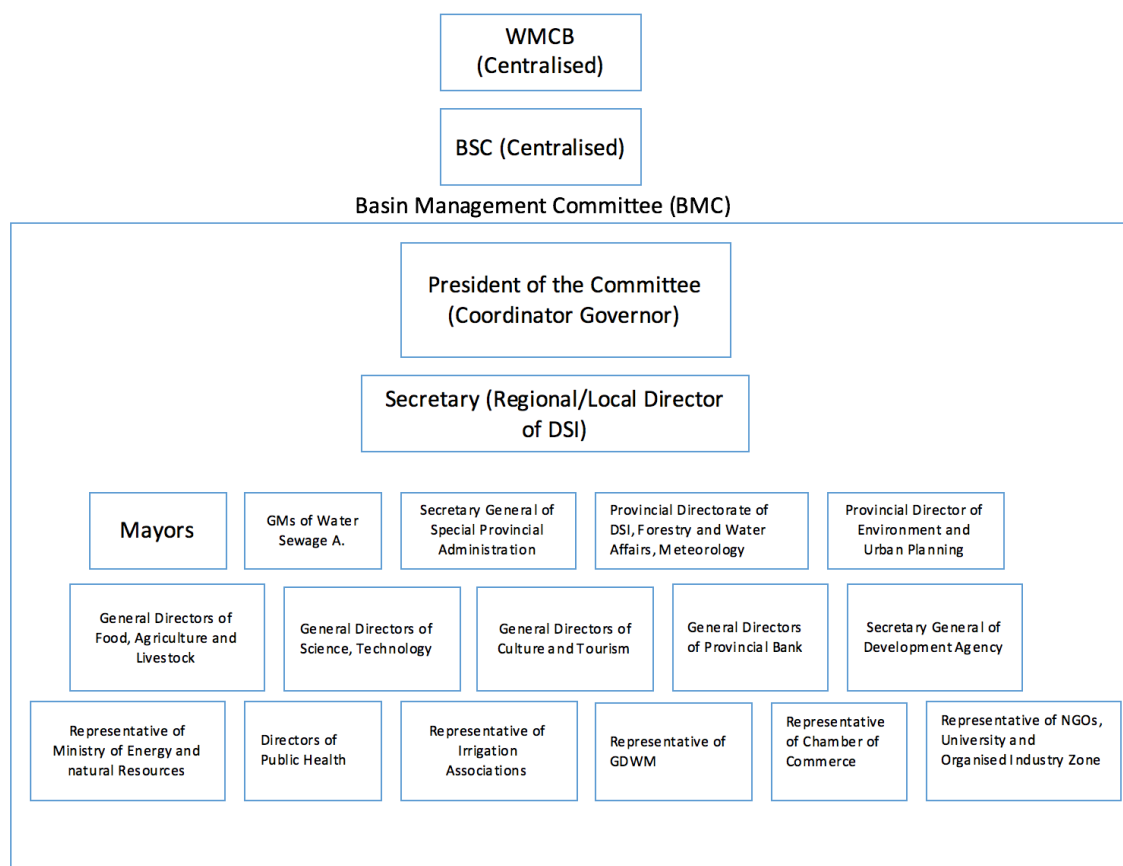
### *Provincial Water Management Coordination Board (PWMCB)*

PWMCB carries out the works for preparation of basin protection action plans and flood and drought management plans, for monitoring and evaluating the implementations, is set on each province by the governor body in the basins. It consists of representatives of the provincial organizations and local governments of the relevant institutions and organizations to represent all stakeholders in the water management. In the presidency of the governor or the deputy governor, general manager of water and sewerage, mayors in provinces, the provincial council chief or Special Provincial Administration, most senior representative in the province from MoFA, MENR, SHW, GDM, General Directorate of Forestry, General Directorate of Highways, Development Agency and Provincial Bank, the provincial directors of Environment and Urban Manager; Food, Agriculture and Livestock; Science, Industry and Technology; Culture and Tourism; Public Health; Disaster and Emergency Authority, the president of industry and chamber of commerce and representatives of irrigation associations.

### *Working mechanism between BSC, BMC and PWMCB*

PWMCB meets three times a year and the results of the meetings are reported to the BMC. BMC are convened twice a year to present the works, troubles, bottlenecks, and solutions to watershed problems, if any, to the BSC. The agenda items prepared according to the committee reports are discussed in the Central Committee of the Basin Management at the level of the undersecretaries of Ministries, the results of the meetings are presented to WMCB. An illustration of the working mechanism between the abovementioned boards and competent authorities in the provinces is given below.

Figure 4 Illustration of basin based boards



### *National Basin Management Strategy (NBMS)*

The Ministry of Forestry and Water Affairs has prepared the National Basin Management Strategy and Action Plan for the coordinated and integrated implementation of basin-based work, guiding medium- and long-term decisions and investment programmes<sup>8</sup>. NBMS was prepared by joint participation of Prime Ministry, Ministry of Environment and Urbanization; Food, Agriculture and Livestock; Development, Disaster and Emergency Authority, local administrations, research and education institutions, NGOs and stakeholders. The NBMS aims to facilitate the implementation of the strategies through the participation of relevant institutions, organizations and stakeholders (10th Development Plan, 2014).

### *Action Plan on Meeting Requirements of the WFD*

As the members states were required to set up and follow a plan for meeting the requirements of WFD, an action plan was specified by GDWM as the competent authority to make research

<sup>8</sup> Specialized Report on Water Resources Management and Security of 10th Development Plan

and take step to realise the activities. In the table below, Turkey's schedule of implementing the WFD River Basin Management Plans (RBMPs) is given (GDWM, 2014).

*Table 3 Actions for Implementation of RBMPs*

Action	Year	Explanations
Legal transposition	2011	Full transposition upon membership (transboundary parts)
Description of River Basin Districts	2012	Activities continue on 25 River Basins
Preparation of RBMPs	After 2014	The preparation of RBMPs are directly linked to the preparation of River Basin Action Plans and Characterisation Reports
Implementation of RBMPs	After 2015	The conversion of RBMPs will continue. The completed plans will start to be implemented.
Exemption	2027	The time of achievement of the good water status depends on the real problems in the basins.

### **2.1.2. General Directorate of State Hydraulic Works (SHW)**

Established in 1953, SHW runs the task based on the Establishment Act (No. 6200), The Ground Water Act (No. 167) and The Domestic Usage and Industrial Water Supply Act (No. 1053). SHW is authorised by the acts as follows (1) Establishment Act on 'construction of dams, operation of structures against floods, building of irrigation and drainage systems, production of hydroelectric power, improvement of navigable rivers, research, projects or construction works the above-named, maintenance and repair of these facilities', (2) Ground Water Act on 'drilling of wells for ground water examinations and research, allocation of ground water, protection and registration of groundwater and exploration, utilization and improvement-modification certificates', and (3) Domestic Usage and Industrial Water Supply Act on 'dam and water transmission lines, construction of water treatment plants, construction of water storage facilities'<sup>9</sup>.

<sup>9</sup> Watershed Management in Turkey (GDWM),  
[http://www.suyonetimi.gov.tr/Libraries/su/Turkiye\\_de\\_Havza\\_Yonetimi.sflb.ashx](http://www.suyonetimi.gov.tr/Libraries/su/Turkiye_de_Havza_Yonetimi.sflb.ashx)

### **2.1.3. Turkish Water Institute (TWI)**

TWI was established under Ministry of Forestry and Water Affairs in 2011 (No. 658), with a special budget<sup>10</sup>. The main responsibilities of TWI, a think tank to strengthen Turkey's position on water at global scale, are conducting academic studies and educational programs for the solution of local and global water problems. Working in close collaboration with national and international organizations on sustainable water management, development of water policies and capacity building, TWI contributes to the national water policy through meetings with water specialists in Turkey and abroad. Therefore, the institute would help the country realise the implementations of the Directive by the studies of networking, capacity building, communication with the community through education activities.

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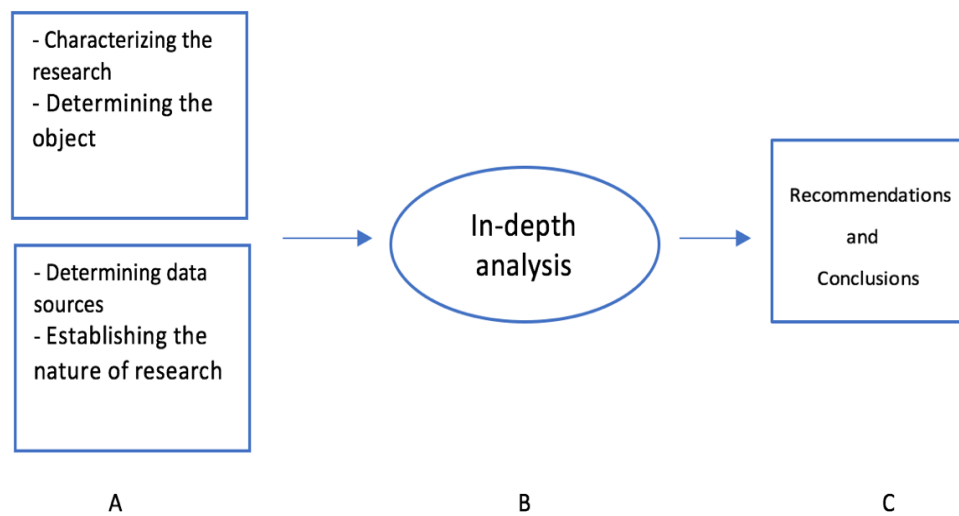
<sup>10</sup> Watershed Management in Turkey (GDWM),  
[http://www.suyonetimi.gov.tr/Libraries/su/Turkiye\\_de\\_Havza\\_Yonetimi.sflb.ashx](http://www.suyonetimi.gov.tr/Libraries/su/Turkiye_de_Havza_Yonetimi.sflb.ashx)

## Chapter 3: Methodology

### 3.1. Research Framework

A conceptual framework that follows a systematic way is a requirement of a research to achieve the objective. To present findings and conclusions, the researcher conducted a study of the following essence of research.

*Figure 5 Schematic illustration of the research*



A: The objective of the research is to analyse the public participation in water management in Turkey and then, based on the analyse, to provide recommendations. Relevant authorities, institutional settings and regulations regarding public participation in water management, as well as completed and ongoing activities are the objects of this research. The research examines publications that focus on participation in water management in Turkey. Additionally, the organizational structure established as required in the Directive to efficiently implement the plans are examined. In order to access and collect the necessary data, this research utilizes legislations, scientific literature, information from webpages, and information from reports.

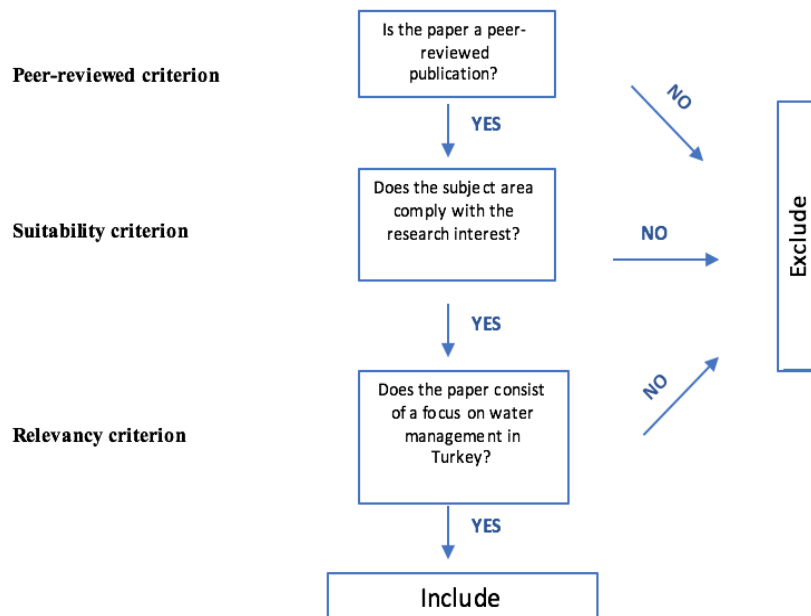
B: By means of which the publications regarding public participation in Turkey is analysed in an in-depth analysis.

C: Using the results from the analysis of the current situation, recommendations are developed on the conditions to successfully fulfil the requirements.

### 3.2. Main Steps of the Review Process

The research followed a qualitative content analysis of the literature (Table 4). The content analysis broadly follows Newig & Fritsch (2009) with modifications after Brandt et al. (2013) and Brink et al. (2016). The articles were identified via the Scopus database, the largest abstract and citation database of peer-reviewed literature<sup>11</sup>, which provided unique bibliographical information of full articles published between 1997 and 2016 in English. The relevant publications were identified and eliminated for the review by applying the selection criteria (Figure 6) (Brink et al. 2016).

Figure 6 Screening criterion of peer-reviewed publications



To achieve a best-match and wide-scale search result, the researcher made use of words “participation”, “water” and “Turkey” as keywords on the database. It was acknowledged when the search performed that, especially in the field of water management studies focusing on participation approach in Turkey, there is a large body of literature not recorded in Scopus, which was beyond the focus of the analysis. The first search (string: *TITLE-ABS-KEY (participation AND water AND turkey)*) resulted in 51 publications, which was not abundant at the beginning. Then the word ‘participation’ has been turned into ‘participat’ in the string in order to reach broaden result by the chance of including studies focusing on participatory

<sup>11</sup> Scopus is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings. <https://www.elsevier.com/solutions/scopus>



approach. Second search resulted in 113 publications, which was a considerable number of documents to start with.

*Table 4 Overview of the paper review-protocol*

<b>Step</b>	<b>Procedure</b>	<b>Result</b>
Data gathering	Database search on Scopus using search string	Bibliographical details of 113 publications
Data screening	Analyse of initial database using pre-defined criteria (field of study)	A database of 90 publications
Data cleaning	Screening of abstracts by the criteria: "theme", "relevancy", "participation"	54 documents to be 'included', 36 to be 'excluded'
Data scoping	Consistency check i.e. focus, access to full-text	37 full-text publications
Classification	Obtain papers classified as relevant Analyse the content of full-text i.e. participation mentioning	Final database of 37 full-text publications
Review	Collect data from each article based on categories	Coherent datasheet containing 25 publications (Appendix 3)

While some of the subjects were necessary to include to comprise any hiding publications from the areas (e.g. Computer Science, Energy, Economics, Mathematics), some of the subjects (e.g. Medicine, Chemistry, Nursing, Psychology) were not relevant. Therefore, the search result was filtered. This screening step brought about a result of 90 publications. Then, an abstract analysis of the publications has been performed as to whether "participation" was referred to in the abstract, which was one of the selection criteria. The result of this data cleaning step created a sharp decrease on the number, dropping the number of relevant publications to 54. Next to that, a detailed examination has been made for the papers as to whether they focused on water management, included the term "participation" (including citations) and it was possible to access to the full-text of the publication. After this scoping step, the number of publications was reduced to 37. After checking the full-text of 37 publications, it was seen that there was still a need of elimination for some publications as they lack focus and relevancy. This final step included a strict elimination for the publications as all the criteria i.e. participation referring, water management focus and coherency, have been checked again. Finally, a number of 25 publications was included in the in-depth review.

### 3.3. Data Analysis

To perform the in-depth analysis, a review matrix has been created including identical sections of publications and criteria. An ID (e.g. P01, P02...) number has been assigned to each publication to prevent any disorder in the course of examination. To make a clear screening during the analysis, only the name of first author was included in the matrix. Then, the sections followed; title, year of publication, Scopus link, publication type, theme, study objective or research questions, definition of participation, definition type, text of the definition, type of method, case location and research gap. Table 5 presents an example of the review matrix prepared for the in-depth analysis.

*Table 5 A sample of review matrix*

<i>ID</i>	
<i>First author</i>	
<i>Title</i>	
<i>Publication year</i>	
<i>Scopus link</i>	
<i>Publication Type</i>	<i>Article, Book Chapter, Conference Paper</i>
<i>Theme</i>	<i>Water governance, Irrigation, Drinking water, Coastal Zone Management, Lakes, Hydropower</i>
<i>Objective / Research questions</i>	
<i>Participation definition</i>	<i>Yes / No</i>
<i>Definition type</i>	<i>Own / Citation</i>
<i>Definition text</i>	
<i>Method</i>	<i>Qualitative, quantitative or mix</i>
<i>Case location</i>	
<i>Research gap</i>	
<i>Remarks</i>	
<i>Include in-depth review</i>	<i>Yes / No</i>

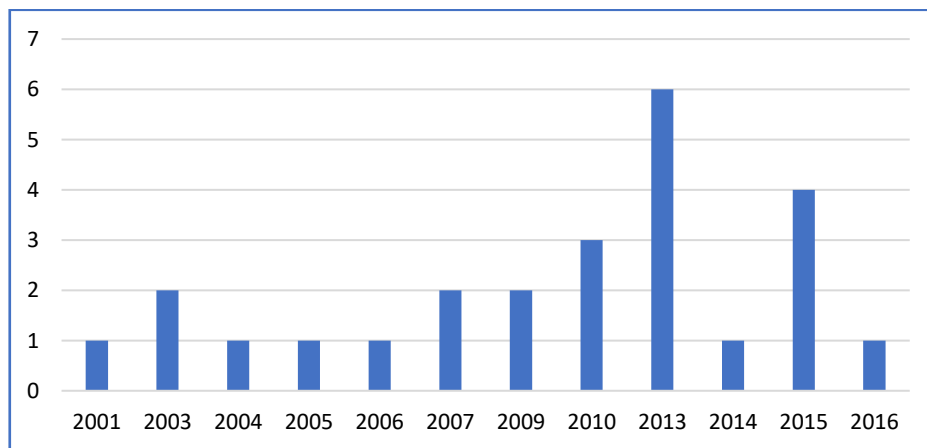
## Chapter 4: Results

The systematic in-depth analysis has been applied to the publications and revealed the findings that are provided in sub-sections below. In order to present the findings in a neat matter, the results of identified publications are given in the titles as follows, publication year and theme, methodological choice, study objective and participation definition.

### 4.1. Distribution of Publications over the Time and Theme

Although the initial Scopus search for the correspondent string has ranged from the year 1997 to 2016, the eventual results ended up with the range of 2001-2016 when the screening criteria applied (see Appendix 3). Below the number of publications based on the year of publication is provided in Figure 6, and theme-based distribution of the publications is provided (Figure 7).

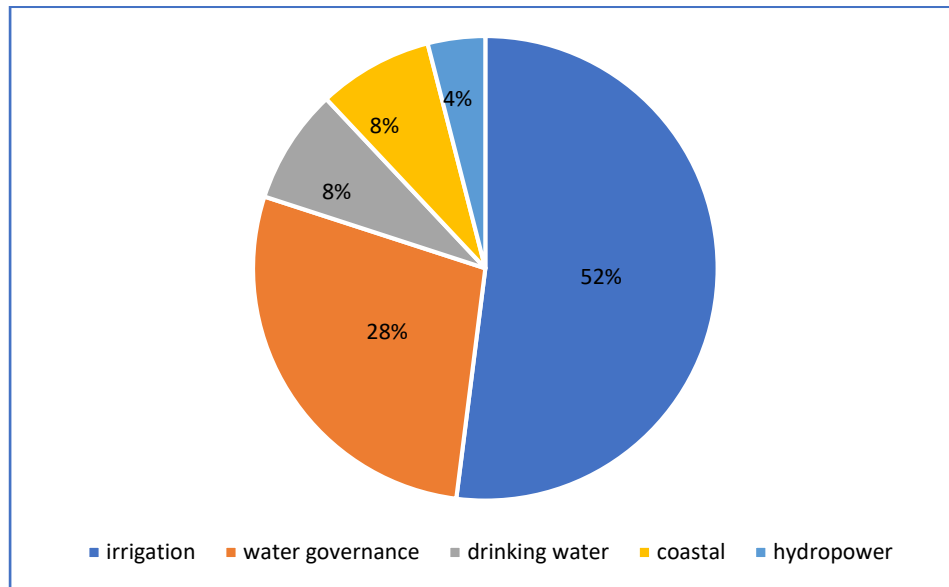
*Figure 7 Year based distribution of publications*



The distribution of 25 publications that were included in the in-depth review is seen in Figure 5. The number peaked in 2013 with the number of 6 publications, 3 of them focusing on irrigation (Cakmak et al. 2013; Özerol, 2013; Sayin et al. 2013), 2 on water governance (Kibaroglu et al. 2012; Özerol et al. 2013) and 1 on hydropower (Kadirbeyoglu & Kurtic, 2013). The next highest peak number was 4 articles in 2015, with the distribution of 2 publications on irrigation (Aydogdu & Yenigun, 2015; Mukhtarov et al., 2015), 1 on coastal waters (Soriani et al. 2015) and 1 on lakes (Yavuz & Baycan, 2015).

As the following pie chart depicts, the irrigation theme took the most attention overwhelmingly amongst the five main themes.

*Figure 8 Theme based distribution of publications*



While the popularity of irrigation topic among the authors was highest (14 out of 25 publications), water governance theme took the second place by seven publications, consisting of water-related focuses such as policy, economic and environmental matters. The rest of the research areas remaining numbered as follows, coastal and lakes studies included 2 publications each and hydropower study included 1 publication.

#### **4.2. Methodological Choices**

When the publications are categorized according the methodological choices made, it is seen that quantitative research is the leading research type within the search results, with a proportion of %64. Given the focus of the publications resulted in the Scopus search, it was seen that water management studies by a quantitative research was paid great attention. 17 studies used quantitative research method (e.g. survey, interview, observation).

When the selection of the cases was examined, it was seen that those studies are mostly linked to agricultural- or watershed-oriented in which a project has been operated or ongoing. For instance, most of the studies of those focused on South-eastern Anatolia Project (GAP in Turkish acronym) Turkey's reputed project, the Gediz River Basin and the Seyhan River Basin, respectively. A detailed list of common cases is given in the table below.

*Table 6 Studies focusing on common locations*

Location	Author and Publication Year	Topic
South-eastern Anatolia Project - GAP	Aydogdu & Yenigun, 2015	Factors affecting farmers' satisfaction from water users association in the Harran Plain-GAP region, Turkey
	Miyata & Fujii, 2007	Examining the socioeconomic impacts of irrigation in the Southeast Anatolia Region of Turkey
	Mukhtarov et al., 2015	Interactive institutional design and contextual relevance: Water user groups in Turkey, Azerbaijan and Uzbekistan
	Özerol, 2013	Institutions of farmer participation and environmental sustainability: A multi-level analysis from irrigation management in Harran Plain, Turkey
	Özerol et al., 2013	Public participation as an essentially contested concept: Insights from water management in Turkey
	Ünver, 2001	Institutionalizing the sustainable development approach: Co-ordination across traditional boundaries
Gediz River Basin	Yercan et al., 2004	Comparative analysis of performance criteria in irrigation schemes: A case study of Gediz river basin in Turkey
	Yercan, 2003	Management turning-over and participatory management of irrigation schemes: A case study of the Gediz River Basin in Turkey
Seyhan River Basin	Cakmak et al., 2010	Visions for the future of water in Seyhan Basin, Turkey: A backcasting application
	Cakmak et al., 2013	Participatory fuzzy cognitive mapping analysis to evaluate the future of water in the Seyhan Basin

When the case locations are mapped, it can be seen that most of the studies concentrate in Turkey's southern, south-eastern and western regions. As being a primarily irrigation region, the publications focused on the GAP, which is located in south-eastern Turkey, constituted 28% of the total number. Similarly, the same argument applies to the southern and western regions. A detailed mapping of the cases is provided in Figure 9.

Figure 9 Selected case locations on the map of Turkey



It was seen that irrigation studies constituted the major interest among the publications focusing on a common theme in the research. As a fact, agricultural activities create jobs, supply food and contribute to economic growth in a country. On the other side, the history of agricultural development in Turkey has included a number of implementations. Introduction of participatory mechanisms, development and management of water resources in the transition from non-participatory approach to participatory water management (Özerol, 2013).

#### 4.3. Research Objectives

To provide a clear understanding, the research objectives of the publications are discussed in terms of the themes that they focus on.

##### *a. Water Governance*

As the nature of this subject, it covers a variety of topics. Participation in general and case-based, transboundary water, water management policy, economic and environmental issues of water management are the primarily involved focal themes.

With respect to participatory watershed management, Karadağ & Barış (2009) analysed stakeholder's participation in the example of Kovada Lake. Socio-cultural and legal structure, problems, needs and priorities of the basin was examined in the study. Özesmi & Özesmi (2003) observed the differences, similarities and views of varied stakeholder groups using Fuzzy

Cognitive Maps (FCM)<sup>12</sup> in Uluabat Lake, Bursa, a Ramsar recognised wetland area, facing serious threats by factories and domestic wastes. Similarly, another study conducted by Cakmak et al. (2010) also used FCM, with the intention of finding out stakeholders' perception for water system in Seyhan Basin, Adana. The basin consists of a fertile plain, Cukurova, is irrigated all by Water User Associations (WUA), therefore, finding how stakeholders perceive applied irrigation activities out in the basin was important.

With the objective of developing a complementary approach for disputes between Iraq and Turkey, Zagonari & Rossi (2014) focused on a negotiation support system for transboundary water. The study by Kafetzis et al. (2010) is another research seeking similar theme focusing on a transboundary river (Maritza River Basin between Bulgaria, Greece and Turkey) with the objective of identifying the political, economic and environmental problems of water resources. Özerol et al. (2013) focused on why public participation in water management is a contested concept, and investigated the implications of the nature of being contested by examining three cases, namely Harran Plain, Konya Closed Basin and Black Sea region.

#### *b. Irrigation*

By the common focus of agriculture, Özerol (2013; Uysal & Atış (2010); Yercan (2003) examined and evaluated level of success for WUAs, specifically the involvement of farmers in decision-making processes. Uysal & Atış (2010) focused on level of success of WUA located in Kestel, Bergama, in the western region of Turkey. Yercan (2003) determined farmers' participation in decision-making level as well as opinions of decentralised irrigation management in the Gediz River Basin, in the western region of Turkey. Özerol (2013) aimed at examining farmer participation from an institutional perspective for the case of Harran Plain in the GAP region. Another study that focused on Harran Plain (Mukhtarov et al. 2015) examined institutional design and discussed the ways to deal with the complexity arising from the GAP. Focusing on irrigation schemes, Degirmenci et al. (2006) and (M Yercan et al. (2004) evaluated the performance of the irrigation systems in a comparative analysis. Degirmenci et al. (2006) conducted a comparative analysis to find out performance after SHW-operated irrigation projects implemented across Turkey and Yercan et al. (2004) to see results of transferring management authority from SHW to WUAs in Gediz River Basin. Sayin et al. (2013) examined the activities of 29 irrigation organizations for a successful irrigation

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<sup>12</sup> FCM: Combining fuzzy logic and cognitive mapping, FCM is a graphical knowledge representation of perception by a given system. Cognitive mapping leans on graph theory (study of graphs) allows users studying the structural properties of the empirical world (Özesmi & Özesmi, 2004).

management in Antalya, a Mediterranean city in the south of Turkey. As a well-known common subject in irrigation, Aydogdu & Yenigun (2015; Miyata & Fujii (2007); Ünver (2001) investigated farming activities for irrigation system implementation in the GAP Region and evaluated respectively the following issues; the factors affecting satisfaction of farmers, achievement of envisioned improvement and capacity building activities.

#### *c. Lakes*

Focusing on the improvement of lake conditions, the study of Alkan et al. (2009) aimed at determining of interactions of residents and precautions to be taken in the surrounding of Egirdir Lake, Isparta. Next to this study, Yavuz & Baycan (2015) assessed the knowledge and perception of the community in Beysehir Lake, Konya, the border city of Isparta, explored local communities' attitude and interactions on problems, sustainability and strategies.

#### *d. Coastal Zone Management*

Irtem et al. (2005) studied coastal zone problems at Edremit Bay, Balıkesir, with an objective of examining the existing conflicts between the activities for tourism and commercial use. Investigating the contribution of public participation to Integrated Coastal Zone Management (ICZM), Soriani et al. (2015) focused on Dalyan-Köycegiz, in the South-West coast. The research included seven cases in the Mediterranean Sea Region and three in the Black Sea Region, which was part of an international EU FP7<sup>13</sup> project.

#### *e. Hydropower Planning*

Kadirbeyoglu & Kurtic (2013) discussed the implementation of participation under the discourse of hegemonic water management and possibility of communities' impact nearby a river on decision-making and operating processes in a general manner throughout Turkey. The study is a relevant case for participation because the authors argued water management hosts participation that lies at the centre of the hegemony in governance in hydropower plants. Özerol et al. (2013), similarly, studied insights of contested concept of public participation by the case of Environmental Impact Assessment consultation in Eastern Black Sea Region. Özerol et al. (2013) stated there are at least 300 hydropower facilities in the area and all of which are granted for 49 years to work on producing electricity. As those plants own the privatization of water-

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<sup>13</sup> EU FP7: European Union research and development funding programme, Seventh Framework Programme



use rights, the community experience limits on the use of waters for other purposes. Özerol et al. (2013) examined the terms ‘public’ and ‘participation’, and explored what these terms meant within the context of environmental impact assessment for hydropower planning.

#### 4.4. Definition of Participation

While 15 out of 25 publications provided a clear definition of public participation, the rest approached the term by giving a general example of participation approach or just implied participation by naming some of the stakeholders. For those addressed participation definitions clearly, the publications that include own definition of the authors outweighed the publications that contain cited texts. A detailed list of these publications is given below.

*Table 7 Publications provided participation definition*

Definition	Author and Publication Year	Topic
Own	Soriani, 2015	Participation in ICZM initiatives: Critical aspects and lessons learnt from the Mediterranean and Black Sea experiences
	Cakmak, 2013	Participatory fuzzy cognitive mapping analysis to evaluate the future of water in the Seyhan Basin
	Özerol, 2013	Public participation as an essentially contested concept: Insights from water management in Turkey
	Özerol, 2013	Institutions of farmer participation and environmental sustainability: A multi-level analysis from irrigation management in Harran Plain, Turkey
	Kadimbeyoglu, 2013	Problems and prospects for genuine participation in water governance in Turkey
	Cakmak, 2010	Visions for the future of water in Seyhan Basin, Turkey: A backcasting application
	Kafetzis, 2010	Using fuzzy cognitive maps to support the analysis of stakeholders' views of water resource use and water quality policy
	Uysal, 2010	Assessing the performance of participatory irrigation management over time: A case study from Turkey
	Yercan, 2002	Management turning-over and participatory management of irrigation schemes: A case study of the Gediz River Basin in Turkey
Citation	Baylan, 2016	Exploring the challenges and opportunities for participatory water management in Turkey
	Mukhtarov, 2015	Interactive institutional design and contextual relevance: Water user groups in Turkey, Azerbaijan and Uzbekistan
	Yavuz, 2015	Stakeholder participation to watershed management: A case study from Beysehir Lake Basin
	Alkan, 2009	Interactions between local people and lakes: An example from turkey
	Karadağ, 2009	Research on stakeholder analysis for isparta province Kovada sub basin participatory watershed management process
	Özesmi, 2003	A participatory approach to ecosystem conservation: Fuzzy cognitive maps and stakeholder group analysis in Ulubat Lake, Turkey

Although the focus was on assessment of participatory irrigation management performance, Uysal & Atış (2010) lacks a comprehensive definition as being in the ‘own definition’ publications category, where the rest leans on a sufficient definition and meets particularly on a common ground. Cakmak et al. (2010); Kafetzis et al. (2010); Özerol et al. (2013); Yercan (2003) expressed participation as ‘an element of decision-making process’. They argued that participation is a core element of water management and therefore cannot be omitted. To be able to take precautions beforehand for disagreement and concern which may arise from lack of comprehensive and efficient management, it should be addressed in policy-making processes, added the authors.

Next to the ‘own definition’ articles, the cited ones that cited other definition mostly made use of more than one references. Baylan (2016) and Özerol et al. (2013) benefited from the distinguished metaphor of ‘participation ladder’ by Arnstein (1969). Baylan (2016) cited the definition of the International Association for Public Participation, and Özerol et al. (2013) referred to EU Environmental Impact Assessment and Aarhus Convention (UNECE, 1998). Another point is that Yavuz & Baycan (2013) emphasized the importance of participation by giving three different citations (De Steiguer et al. 2003 (2) and Yoganand & Gebremedhin 2006).

It was observed that participation in water management was seen by the authors as an essential part of governance in the making. Besides giving a definition of participation, the publications focused on its value by addressing several steps of integrated water management.

#### **4.5. Research Gaps**

A research can be considered as a tool to fill the knowledge gap of a research area in the particular field. Accordingly, the research gap for the in-depth analysis of publications in this thesis was considered as the area that has not yet been explored or a subject that needs to be focused on.

Seven out of 25 publications (Aydogdu & Yenigun, 2015; Degirmenci et al., 2006; Gündoğdu & Aslan, 2006; Miyata & Fujii, 2007; Ünver, 2001; M Yercan et al., 2004; Zagonari & Rossi, 2014) did not include a gap for future research needs, whereas the remaining 18 reflected on suggestions for future research. To provide a clear overview, the findings based on research gaps are discussed below based on the research themes.

#### *a. Water Governance*

Özesmi & Özesmi (2003) made suggestion to the decision-making processes to include more activities that can create more stakeholders' attention. They also added, indicating the importance of sustainable development and conservation of lake Uluabat, facilitating meetings of stakeholders by Fuzzy Cognitive Maps method was helpful on determining the goals. Baylan (2016) examined the water management system in Turkey and the stakeholder participation based on legislations in the scope of water management process by addressing the collaboration concept that has potential struggle. Baylan (2016) listed several weaknesses that make ensuring participation in water management difficult;

- Disorder and conflicts at the authorities,
- Lack of cooperation and coordination at data collection and audit,
- Shortcomings in monitoring mechanism,
- Insufficient involvement of stakeholders and local ownership,
- Inadequate participation by NGOs,
- Negative perception of interest by society.

Baylan (2016) stated that the aim and promise of participation mechanism to the participants throughout the preparation and implementation process are limited at giving information. The one-way of giving information (from officials) to the locals is dominant. Addressing three different implementation problems, namely the supporting participation culture, collaborative targets and revising top-down management approach, Baylan (2016) suggested Turkey to have an integrated water management approach that feeds aforementioned lacks.

Kibaroglu et al. (2012) argued the reforms and concerns addressed towards management bodies are not introduced at sectoral level and addressed that water users experienced lack of incentives on water resources protecting. Next to this study, Özerol et al. (2013) referred to the hierarchical water management approach and suggested improvements in following ways; implementing participatory approach and involving not only stakeholders that already participate but also small-scale stakeholders and more landless farmers.

On the other hand, in the study of Kafetzis et al. (2010), which focused on the transboundary Maritza river basin between Bulgaria, Greece and Turkey, stated the nature of being transboundary watershed creates another hierarchy level into policy and politics. Thus, taking such situations into consideration in advance is necessary, concluded Kafetzis et al. (2010) as a suggestion.

### *b. Irrigation*

Concerning the lack of enough WUA, Uysal & Atış (2010) indicated that WUAs present promising performance as being enduring alternative for irrigation implementations. Similarly, Mukhtarov et al. (2015) suggested reconciling the diversity in existing WUAs in their article focusing on the Harran Plain. Mentioning of reaching sustainable irrigation management, Cakmak et al. (2010) addressed developing policies towards supporting capacity building for NGOs, implementing subsidies for water saving in irrigation and instructing NGOs and authorities are essential to reach the targeted point.

Özerol (2013) pointed out two appropriate concepts for understanding social-ecological systems. First one is the multi-level institutional scale, enabling the analysis of institutions' interactions with environmental sustainability, and the second one is identifying areas in the social-ecological system that incorporates features of resources and users of this resources. Addressing the necessity of investments in irrigation, Sayin et al. (2013) argue that the efficiency of water use should be encouraged with respect to modern irrigation systems.

For integrated and sustainable natural sources management, planning and developing management at the basin level, in which participatory approach as a key element is essential, suggested by Karadağ & Barış (2009). They also argued that it is primarily possible with defining and analysing the shareholders for a successful integrated management. Cakmak et al. (2013) suggested that applying combined FCM implementation and participation techniques in water management in a broad range is linked to involving various stakeholder in the study focusing on Seyhan River Basin. Besides these suggestions, Yercan (2003) addressed the complains of the fees required in the irrigation activities and suggested the distribution of surplus of total cost to the farmers.

### *c. Coastal Zone Management*

After exploring that the residents have a common environmental concern, Irtem et al. (2005) pointed that no collaborative action has been taken regarding preserving and enhancing the conditions of the environment in Edremit Bay. Much more to be taken in order to reach the target for coastal zone management in the area, highlighted the authors. Focusing on a similar research subject, Soriani et al. (2015), addressed coastal zone management issues of Dalyan-Koycegiz area. Added, mismatching local governance and multi-scale nature of coastal systems creates unfavourable management, thus that needs to be overcome in advance.

### *d. Hydropower Planning*

Kadimbeyoglu & Kurtic (2013) made suggestion to future research interest in their study covering hydropower implementations towards studying usage of and access to inclusive, sustainable and equitable water. Özerol et al. (2013) emphasized the utmost importance of involving disadvantaged farmers e.g. landless and smallholders, and suggested monitoring the managerial and financial performance of WUAs by independent organizations.

*e. Lakes*

Alkan et al. (2009) suggested that to prevent the interest lose on the use of lake caused by the term of plan introduced for Lake Egirdir, increasing awareness of the locals by training activities and projects is the necessity. Yavuz & Baycan (2013) suggested indicating achievement of watershed management is linked to participation of shareholder, engaging public and authorities and evaluating community's perspective, therefore, should be improved, in the study focusing on stakeholder participation to Beysehir Lake Basin.

## **Chapter 5: Conclusions and Recommendations**

### **5.1. Conclusions**

In this research, the researcher attempted to create empirical and methodological insights on participatory water management in Turkey by conducting an in-depth analysis of publications from the Scopus database. How public participation in water management is dealt with was examined. During the research, apart from national and international documents such as the WFD, regulations and development plans, a number of 25 publications was evaluated in the eventual in-depth phase.

In Turkey, while the strategic decisions and plans are made by central government and affiliated units, the implementations of those are operated by the authorities of relevant ministries, provincial and local administrations, public-private consortiums i.e. NGOs and companies. Since 1950s, a top-down management approach has been adopted and dominant in the determination of involvement of shareholders in governing water (Baylan, 2016b). Referring to Arnstein's ladder metaphor, a limitation of citizen power exists (Tokenism); partnership, delegation and citizen control (Citizen Power) is not applied. That is to say, one-way information supply is operated. When involving citizen is the case in any water management process or implementation of a project in general basis, the information and consultation levels obtain acceptance from the management whereas active involvement lacks a comprehensive application.

The changes have been made, on the other side, on improving water management approach that has been in practice for the last couple of years are promising implementations that can eventually bring about an extensive application of participation in the country. For instance, establishment of GDWM which working as a leading water management authority in full-efficiency together with related governmental and non-governmental organizations and affiliated boards such as Water Management Coordination Board and Basin Management Committee consisting Provincial Water Management Coordination Board. They have been the necessary formations for the country to not only meet the requirements stated by the WFD but also will act as a sanction in reaching an efficient water governing.

## **5.2. Recommendations**

### **5.2.1. Engagement and Encouragement**

In the planning and operation process of projects, there are two types of people involvement in a general matter, implementers and stakeholders; basically, one implements, other one raises claims. As a matter of fact, while one is to be at the affecting side, the other one is being affected by the result of the implementation. Nonetheless, when a poor capacity building is the case, the implementations are shaped in unsystematic way.

For the last couple of years, governmental organizations have been publishing public service announcements (PSAs) on TVs and at public spaces to either inform the community about concerns or create awareness of common bad habits. For instance, creating consciousness of recycling by Ministry of Environment and Urban Planning, awareness of forest fires by Ministry of Forestry and Water Affairs, encouragement of joint projects between EU and Turkey by Ministry of Europe Union<sup>14</sup>. As the PSAs are official statements that making it accessible to reach public easily, they gain greater acceptance by the community rather than other informing methods. Involvement of public requires ‘capacity building’ and ‘investment’ to create a ground for collaborative management (EC, 2003). Therefore, lack of engagement of varied people would be fulfilled by awareness campaigns and encouragements, and the necessity for capacity building by upward of joint collaborations. Accordingly, setting up an accessible information centre in the basins also would enable the community to be aware of the plans and implementations.

### **5.2.2. Policy Improvement**

It was seen in the results that after the implementations of projects in the country in which supranational organizations took place such as World Bank and Europe Union, effective policy adaptation and project applications has been implemented successfully. For instance, Irrigation Management Transfer project between the years 1993-2005, Environmental Impact Assessment regulation in 2006 and River Basin Management Plans started in 2014. Results of analysed publications show IMT was the pioneer for the application of participation mechanism, which has brought about the continuation of the application. In the recent years, commencing the implementation of RBMPs resulted on setting up effective working mechanisms (such as basin-based management) not only at central level but also at the local level, where NGOs and public

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<sup>14</sup> PSAs in Turkey, <http://www.trt.tv/kamu-spotu/bolumler/80213>

(or representatives) can partially be part of. Nevertheless, the findings of the research suggest the followings;

- elimination of the disorder among authorities and the negative perception of community in water management,
- taking presence of stakeholder including small shareholders into account in decision-making,
- making improvement on the usage of and access to inclusive, sustainable and equitable water,
- reconciling the diversity in WUAs,
- increasing awareness of community by training activities and projects.

As a result, collaborative working mechanism in water governance involving (1) practitioners from diverse background and (2) community “*who have something at stake*”<sup>15</sup> via NGOs or direct involvement in policy making is likely to enable policies to become comprehensive. An engagement of all relevant people, experts, academics, community in the planning steps will provide a ground that is made of integration of ideas and inputs. That will bring about the success in the implementation, as the context of the policy will cover a consistent range of topics.

### **5.3. Research Limitations**

One of the limitations faced during the research was the limited number of publications, caused limited data. Unfortunately, a limited number of publications exists in the Scopus database available for the topic of water management and participation in Turkey. On the other hand, there was also limited accessibility to the official documents that address participation and provide relevant data, despite the principle that “*Access to information and background documents should be secured by the competent authorities*” (EC, 2003).

### **5.4. Future Research**

In the context of WFD, there is a number of requirements to be implemented for the states. A foremost issue among others is placing the community where a plan is implemented in the processes. Hence, studies evaluate water management need to increase in number and governments would take collaborative actions to preserve the assets, water resources, for the communities comprehensively. Future research interest, therefore, would pay attention to

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<sup>15</sup> Participant description in the document of Common Implementation Strategy document (EC, 2003).



escalate capacity building of citizens and implementers towards an efficient participatory water management.

The outcome of this research would be valuable to provide a detailed review of the publications (theme and year, methodical choice, objective participation referring and future research areas) focused on participatory water management to the literature. Accordingly, it would also create a ground for future research by providing detailed publication information with unique link to Scopus.

# Appendices

## Appendix 1: Actors and their roles in any kind of water management

Authority	Tasks
Ministry of Foreign Affairs	Transboundary waters, international agreements
Ministry of Development	Investment and development plans, to produce statistics about water
Ministry of Forestry and Water Affairs	Projects for water resources management, policy setting, national and international coordination of water management, preparation of river basin management plans, monitoring of the quality of underground and surface waters, sectoral water conservation, drinking, irrigation and wastewater treatment facilities, tender and construction works, financing, establishment of National Water Information System
Ministry of Environment and Urban Planning	Implementation of environmental legislation and implementation supervision, discharge permission, supervision, enforcement, monitoring (partial), EIA, financing, treatment plant approval. Drinking and usage water, wastewater treatment plant project, procurement and construction works, financing, National GIS policy
Ministry of Health	To monitor water quality of drinking water and bathing water, to take measures related to environment and public health, to make and supervise the water regulation and sewage system related regulations
Ministry of Food, Agriculture and Livestock	Taking precautions for the protection of aquatic products in the case of the use of inland water for various purposes (drinking water, irrigation, energy), monitoring agricultural pollution in agriculture, sanctions, supporting activities
Ministry of Interior (Special Provincial Administration and Provincial Service Units)	To provide drinking water, irrigation, sewage and wastewater treatment services for settlements outside municipal boundaries
Ministry of Science, Industry and Technology	Standardisation, Technology, Organised Industrial Zones
Ministry of Energy and Natural Resources	Energy investments and mining works
Ministry of Culture and Tourism	Providing drinking water, urban wastewater and waste disposal services in tourist areas
Maritime transport and Communications Ministry	To examine and certify the projects and specifications of ports, shelters and related equipment and facilities, coastal protection structures, coastal structures and facilities in all public institutions and municipalities, special administrations by legal and real persons
Metropolitan municipalities and other municipalities	Plan, build and operate drinking water, rainwater and wastewater systems in urban areas
Water User Organizations (Irrigation Unions and Cooperatives)	Operation, maintenance and management of facilities under their responsibility
Research Institutions (Universities, TUBITAK, Water Institutes, NGOs)	To make research about water and to produce data

## Appendix 2: Turkey's 25 basins and the cities in each basin

Basin No	Basin Name	Coordinator Governor	Other Provinces in the Basin	Basin No	Basin Name	Coordinator Governor	Other Provinces in the Basin
1	MERİÇ-ERGENE	Tekirdağ	Edirne, Kırklareli	14	YEŞİLIRMAK	Amasya	Çorum, Samsun, Tokat, Yozgat, Sivas, Gümüşhane, Giresun, Erzincan, Ordu, Bayburt
2	MARMARA	İstanbul	Kocaeli, Çanakkale, Bursa, Tekirdağ, Yalova	15	KIZILIRMAK	Samsun	Kırşehir, Kayseri, Yozgat, Nevşehir, Kırıkkale, Kastamonu, Çankırı, Çorum, Sinop, Sivas
3	SUSURLUK	Bursa	Balıkesir, Kütahya, Manisa, Çanakkale, Bilecik, İzmir	16	KONYA	Konya	Aksaray, Ankara, Isparta, Mersin, Karaman, Nevşehir, Niğde
4	KUZEY EGE	Çanakkale	Balıkesir, İzmir, Manisa	17	DOĞU AKDENİZ	Mersin	Karaman, Konya, Antalya
5	GEDİZ	Manisa	Uşak, İzmir, Kütahya	18	SEYHAN	Adana	Kayseri, Sivas, Niğde, Kahramanmaraş, Mersin
6	KÜÇÜK MENDERES	İzmir	Aydın, Manisa	19	ASİ	Hatay	Kilis, Gaziantep
7	BÜYÜK MENDERES	Aydın	Uşak, İzmir, Afyonkarahisar, Denizli, Burdur, Isparta, Kütahya, Manisa, Muğla	20	CEYHAN	Osmaniye	Kahramanmaraş, Adana, Kayseri, Sivas, Adıyaman, Gaziantep, Malatya, Hatay
8	BATI AKDENİZ	Muğla	Antalya, Burdur, Denizli	21	FIRAT DİCLE	Diyarbakır	Elâzığ, Gaziantep, Malatya, Şanlıurfa, Adıyaman, Van, Kahramanmaraş, Erzurum, Erzincan, Bingöl, Ağrı, Muş, Bitlis, Mardin, Kilis, Tunceli, Batman, Hakkâri, Siirt, Şırnak, Sivas,
9	ANTALYA	Antalya	Isparta, Burdur	22	DOĞU KARADENİZ	Trabzon	Ordu, Rize, Giresun, Gümüşhane, Sivas, Artvin
10	BURDUR	Burdur	Denizli, Isparta, Antalya, Afyonkarahisar	23	ÇORUH	Artvin	Erzurum, Bayburt
11	AKARÇAY	Afyonkarahisar	Konya	24	ARAS	Kars	İğdır, Ağrı, Ardahan, Erzurum
12	SAKARYA	Sakarya	Ankara, Eskişehir, Bilecik, Kütahya, Konya, Afyon, Bursa, Bolu	25	VAN GÖLÜ	Van	Bitlis, Ağrı
13	BATI KARADENİZ	Kastamonu	Zonguldak, Bolu, Düzce, Karabük, Bartın, Sinop, Çankırı				

### Appendix 3: A list of analysed publications

ID	First author	Title	Publication year	Scopus link	Publication type
P05	Baylan E.	Exploring the challenges and opportunities for participatory water management in Turkey	2016	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011901256&amp;partnerID=40&amp;md5=7ff3476477cb4a052cb22c90fe0c1f5c">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011901256&amp;partnerID=40&amp;md5=7ff3476477cb4a052cb22c90fe0c1f5c</a>	Article
P07	Aydogdu M.H.	Factors affecting farmers' satisfaction from water user associations in the Harran Plain-GAP region, Turkey	2015	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84951956795&amp;partnerID=40&amp;md5=c9c2c6f5abb7311ec1527ec4ebf0d28f">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84951956795&amp;partnerID=40&amp;md5=c9c2c6f5abb7311ec1527ec4ebf0d28f</a>	Article
P08	Mukhtarov F.	Interactive institutional design and contextual relevance: Water user groups in Turkey, Azerbaijan and Uzbekistan	2015	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84939260803&amp;doi=10.1016%2fj.envsci.2014.10.006&amp;partnerID=40&amp;md5=cca94b5c88389a31ca2cd0925e7d25fc">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84939260803&amp;doi=10.1016%2fj.envsci.2014.10.006&amp;partnerID=40&amp;md5=cca94b5c88389a31ca2cd0925e7d25fc</a>	Article
P09	Soriani S.	Participation in ICZM initiatives: Critical aspects and lessons learnt from the Mediterranean and Black Sea experiences	2015	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84925364797&amp;doi=10.1016%2fj.marpolbul.2014.12.045&amp;partnerID=40&amp;md5=14c1639971f8461b26024d4997c9fcfb">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84925364797&amp;doi=10.1016%2fj.marpolbul.2014.12.045&amp;partnerID=40&amp;md5=14c1639971f8461b26024d4997c9fcfb</a>	Article
P10	Yavuz F.	Stakeholder participation to watershed management: A case study from Beysehir Lake Basin	2015	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84920449531&amp;partnerID=40&amp;md5=9d0ed14fd23951cb3d05e365f32b378c">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84920449531&amp;partnerID=40&amp;md5=9d0ed14fd23951cb3d05e365f32b378c</a>	Article
P16	Zagonari F.	A negotiation support system for disputes between Iraq and Turkey over the Tigris-Euphrates basin	2014	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84899678500&amp;doi=10.1016%2fj.jhydrol.2014.04.003&amp;partnerID=40&amp;md5=f776c89382336d70c793e55d999f7613">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84899678500&amp;doi=10.1016%2fj.jhydrol.2014.04.003&amp;partnerID=40&amp;md5=f776c89382336d70c793e55d999f7613</a>	Article
P20	Özerol G.	Public participation as an essentially contested concept: Insights from water management in Turkey	2013	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84906012818&amp;doi=10.4324%2f9780203102992&amp;partnerID=40&amp;md5=fb3a20f502a3598d700ba64d6e605588">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84906012818&amp;doi=10.4324%2f9780203102992&amp;partnerID=40&amp;md5=fb3a20f502a3598d700ba64d6e605588</a>	Book Chapter
P22	Cakmak E.H.	Participatory fuzzy cognitive mapping analysis to evaluate the future of water in the Seyhan Basin	2013	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84879385438&amp;doi=10.2166%2fwcc.2013.029&amp;partnerID=40&amp;md5=4f345e4c1d53379305b24d3024e415d5">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84879385438&amp;doi=10.2166%2fwcc.2013.029&amp;partnerID=40&amp;md5=4f345e4c1d53379305b24d3024e415d5</a>	Article
P24	Sayin B.	Assessment of the performance of participatory irrigation management in Antalya, Turkey	2013	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84878778657&amp;doi=10.2166%2fwpp.2012.133&amp;partnerID=40&amp;md5=7b78d893d5033bfe41d760132c7b4fd4">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84878778657&amp;doi=10.2166%2fwpp.2012.133&amp;partnerID=40&amp;md5=7b78d893d5033bfe41d760132c7b4fd4</a>	Article
P25	Kibaroglu A.	Fundamental Shifts in Turkey's water policy	2013	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84879012014&amp;partnerID=40&amp;md5=67e928b6e2c59d012928e5a80bbe1bc0">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84879012014&amp;partnerID=40&amp;md5=67e928b6e2c59d012928e5a80bbe1bc0</a>	Article
P26	Özerol G.	Institutions of farmer participation and environmental sustainability: A multi-level analysis from irrigation management in Harran Plain, Turkey	2013	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84874596599&amp;partnerID=40&amp;md5=752e97e31e33469a5a6f91ba8e3de4c7">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84874596599&amp;partnerID=40&amp;md5=752e97e31e33469a5a6f91ba8e3de4c7</a>	Article

P27	Kadimbeyoglu Z.	Problems and prospects for genuine participation in water governance in Turkey	2013	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84917428280&amp;doi=10.4324%2F9780203076361&amp;partnerID=40&amp;md5=20fa789328ac6a885fe45ed78f78b800">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84917428280&amp;doi=10.4324%2F9780203076361&amp;partnerID=40&amp;md5=20fa789328ac6a885fe45ed78f78b800</a>	Book Chapter
P34	Cakmak E.H.	Visions for the future of water in Seyhan Basin, Turkey: A backcasting application	2010	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84858634992&amp;partnerID=40&amp;md5=470118e480cd141851153534a24ca01a">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84858634992&amp;partnerID=40&amp;md5=470118e480cd141851153534a24ca01a</a>	Conference Paper
P36	Kafetzis A.	Using fuzzy cognitive maps to support the analysis of stakeholders' views of water resource use and water quality policy	2010	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-77956544833&amp;doi=10.1007%2F978-3-642-03220-2_16&amp;partnerID=40&amp;md5=e85e902b33266b546c85fce3717bd13f">https://www.scopus.com/inward/record.uri?eid=2-s2.0-77956544833&amp;doi=10.1007%2F978-3-642-03220-2_16&amp;partnerID=40&amp;md5=e85e902b33266b546c85fce3717bd13f</a>	Conference Paper
P37	Uysal O.K.	Assessing the performance of participatory irrigation management over time: A case study from Turkey	2010	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-77950521404&amp;doi=10.1016%2Fj.agwat.2010.02.007&amp;partnerID=40&amp;md5=d1ddc78e6ab8c2e61b90f77d38160195">https://www.scopus.com/inward/record.uri?eid=2-s2.0-77950521404&amp;doi=10.1016%2Fj.agwat.2010.02.007&amp;partnerID=40&amp;md5=d1ddc78e6ab8c2e61b90f77d38160195</a>	Article
P41	Karadağ A.A.	Research on stakeholder analysis for isparta province Kovada sub basin participatory watershed management process	2009	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-73649125018&amp;partnerID=40&amp;md5=7f484c18a6c412b652e8a033697c3b4f">https://www.scopus.com/inward/record.uri?eid=2-s2.0-73649125018&amp;partnerID=40&amp;md5=7f484c18a6c412b652e8a033697c3b4f</a>	Article
P43	Alkan H.	Interactions between local people and lakes: An example from turkey	2009	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-70349589630&amp;doi=10.3846%2F1648-6897.2009.17.la-lh&amp;partnerID=40&amp;md5=52a6004fc139d73fd42a47c0145a3f7">https://www.scopus.com/inward/record.uri?eid=2-s2.0-70349589630&amp;doi=10.3846%2F1648-6897.2009.17.la-lh&amp;partnerID=40&amp;md5=52a6004fc139d73fd42a47c0145a3f7</a>	Article
P53	Gundogdu K.S.	Effects of irrigation system management turnover on water table depth and salinity of groundwater	2007	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-34247558230&amp;partnerID=40&amp;md5=5c118551264dcb24b05d703012522c37">https://www.scopus.com/inward/record.uri?eid=2-s2.0-34247558230&amp;partnerID=40&amp;md5=5c118551264dcb24b05d703012522c37</a>	Article
P54	Miyata S., Fujii T.	Examining the socioeconomic impacts of irrigation in the Southeast Anatolia Region of Turkey	2007	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-33846199897&amp;doi=10.1016%2Fj.agwat.2006.11.001&amp;partnerID=40&amp;md5=b9fe30d450eb611905d536de8b87f77c">https://www.scopus.com/inward/record.uri?eid=2-s2.0-33846199897&amp;doi=10.1016%2Fj.agwat.2006.11.001&amp;partnerID=40&amp;md5=b9fe30d450eb611905d536de8b87f77c</a>	Article
P57	Degirmenci H.	Assessment of irrigation schemes in Turkey with irrigation ratio and relative water supply	2006	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-33749464060&amp;partnerID=40&amp;md5=a27720aa79d3ce378723fe9901ab8768">https://www.scopus.com/inward/record.uri?eid=2-s2.0-33749464060&amp;partnerID=40&amp;md5=a27720aa79d3ce378723fe9901ab8768</a>	Article
P61	Irtem E.	Coastal zone problems and environmental strategies to be implemented at Edremit Bay, Turkey	2005	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-23844475595&amp;doi=10.1007%2Fs00267-004-0062-5&amp;partnerID=40&amp;md5=bf43ecf56317b42f2bdf381513b545ee">https://www.scopus.com/inward/record.uri?eid=2-s2.0-23844475595&amp;doi=10.1007%2Fs00267-004-0062-5&amp;partnerID=40&amp;md5=bf43ecf56317b42f2bdf381513b545ee</a>	Article
P66	Yercan M.	Comparative analysis of performance criteria in irrigation schemes: A case study of Gediz river basin in Turkey	2004	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-1842817728&amp;doi=10.1016%2Fj.agwat.2003.10.008&amp;partnerID=40&amp;md5=1e6d004d22fdce80659bc163f65ec9ec">https://www.scopus.com/inward/record.uri?eid=2-s2.0-1842817728&amp;doi=10.1016%2Fj.agwat.2003.10.008&amp;partnerID=40&amp;md5=1e6d004d22fdce80659bc163f65ec9ec</a>	Article
P70	Yercan M.	Management turning-over and participatory management of irrigation schemes: A case study of the Gediz River Basin in Turkey	2003	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-1842673939&amp;doi=10.1016%2Fs0378-3774%2803%2900051-9&amp;partnerID=40&amp;md5=">https://www.scopus.com/inward/record.uri?eid=2-s2.0-1842673939&amp;doi=10.1016%2Fs0378-3774%2803%2900051-9&amp;partnerID=40&amp;md5=</a>	Article

				67e6e3dbdac0878f70a67fd239e7a335	
P73	Özesmi U.	A participatory approach to ecosystem conservation: Fuzzy cognitive maps and stakeholder group analysis in Uluabat Lake, Turkey	2003	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-0038809969&amp;doi=10.1007%2Fs00267-002-2841-1&amp;partnerID=40&amp;md5=2d1546a9196be63d3609975a1ad25431">https://www.scopus.com/inward/record.uri?eid=2-s2.0-0038809969&amp;doi=10.1007%2Fs00267-002-2841-1&amp;partnerID=40&amp;md5=2d1546a9196be63d3609975a1ad25431</a>	Article
P78	Ünver I.H.O.	Institutionalizing the sustainable development approach: Co-ordination across traditional boundaries	2001	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-0035575509&amp;doi=10.1080%2F07900620120094064&amp;partnerID=40&amp;md5=c231ceea4f0cdb061c034f6fb3aff704">https://www.scopus.com/inward/record.uri?eid=2-s2.0-0035575509&amp;doi=10.1080%2F07900620120094064&amp;partnerID=40&amp;md5=c231ceea4f0cdb061c034f6fb3aff704</a>	Article

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