The Regional Process of The 5th World Water Forum

In & Around Turkey

Regional Report

Fourth Draft

January 2009

FOREWORD

Foreword

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1. INTRODUCTION

Turkey, bridging the two continents of Europe and Asia, is the hosting country of the 5th World Water Forum that will be held in Istanbul from 16 to 22 March, 2009. The Forum focuses on water issues with the participation of all stakeholders. The General Directorate of State Hydraulic Works (DSI) of Turkey, under the Ministry of Environment and Forestry (MoE) acts as the principal leader whereas the Ministry of Foreign Affairs (MoFA), Istanbul Greater Metropolitan Municipality (IBB) and Istanbul Water and Sewerage Administration (ISKI) are among the supporting organizations.

The main idea behind this Forum is to make it a turning point for water management throughout the world, and therefore, the target group is all society. *Bridging Divides for Water* means connecting stakeholders, sectors and regions. This Forum will therefore be joining people and regions to find common solutions for water related problems.

The 5th World Water Forum regional process with the spirit of "bridging divides", has taken place through a number of regional coordination meetings both at several continents and at the sub-regional or national scale, which will ultimately be integrated with the political outcomes of the Forum. The regional preparatory processes were carried out in the four continental-based regions, mainly Africa, the North, Central and South Americas, the Asia-Pasific and Europe. The regional processes which have produced substantial contributions to both the thematic and political processes of the Forum have already been completed. The regional process also provided an opportunity to *bridge the divides for water* with the tireless efforts of the representatives from various sectors.

The objectives defined by the Regional Process Coordination were the following;

- Motivate and mobilize actors in the region and promote region-specific contributions to the Forum;

- Contribute to the thematic process by providing regional perspectives based on the regional insights of the issues and on priority action required;
- Contribute to the political process by organizing decision makers in the region and providing inputs into the political process of the Forum;
- Establish bridges between the divides on water issues.

To achieve these objectives, a series of *In* and *Around Turkey* meetings have been conducted. *In & Around Turkey* represents one of the three specific sub-regions. The other sub-regions are the Mediterranean and MENA/Arab countries.

In Turkey meetings, led by the Regional Directorates of DSI, were realized in various provinces of Turkey, facing critical local water challenges. Thus, 17 *In Turkey* meetings have been conducted under different Forum Themes on water challenges and possible solutions. However, not only the local problem of the province itself, but also similar water disputes in the surrounding provinces were deeply discussed in the above meetings.

Around Turkey meetings were organized in six different countries, Jordan, Kyrgyzstan, Bosnia and Herzegovina, Macedonia, Northern Cyprus and Turkey on behalf of Ukraine representing Middle East, Central Asia, Balkans, Eastern Europe, Mediterranean and Black Sea regions, respectively.

These meetings aimed at enhancing national and international collaboration among the interest groups in the regions. In order to exchange the experiences among stakeholders, discussion platforms were formed with the participation of different groups who are dealing with regional water challenges and disputes. One of the successes of these meetings was the attendance of decision and policy makers.

In light of this, the outcomes and the key messages derived from these meetings are briefly summarized in terms of dividing problems and bridging solutions for water within the framework of six Forum Themes, in the following sections of the report.

2. REGIONAL PROCESS

2.1 PREPARATORY STAGES

In & Around Turkey preparatory stages has been led by the Ministry of Environment and Forestry of Turkey (MoE), which requested the General Directorate of the State Hydraulic Works (DSI) to coordinate *In & Around Turkey* regional meetings. Enhancing the communication and technical guiding of the preparatory process, composing the regional document, providing regional input for the Political Process along with the Thematic Process[1], and determining "divides" and "bridges" are the main responsibilities of the DSI and MoE.

In the preparation stages, the themes of the Forum have been widely covered by the meetings which were held *In & Around Turkey*, i.e., Theme 3 was the main subject of concern in the Middle East, Balkans, Central Asia and Mediterranean meetings. Regarding *In Turkey* meetings, Theme 1 and Theme 3 have been highly emphasized.

During the implementation of the meetings, both the political process and the thematic process is equally and simultaneously considered. It is well known that the thematic and regional processes are the driving forces of the political process that are mutually in interaction. The meetings were subsumed under opening, presentations, debate/discussions and panel/closing sessions.

[1] Information on the Thematic Process of the Forum is given in Annex …

Table 2.1 The list of the meetings *In & Around Turkey* in a chronological order.

Date	Event	Venue	Number of Participants
March 22-24 2007	River Basin Management	Antalya/TURKEY	
Feb 26-27, 2008	Water Management Strategies and Practices in Arid and Semi-arid Regions	Amman/JORDAN/ MIDDLE EAST	
March 27-28, 2008	Snow Hydrology	Erzurum/TURKEY	
April 10-11, 2008	Irrigation/Drainage	Adana/TURKEY	
April 16-17, 2008	Managing and Protecting Water Resources and Their Supply Systems to Meet Human and Environmental Need	Sarajevo/BOSNIA and HERZEGOVINA/ BALKANS	
April 24-25, 2008	Thermal and Mineral Waters	Afyonkarahisar/TURKEY	
May 15-16, 2008	Water Management / Drought	Ankara/TURKEY	
May 22-23, 2008	Karstic Hydrology	Antalya/TURKEY	
May 28-29, 2008	Climate Change, Water Resources Management,	Bishkek/KYRGYZSTAN/ CENTRAL ASIA	

	Governance and Capacity Building Issues in Central Asia		
June 12-13, 2008	Irrigation/Salinity	Şanlıurfa/TURKEY	
June 19-20, 2008	Flood	Edirne/TURKEY	
June 26-27, 2008	River Basin Pollution	İzmir/TURKEY	
June 26-27, 2008	Historical Water Structures	İzmir/TURKEY	
July 03-04, 2008	Water Issues in the Eastern Europe: Impact of Climate Change, Vulnerability Assessments and Adaptation Measures	Skopje/MACEDONIA/ EASTHERN EUROPE	
July 10-11, 2008	Wetlands	Kayseri/TURKEY	
July 24-25, 2008	Flood/ Inundation/ Landslide	Samsun/TURKEY	
August 07-08, 2008	Inundation/ Landslide/ Protection of River Beds	Trabzon/TURKEY	
August 21-22, 2008	Lake Hydrology	Van/TURKEY	
September	Water Usage/	Bursa/TURKEY	

03-05, 2008	Treatment/ Reuse		
September 11-12, 2008	Groundwater/ Drought	Konya/TURKEY	
September 25-26, 2008	Water and Energy	Artvin/TURKEY	
October 09-11, 2008	Water in the Mediterranean Basin	Nicosia/T. R. NORTH CYPRUS/ MEDITERRANEAN	
November 08-09, 2008	Managing and Protecting Water Resources and Their Supply Systems to Meet Human and Environmental Need	Istanbul/ TURKEY/ BLACK SEA	

2.2 KICK-OFF MEETING OF THE PREPARATORY PROCESS

The preparatory process has been initiated by a kick-off meeting during the International Congress on River Basin Management which was held between 22 and 24 March 2007 in Antalya, Turkey. The follow-up procedures of *In & Around Turkey* meetings were discussed and arranged in the kick-off meeting.

The International Congress was organized by the General Directorate of State Hydraulic Works (DSI), in collaboration with the World Water Council. The main purpose of this International Congress was to contribute to the regional preparatory activities for the 5th World Water Forum. The scope of this congress was mainly Theme 3, which is "Managing and Protecting Water

Resources and Their Supply Systems to Meet Human and Environmental Needs".

In this initial meeting, the strategies, timing and venue of the other *In Turkey* meetings were planned by the responsible authorities and the meetings were arranged accordingly. The outputs of these meetings are action-oriented. At the end of each meeting, documents summarizing all the outputs were prepared. The meetings covered the following sessions;

- Day 1: Four sessions (an opening session, 3 technical sessions)
- Day 2: Two sessions (a morning session: workshop, an afternoon session: panel)

Box X.X.
The emerging issues from the kick-off meeting related to the Forum are summarized as follows;

- Specific focus on "water for food",
- Participation of water users and general public in IWRM,
- Public / Private Partnership,
- "Water and Culture" inter relations,
- 5thWWF needs to address that increasing "efficiency" will actually increase consumption by the largest users (nature and agriculture), and instead the thrust needs to be on "productivity",
- Water for People which focuses on the critical junction of water and social development. From the perspective of the Southeastern Anatolia Development Project (GAP), which is human oriented, social transformation set-off by water projects needs to be discussed as a response to the pragmatic approach that water development projects are narrow-sighted and do not take into consideration societal needs.

2.3 IN TURKEY MEETINGS

Seventeen *In Turkey* meetings were organized between March 2007-November 2008 in collaboration with DSI, its Regional Directorates, scientists and NGOs (particularly Union of Farmers, Chamber of Farmers, Chambers of Civil, Environmental and Agricultural Engineers) in order to contribute to the critical water issues of Turkey. These meetings included various presentations and workshops allowing enough time for discussions and interactions during two days. The list of the meetings, their dates, venues and number of the participants is given in Table 2.1.

(Ayrı bir in Turkey tablo, number of participants burada)

It may be noted that there have been many regional meetings in this process. It is a fact that the number of the preparatory meetings is relatively much higher than that of the other regional processes.

Due to its geographical location, Turkey has different climatic conditions which are directly related to the various water problems. Therefore region-unique water problems were discussed at various meetings, by the participation of interested groups in order to exchange opinions on common water related problems.

2.4 AROUND TURKEY MEETINGS

These meetings were arranged and organized similar to *In Turkey* meetings. Due to the geographic and climatic variations in the sub-regions, meetings necessitated to be organized in different countries, namely, Jordan, Kyrgyzstan, Bosnia and Herzegovina, Macedonia, Northern Cyprus and Turkey on behalf of Ukraine. (Table X.X)

The meetings served as fruitful platforms bringing all the local regional stakeholders to provide regional, national and sub-regional contribution which have been directly transferred to the 5th World Water Forum. Such

activities, realized within a limited period of time, are considered as a success of the preparatory processes towards the Forum.

Table X.X Around meeting tablosu

Box1.1 The Ministry of Environment and Forestry

The Ministry of Environment and Forestry was enacted within the frame of procedures and fundamentals of Act No. 4856 by merging the Ministry of Environment and Ministry of Forestry on 01.05.2003. Ministry of Environment was first established in 1991.

Box1.2 The General Directorate of State Hydraulic Works (DSI)

The General Directorate of State Hydraulic Works (DSI), is a legal entity included in the general budget, and is the primary executive state agency responsible for planning, management, development, and operation of the nations overall water resources. DSI works under the aegis of the Ministry of Environment and Forestry. The ultimate objectives of DSI are the followings:

- Enhance irrigated agriculture
- Generate hydroelectric energy
- Supply water to municipalities for domestic and industrial use, and
- Take measures against floods.

3. CRITICAL WATER ISSUES IN THE REGION

The critical water issues in the region are derived from the reports of each *In Turkey* and *Around Turkey* meetings. They will be presented below in a summarized form.

BOX3 **RESİM KONACAK!!!**

Turkey is a transcontinental Eurasian country that stretches across from the Anatolian peninsula in western Asia to the Balkan region of south-eastern Europe. Anatolia which covers almost 97% of the country is separated from European Turkey by the Bosporus, the Sea of Marmara, and the Dardanelles. She is bordered by eight countries: Bulgaria to the northwest; Greece to the west; Georgia to the northeast; Armenia, Azerbaijan and Iran to the east; and Iraq and Syria to the southeast. Turkey is encircled by seas on three sides: the Aegean Sea to the west, the Black Sea to the north and the Mediterranean Sea to the south. Turkey also contains the Sea of Marmara in the northwest.

Turkey, being a powerful regional country in the Eurasian landmass with strong historical, cultural and economical influence, forming a bridge between Europe in the west and Central Asia in the east, Russia in the north and the Middle East in the south, has come to acquire increasing strategic significance.

3.1 IN TURKEY

Conducted seventeen national meetings in various regions of Turkey, focused on different water related issues. The discussions and messages achieved are given below, under the themes of the Forum.

In most of the local meetings, interrelations between the themes were observed as seen in Table 3.1. One may understand that the main water problems of Turkey relates basically to Themes 1 and 3 of the Forum.

Table 3.1 – The Meetings *In Turkey* and the related Forum Themes

Forum Themes / Meetings and Main Topics	**Theme1** Global Change& Risk Management	**Theme2** Advancing Human Development and the MDGs	**Theme3** Managing and Protecting Water Resources and Their Supply Systems to Meet Human and Environmental Needs	**Theme4** Governance and Management
"Snow Hydrology" Erzurum				
"Irrigation and Drainage" Adana				
"Thermal and Mineral Waters" Afyonkarahisar				
"Water Management and Drought" Ankara				
"Karstic Hydrology" Antalya				
"Irrigation and Salinity" Şanlıurfa				

"Flood" Edirne					
"Water Basin Pollution" İzmir					
"Historical Water Structures" İzmir					
"Wetlands" Kayseri					
"Flood/Inundation/ Landslide" Samsun					
"Inundation/Landslide/ Protection of River Beds" Trabzon					
"Lake Hydrology" Van					
"Water Usage/Treatment/Reuse" Bursa					
"Groundwater and Drought" Konya					

"Water and Energy" Artvin				

3.1.1 Key Messages under Theme 1: Global Change and Risk Management

In general, global change results in significant variations in water resources, spatially temporally, quantitatively and qualitatively. Thus, adaptation actions need to be implemented. The outcomes and the key messages derived from the *In Turkey* meetings under Theme I are presented below as follows;

- ✓ Change in the precipitation patterns due to the effects of global warming is being observed in the Anatolian Region. Decrease in snowfall and early melt in the recent years has also been recorded. The recordings of meteorological events should therefore be assessed through a series of studies to determine the available water resources. Implementation of the adaptation strategies including early warning systems for extreme events should be undertaken. Biodiversity conservation in the context of national and global sustainable development efforts need to be emphasized. In addition, sectoral adaptation strategies ought to be improved and/or developed. ***(Message of Snow Hydrology Meeting, Erzurum)***

- ✓ Improved risk management studies should be incorporated with adaptation strategies to achieve various insurance options. ***(Message of Snow Hydrology Meeting, Erzurum and Groundwater and Drought Meeting, Konya)***

- ✓ Storing maximum amount of water is recommended. Moreover, possibilities of inter-basin water transfer should be considered. ***(Message of Irrigation and Drainage Meeting Adana)***

- ✓ Local impacts of global climate change should be well identified, and short, medium and long-term hazard and mitigation scenarios should

be developed accordingly. Within the context of these scenarios, the impact of climate change on water, agriculture and similar fields should be examined. Related policies should be carried out by a single national entity and supported by the local operational and institutional stakeholders. On the other hand, widespread public participation and training should be a priority to increase awareness on the protection of nature, water and energy. (Message of Ankara, Edirne, Van and Konya Meetings)

- ✓ A systematic water quality and quantity data collection (monitoring) network should be implemented. Time, location, flow rate, and water quality data are the priority values to be compiled into the system simultaneously. Data storage, data processing and dissemination (easy access) should be provided. Statistical evaluation of collected data, modelling and Geographical Information Systems (GIS) techniques should be used as decision support tools. Finally, special emphasis should be given to research and development activities. Adaptation to global climate change should be considered by all sectors in their system planning. (Messages of Konya and Izmir Meetings)

- ✓ In order to save water, efficient and effective irrigation practices have to be scaled up. Agricultural services should be based not only on theoretical background, but also on practical use of them. Since the modern irrigation methods are barely applied due to economical constraints faced by farmers, better surface irrigation practices need to be considered in the transient period and applied by the farmers. Additionally, national soil survey of Turkey should be executed. (Messages of Şanlıurfa Meeting)

- ✓ Although flood has negative effects, it may be turned up to a benefit in some regions. Investigation on the subject of concern is necessary, and therefore collaborative work on flood should be promoted among

universities, NGOs, governmental organizations, professional chambers and public. (Edirne)

- ✓ Legal arrangements should be made in order to define the hierarchy, competencies and responsibilities of the related institutions regarding climate change and its adverse effects. (Van)

- ✓ Prevention of migration need to be emphasized. Agriculture and agro-industry can be taken into account as an important sector to mitigate migration through provision of various employment possibilities. Within this framework, farmers should be trained under the coordination of all related sectors, and a bridge should be formed between farmers and research institutes. In addition, winter tourism is proposed as another potential employment regarding regional characteristics (high and mountainous areas). (Erzurum)

- ✓ Migration may also be prevented by providing sufficient and satisfactory revenues to farmers. (Erzurum-Ankara)

- ✓ Land-use planning is a must in order to allocate land according to their quality. Land registration processes should be established in the short term. (Ankara)

- ✓ Institutional coordination should be developed during land-use planning and implementation regarding sustainability. Universities and public institutions should develop projects under coordination to satisfy human needs. Public should be informed on non-structural precautions and planned actions against possible dangers. The importance of sustainability and sensitiveness should be emphasized by local media. Implementation of the legitimate proceedings without exception should be provided. (Samsun)

- ✓ There is an urgent need to develop efficient disaster and risk management strategies. Thus, risky areas should be identified and contingency plans coupled with early warning systems should be established. Public should be informed about contingency actions. (Erzurum, Trabzon)

- ✓ It is necessary to produce scenarios for predicting possible hazards of the disasters. Strategies coping with the disaster effects should be adapted to protect the natural life, environment and historical structures. (Erzurum)

- ✓ Institutional coordination must be established to set contingency plans coupled with modern engineering design and application experiences like early warning systems, GIS technologies and/or mathematical models, expert systems. Moreover, cooperation among administrations and institutions must be strengthened and current laws and regulations should be enforced. Public awareness should be raised on the effects of natural disasters. (Edirne-Trabzon)

- ✓ All the policies and precautions related to air-water-earth should jointly be decided by all the stakeholders. Implementation policies must be realized without having any exemption. Among them, drought management is an important component of disaster mitigation plans. Developing strategies for effective drought management is crucial for sustainable development and environmental welfare. Another policy for disaster management is to establish proactive strategies. (Konya)

3.1.2 Key Messages under Theme 2: Advancing Human Development and the MDGs

The general focus on human development deals with different contents, which integrates with the development options in connection with water. However, depending on the geographical characteristics of each region, the

water related problems differ widely. The focus content chosen here is therefore coherent with regional issues. The outcomes and the key messages derived from the *In Turkey* meetings regarding Theme 2 can be summarized as follows;

- ✓ Emphasis should be given to supply hygienic water. Human beings have the right to consume safe water. Various types of water treatment if needed must be achieved. Bursa

- ✓ Participation of women should be encouraged, and thus education at all levels (especially primary) must be supported. Bursa

- ✓ Water saving is essential. Efforts towards saving as well as reuse should be promoted. Environmental and local factors should be considered, while preparing the water related projects. Reuse of treated wastewater in a controlled manner should be encouraged to decrease water demand. Desalination could be considered as an emerging alternative method for water abstraction. Bursa

- ✓ Wastewater collection and storm water drainage networks should be constructed. Separation of sewer and storm water drainage systems are recommended in order to implement and operate wastewater treatment plants. Bursa

- ✓ Wastewater treatment plants are one of the important instruments that protect water resources. Their planning, design, construction, operation and maintenance should be ensured. Besides the already existing wastewater treatment plants should be upgraded in compliance with current legislation. Wastewater treatment sludge should be treated and disposed in correlation with sustainability principles, and also its valorisation should be investigated via R&D studies. (Bursa)

3.1.3 Key Messages under Theme 3: Managing and Protecting Water Resources and their Supply Systems to Meet Human and Environmental Needs

One of the aims of this Theme is to execute the will to reveal the challenges related to the management and protection of water resources and to form a synergy among the civil society related to these issues. Below are the outcomes of the *In Turkey* meetings.

- ✓ Utilization-protection balance should be considered in basin management as stated in the Water Framework Directive. (Artvin)

- ✓ Effective management of water resources should be considered together with the social and environmental aspects.

- ✓ To protect water resources and reduce water pollution, appropriate integrated basin management strategies need to be implemented, and application of legal framework and completion of infrastructure is necessary to fulfil the strategies which necessitate coordination of the related institutions. Bursa

- ✓ It is essential to rehabilitate the water distribution networks and run the systems with minimum loss and leakages. A stringent control mechanism should be developed for the utilization of groundwater resources. (Bursa and İzmir)

- ✓ Allocation of the energy structures in river basins is a subtle problem. Therefore, during design and planning process of the energy structures, the principles of integrated basin management and sustainable development are fulfilled to achieve utilization-protection balance. Public objections are minimized by promoting public participation during investment and operation periods. Public benefit may also be provided through sharing of revenues. Çoruh basin is a

typical example of such dispute. A management strategy should be developed like the Southeast Anatolian Project (GAP) in the Çoruh Basin. (Artvin)

- ✓ Flood management on trans-boundary waters should be improved by the riparian countries under coordination. The reliable data collection, exchange and evaluation should be encouraged. Therefore, a good relationship between the riparian countries is the most important priority issue to be considered. Although technical experts agree on sustainable utilization of trans-boundary water, decision-makers and politicians must also have an insight towards realizing the mutually accepted strategies. Maritsa/Evros/Meric River is a typical trans-boundary river system. (Edirne)

- ✓ Turkey has one-eighth of the world's overall geothermal potential. The majority of this potential has relatively low enthalpy, but still is used for heating purposes. Progressive studies are ongoing to search the possibility of using this energy as a wind power resource in a cost-effective manner. Research should be carried out on geothermal reservoirs to improve their utility. It is necessary to advance geothermal researches all throughout Turkey at each thermal field, and water extraction, usage, protection, treatment and its re-injection have to be centralized. Since the demand for geothermal water increases rapidly, it is necessary to determine their accurate capacity through drillings and geophysical research methods with the aim of sustainable utilization. (Afyon)

- ✓ Groundwater resources should be used with utmost care. There is a high risk of groundwater contamination in karstic areas due to the structural characteristics of soil. Therefore, in such sensitive areas beneficial water uses must be determined with care and land-use maps should be revised considering the karstic terrains. Qualified technical personnel are required in such areas for protecting water against pollution. Inhabitants living in Karstic basins should be well

informed on the sensitiveness of these areas against contamination. (Antalya)

- ✓ Wetland management should be participatory, and inter-sectoral water use should be well-identified. Management plans should be sustainable and applicable. Related laws and regulations should be reviewed and new arrangements should be made according to problems faced at practice. It is important to raise public awareness about the benefits of protecting the wetlands. Wetland management plans have to depend on the entire basin covering the wetlands. They should be included in the water budget of the basins. General water quality and discharge standards should be defined and, considering the assimilation capacity of the recipient environment and endemic species, additional water quality definitions should be made for all wetlands. Around the wetlands, the agricultural activities must include the vegetal patterns that do not require much water. The survival of wetlands has to become the primary precedence of the all of the organizations, institutions and the society. (Kayseri)

- ✓ Pollution inventory at Lake Van should be prepared and the sources of pollution need to be determined. This should be supported with the long term perceptions. Municipalities should lead these efforts. More hydro-meteorological stations are required at the Lake Van Basin to cope with coastal erosion problems. Van

- ✓ Training and common studies should be conducted to improve irrigation and drainage activities. Care should be taken when using low quality drainage waters for agricultural purposes, related quality and quantity should be controlled and monitored. In order to improve the concepts of environmental awareness and protection, institutional assignments, authorizations and responsibilities should be clarified and a legal infrastructure should be formed. (Adana)

- ✓ There is a need to develop low-cost irrigation technologies, such as land levelling, simple water diversion structures, and improvements in scheduling and rotational irrigations, sprinkler irrigation, drainage infrastructure and water harvesting. (Adana)

- ✓ More dams and regulators are required in order to store and save more water resources that would enable the transfer of water from one basin to another. New projects must be initiated to realize groundwater dams, rainwater harvesting, treated wastewater reuse. Constructions are not sufficient enough for satisfactory water resources management; it must also be accomplished by legal, technological, educational and cultural aspects through a holistic approach. (Ankara)

- ✓ Rules for water protection and usage should effectively be put into practice. Gediz Basin is an example where sufficient financing and administrative incentives are crucial in realizing this goal. Development and expansion of organic agricultural activities should be encouraged to minimize pollution. Even in the traditional agricultural activities, control, certification and consultancy services should be strengthened. Technical applications should be guaranteed by incentives and sanctions. Integrated river basin management model should be adapted in a participatory manner in accordance with the socio-economic structure of the region. (Izmir)

- ✓ The projects for the protection of the wetlands have to be conducted at basin scale including all water structures. Water allocation should be well planned so that necessary precautions can be taken especially during the long dry periods. Therefore, rational water use, modification of existing crop patterns could be considered as options to cope with the extreme climatic conditions. The sustainability of the wetlands in the region has to be one of the main agenda items in water resources development plans and should be treated accordingly by all the stakeholders. (Kayseri)

- ✓ Reuse of wastewater should be encouraged at regional level under strict quality control of the treated water. Bursa

3.1.4 Key Messages under Theme 4: Governance and Management

The quality of governance and management has a profound effect on the operational issues for water supply and utilization. During the *In Turkey* meetings, the points regarding the existing structures, roles, policies, procedures and recommendations concerning management and governance were reviewed and the key messages are presented as follows;

- ✓ It is important that coordination and mutual understanding has to be formed between farmers, irrigation associations and water suppliers. For advanced water management, the legal loophole which creates administrative, technical and economical problems for irrigation associations should be updated.

- ✓ In order to improve the concepts of environmental awareness and protection, institutional assignments, authorizations and responsibilities should be clarified and a legal infrastructure should be formed for coordination. (Adana)

- ✓ Establishing cooperation among universities, private enterprises and the government technology production and transfer should be carried out. (Afyonkarahisar, Samsun)

- ✓ Farmers and the irrigation organizations need to work in cooperation on problems concerning irrigation. With the most possible broad attendance of farmers, this problem could be addressed and solved. The irrigation related problems in Harran Plain are quite similar to other agricultural regions of Turkey. (Şanlıurfa)

- ✓ The efficiency of irrigation associations need to be improved. This may be achieved by eliminating their political power. Adana.

- ✓ Water supply should be taken into account while allocating water. The trends on privatization of water services should carefully be handled by considering the national benefits. (Konya)

- ✓ Engagement of private sector to small-scale hydropower structures should be incorporated cautiously, and public participation to decision making process is encouraged. Public must be considered as one of the governing actors in the process. (Artvin)

- ✓ Existing laws and regulations should be applied thoroughly. (Trabzon, Samsun)

3.1.5 Key Messages under Theme 5: Finance

During the *In Turkey* meetings, significant financial and/or investment works regarding the water related issues were reviewed and analyzed. The management recommendations given below were derived;

- ✓ In irrigation networks, pricing of the water use should be done by volume of water consumption. (Izmir)

- ✓ Technological advances can not be fully applied in the country due to economical constraints.

- ✓ Available funds should be allocated in accordance with the priority water issues.

- ✓ International finance sources (funds) are resulting in more expensive investments.

3.1.6 Key Messages under Theme 6: Education, Knowledge and Capacity Development

Education and therefore, knowledge could make a difference reducing the impact of major water problems. To build a better future, to find appropriate and innovative solutions, the participants of the In Turkey meetings suggested the following points;

- ✓ Continuous public awareness on water saving and protection against pollution may be achieved both at national and local levels in the form of written and visual documents through press and media. (Bursa, Konya, Izmir)

- ✓ Water saving efforts should be promoted among farmers by training them on suitable crop patterns vs. water demand. Konya

- ✓ Recent agricultural technologies should be encouraged and the users should be granted.

- ✓ Municipalities and local authorities should be more actively engaged with water science and technological developments and improvements. (Şanlıurfa)

- ✓ Historical hydraulic structures should be documented through a chronological survey. This information should be integrated on GIS and registered by related offices. A common principle should be adopted among all institutions involved with historical hydraulic structures. All stakeholders (photographers, architects, archaeologists, art historian and engineers) should work together. Local governments may organize meetings with participation of inhabitants. Public

awareness should be raised on related studies and adopted principles. Water transfer to cities should be enhanced and necessary measures should be taken to prevent historical water infrastructures. Educational studies should be carried out. Importance of the Historical Hydraulic Structures should be explained in popular books written in a simple and effective manner. (İzmir)

3.2 AROUND TURKEY

The 6 *Around Turkey* meetings were arranged and organized under the leadership of MoE and General Directorate of DSI. The Turkish Minister of Environment and Forestry honoured the meetings together with the related Ministers of each participating countries.

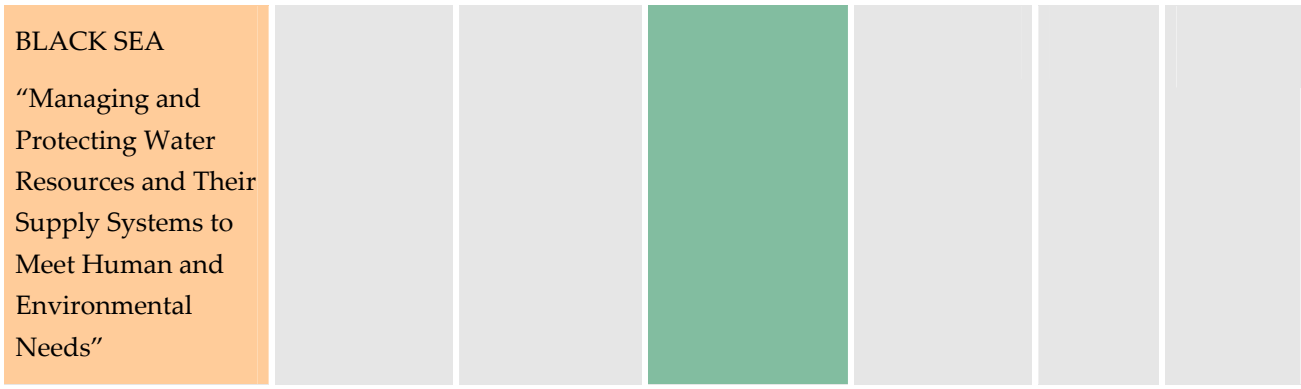
During the *Around Turkey* meetings stakeholders, organizations and institutions had an opportunity to work together and discuss the water related issues. Working group meetings attended by many experts from the various regional countries experiencing similar problems were fruitful and provided contributions to the Thematic Process of the Forum. Many interesting ideas and comments have emerged. After the opening ceremony in every meeting, representatives from the participating countries presented their water-related problems and solutions to which they would like to convey to the Forum.

Table 3.2 presents the list of the Meetings held *Around Turkey* in the form of a matrix that relates the main topic of each meeting with the Themes of the 5th World Water Forum.

Table 3.2 – The Meetings *Around Turkey* and the related Forum Themes

Forum Themes / **Meetings and Main Topics**	**Theme1** Global Change& Risk Management	**Theme2** Advancing Human Development and the MDGs	**Theme3** Managing and Protecting Water Resources and Their Supply Systems to Meet Human and Environmental Needs	**Theme4** Governance and Management	**Theme5** Finance	**Theme6** Educatio Knowled and Capa Develop
MIDDLE EAST						

"Water Management Strategies and Practices in Arid and Semi-arid Regions"						
BALKANS "Managing and Protecting Water Resources and Their Supply Systems to Meet Human and Environmental Needs"						
CENTRAL ASIA "Climate Change, Water Resources Management, Governance and Capacity Building Issues in Central Asia"						
EASTHERN EUROPE "Water Issues in the Eastern Europe: Impact of Climate Change, Vulnerability Assessments and Adaptation Measures"						
MEDITERRANEAN "Water in the Mediterranean Basin"						



3.2.1. Key Messages under Theme 1: Global Change & Risk Management

The most critical water issues listed below for *Around Turkey* were determined at 4 different meetings held in Jordan, Kyrgyzstan, Macedonia and Northern Cyprus;

- ✓ In the First Regional Meeting of *Around Turkey* which took place in Amman, Jordan on 26-27 February 2008 the following issues were raised; scientific tools fitting to the specifications of the Middle East region should be developed and modified in order to evaluate the effects of the climate change, and to establish scenarios to mitigate its effects. The creation of a network in the Middle East is necessary in order to share water and climate related data to be further used in scientific studies and to give guidance to the decision makers.

- ✓ The issues; climate change, population growth, industrialization, urbanization and deforestation create huge stress on the water resources of Central Asia and they were reported in the Bishkek, Kyrgyzstan meeting (28-29 May 2008). The other point raised during the meeting was glacier melting in the mountainous areas due to global warming, resulting in floods in the rivers and lakes. This may cause an increase in the amount of water of Amudarya and partly some tributaries of Syrdarya and Zarafshan. Understanding the effects of climate change is crucial for developing regional and national adaptation strategies. Integrated water management and water storage are important components in that respect.

- ✓ CO_2 emissions should be decreased by using renewable energies, hydro-energy in particular. Reuse of treated wastewater and utilization of the modern irrigation techniques are essential for water saving. Furthermore, public awareness should be raised. Hydro-meteorological data and information should be derived continuously and systematically. Therefore, monitoring and measurement networks need to be improved. Regional solutions are requested for addressing the regional problems such as the aridity of the Aral Lake. (Central Asia)

- ✓ According to the Fourth Regional Preparatory Meeting that took place in Skopje, Macedonia on 03-04 July 2008, with the participation from 5 countries, formation of different regional climate change scenarios reflecting different levels of effects (high, medium and low) was recommended. The participants also highlighted that these scenarios must be supported by proper weather observations and database. Coordination and cooperation among state institutions and universities should be enhanced. Since re-networking of measurement and observation stations is costly, topologically similar pilot regions can be used and their results can be transferred to the ungauged parts of the basins. There is a clear need for establishment of climate change specific measurement and observation systems. There also exists a need for additional information on the human impacts (inappropriate river channel maintenance, land-use changes within the river basin, etc.) versus climate change impacts to the increased frequency of floods.

- ✓ In the "Regional Meeting on Water in the Mediterranean Basin" that was held in Nicosia, Northern Cyprus on 09-11 October 2008, the following results were derived on the climate change and the Mediterranean Basin problems. Climate change is a global issue which affects both poor and rich countries. Whilst the rich countries are releasing substantial part of the greenhouse gases, emissions of the developing countries are ever-increasing as they are demonstrating

rapid economic growth. The effects of climate change speed up groundwater exploitation, therefore a decrease in water table in aquifers are likely to continue. Climate change mitigation and adaptation measures for surface water and groundwater resources management are essential for satisfying sustainability. Similarly water availability in trans-boundary river basins is also affected by the climate change and is a subject of trans-boundary cooperation. A common and reliable database which includes all sorts of data related to water quality and quantity should be set up, and scientists and experts, who have interest, should have a direct and free access to it. Moreover, interpretation of the water related data is as important as their collection. Statistical models for the reliability of hydrological cycle models together with the climate models should be utilized. Groundwater reservoirs will play an important role by means of storing of flood water to be used during dry periods.

- ✓ Quality and quantity of fresh water flowing to the marine environment is decreasing significantly causing adverse effects on coastal and marine ecosystems. Meteorological models should be used to evaluate uncertainties. Sectoral policies and plans on mitigating the effects of climate change ought to be revised or developed. (Mediterranean)

- ✓ Migration and land-use changes and human settlements' is another issue that will be discussed in the 5th World Water Forum. This subject was discussed in Skopje, Macedonia on 03-04 July 2008 with the participation of 5 countries. In the meeting, the participants raised several issues. Drought is one of the main driving forces of migration. One of the reasons of insufficient water supply is mainly due to the lack of hydraulic structures, primarily storage reservoirs. Economic development, especially equitable income distribution in the whole territory of a country, is important in terms of preventing migration. (Mediterranean)

- ✓ The available land-use maps need to be further developed. Relevant databases should be improved in order to facilitate decision making. For land-use and water policies, it is important to define roles and responsibilities of various stakeholders in decision making processes. Even though policies are well formulated; they cannot always be fully implemented, especially in transition countries, due to lack of capacity and financial resources. Climate change will adversely affect water availability and land-use and as a result of this, poor rural population would suffer from decreased agricultural production unless proper water and land management is ensured. Coordination between land-use and water policy makers must be achieved. (Mediterranean)

- ✓ In the Fourth Regional Preparatory Meeting that took place in Skopje, Macedonia on 03-04 July 2008, the following disaster mitigation measures in general were introduced in order to reduce the negative effects on humans:
    - o Shift from state scale and reactive approach (emergency/crises management) to a regional scale and pro-active approach (basin management, monitoring, forecasting, contingency plans),
    - o Raise the awareness of public on the need for disaster mitigation,
    - o Mobilize support through partnerships,
    - o Expand disaster mitigation activities within societies,
    - o Advocate legislation and government actions,
    - o Encourage and support efforts to incorporate disaster mitigation into community decision making.

3.2.2. Key Messages under Theme 2: Advancing Human Development and the MDGs

In relation to Theme 2, two different meetings were organized in Jordan and Bosnia Herzegovina and the outcomes of which are presented below;

- ✓ The main outcome of the Regional Meeting in Amman, Jordan on 26-27 February 2008 was "Privatization appears as a solution at the first glance, however financing stays as the main challenge". There is a considerable difference between water and sanitation services in rural and urban areas in the Middle East. In some regions, where majority of the population cannot achieve adequate water supply and sanitation. Because of the lack of inadequate sanitation services, sewage flows directly into streams, rivers, lakes and wetlands, affecting coastal and marine ecosystems, fouling the environment and threaten the health of millions of children. Reuse treated wastewater is recommended especially in arid regions.

- ✓ In the same meeting, the other critical issue was related to modern irrigation techniques. The farmers' should be trained on modern and more efficient irrigation systems. Pilot projects ought to be developed; capacity building at all levels should be considered. Public Private Partnership should be promoted in the implementation of irrigation projects.

- ✓ The main issue of the meeting that took place Sarajevo, Bosnia Herzegovina on 16-17 April 2008 was "the harmonization and gradual implementation of the water related EU acquis". The countries of the region are either the member states or the candidate and potential candidate countries of EU. In this respect, the Water Framework Directive provides an adequate and exemplary legal framework for sustainable water management.

- ✓ Financial resources are needed to be mobilized to existing and future plans and programs for drinking water supply, wastewater collection and treatment, reuse and agricultural needs. In the same meeting, it was pointed out that sanitation and wastewater treatment are important to improve the quality of life. Research on the reuse of wastewater needs to be emphasized for saving water. Insufficiently maintained water distribution systems and illegal water utilization are

the two important barriers against water saving. Moreover, industries must be encouraged to use treated wastewater instead of using ground and other water resources. Strong legal framework for water management is necessary. However, laws and legislations will not be enough by itself, monitoring and enforcement by the relevant authorities are needed. EU standards could help to address the water related problems. Integrated river basin management concept should be used to manage water resources in a sustainable manner. In order to provide adequate water services and make necessary investments, full cost recovery financing systems are essential in principle. In water management, in addition to existing finance models, the Public Private Partnership (PPP) is worth considering.

- ✓ Awareness of the public on importance of saving water should be raised. The real meaning of the term ”right to water”, the costs of services and the individual responsibilities should be clearly identified.

3.2.3. Key Messages under Theme 3: Managing and Protecting Water Resources and their Supply Systems to Meet Human and Environmental Needs

In five different regions of *Around Turkey* namely Macedonia, Kyrgyzstan, Northern Cyprus, Bosnia Herzegovina and Turkey, the subjects of Theme 3 were addressed. The following outcomes were obtained;

- ✓ In the Third Regional Meeting *Around Turkey* that took place in Bishkek, Kyrgyzstan on 28-29 May 2008, the following critical points related to the subject of “Basin Management and Trans-boundary Cooperation” were discussed. The Central Asia region is relatively rich in water resources, but there are many trans-boundary rivers. Trans-boundary cooperation in the region for the last 16 years has permitted to avoid any serious conflict for water delivery between different states and zones, even in previous water scarce and flooding

years. Nevertheless, the existing cooperation among the countries of the region must be improved. Although political balance will generally exist, the lack of understanding and confidence at the technical level is the main barrier to enhance cooperation. Regional program of consensus building dialogues at different levels could be developed so as to merge different views and positions. Exchange of reliable data and information is crucial. Furthermore, international mechanisms should work coherently to strengthen and advance trans-boundary cooperation.

- ✓ Cross-sectoral interests of hydropower, irrigation and environment requires strengthening of legal and institutional framework. Similarly, financial tools that would account for sharing benefit, expenses and compensation of damage should be taken into consideration. This recalls comprehensive basin development plans with stronger participation of all riparian countries and should be based on Integrated Water Resources Management (IWRM) principles. Promotion of regional and sectoral dialogues in the context of the agreements by member countries is a must in order to merge different sectoral and country priorities on water use with the interest of society and nature.

- ✓ The Chu-Talas experience can be taken into account particularly representing small trans-boundary rivers. Commissions should be established by the riparian states in order to manage trans-boundary water resources in an equitable and sustainable manner. Integrated water management plans could be developed at the basin level. However, good management of water resources at the national level is the main priority. All stakeholders should be included in this process.

- ✓ It was emphasized that water resources management and governance should be reformed in Central Asia. Content and phases of the reform, from the decentralization point of view in particular, is as follows;

- Trans-boundary level (Aral Sea basin, agreements, strengthening of organizations on regional/basin level, ecosystem demands, economical tools like cost benefit analysis, information exchange, water demand and limitation),
- Decentralization of water resources management in line with the economic reforms, mostly in agriculture sector, requires the tools and instruments for all inclusive (states, sectors and stakeholders) and good governance such as; Institutions, Legal and regulatory framework (development and harmonization),
- Economic tools (what is state share and what are the boundaries of responsibility, financial mechanisms – tariffs, subsidies, privilege loans, incentives for water saving and resources protection),
- Technical and technological aspects (hydrometrics, automation, water allocation tools),
- Environmental needs (pollution control, ecological releases, and protection zones),
- Capacity building (equipment, training, field trips).

✓ In the meeting held in Istanbul Turkey on 08-09 November 2008, the following significant water issues were addressed. Joint efforts and actions based on IWRM responsive to water issues in the region should be improved. Water resource management in basin scale must be developed considering socio-economic, environmental and technical issues altogether. Information related to water should be shared by all stakeholders that ought to communicate and cooperate effectively. Confidence building efforts among the countries of the region can be improved in addition to exchange hydrological data and sharing experiences. Joint training and technical assistance programmes and cross border projects can be developed to further regional cooperation. As regards conservation of water resources in the region, the effects of climate change and pollution has to be taken into account.

- ✓ The following critical points were also discussed in Istanbul meeting. In order to ensure good quality and sufficient quantity of water the countries around the Black Sea region should be encouraged to create a joint database and conduct collective projects. Collaboration among the hydro-meteorology and water institutions should be improved. Furthermore, environmental, hydrological, geological and topographical data and information should be collected and shared in a reliable and extensive manner. In view of minimizing negative environmental effects of water utilization for domestic, agricultural, industrial and energy generation purposes in the river basins of the Black Sea region, integrated river basin planning and management should be ensured. Due to the effects of the climate change, floods and droughts and rising freshwater demand, increasing the capacity of new and existing reservoirs and inter basin water transfer, when possible, can be considered. It is needed to attach priority to technologies that will provide effective usage and sustainable planning of water resources. It should be encouraged to use latest techniques such as drip irrigation that save water by minimizing leakages and blow-outs in the water supply networks. Lastly but not the least, municipal solid waste dump sites in the region have a significant risk on river water quality and this issue needs to be managed properly.

- ✓ In the meeting held in Skopje, Macedonia on 03-04 July 2008, it was concluded that good trans-boundary river basin management requires participation of all riparian countries. It was also raised that this would help to protect land from floods, droughts and erosion, so that increase in economic and living standards, decrease in life and property losses and better water pollution control could be achieved. Good water quality and sufficient supply of water should be the ultimate objective of the policy makers in order the reduce health risks, develop tourism and recreation activities and ensure well functioning of ecosystems. Integrated models (including climate and hydrology) should be developed and operated to represent and capture climate change conditions at country and interstate levels.

- ✓ For the integrated water resources management; new and better technologies/information, common understanding and compromise among water users and sectors, re-assessment of available water resources, better financing, appropriate institutional structure and legislative framework for water management, better water supply and demand management, involvement of public, stakeholders and NGOs in decision making and ethics and social responsibility aspects are all essential.

- ✓ In the regional meeting in Northern Cyprus (09-11 October 2008), the related points raised were as follows;
    - o Conjunctive use of surface and groundwater should be optimized.
    - o Water pricing is a must to ensure efficiency. The amount of water used for domestic, agricultural and industrial purposes as well as the water quality has influence on water pricing.
    - o The value, cost and price of water within the framework of changing climate, land-use changes, population growth and migration from rural to urban ought to be taken into account.
    - o Political and legislative issues with respect to the effect of environmental/ecological issues on water utilization should be considered.
    - o Tackling with the extreme water events, namely floods and droughts, is one of the crucial aspects of IWRM.
    - o Emergency preparedness plans and early warning systems should be put in place for the prevention and mitigation measures.

- ✓ New infrastructure and networks should be established and the materials to be used in water structures should be durable and strong enough to cope with natural disasters. The maintenance and viability of networks has to be taken into consideration within long term plans.

Present technologies should be developed to ensure good quality water. Pollutants in water are an important problem to be addressed. Governments should control water consumption by creating public awareness on water scarcity and following appropriate pricing policies. Monitoring and control systems for quality parameters are not enough in some cases to protect water resources and the environment. Intense and extreme precipitation is a concern in urban areas in particular. However, storm water could be considered as a potential freshwater resource. Open channel irrigation systems increase consumption as they allow high evaporation losses. Therefore, closed conduit systems should be designed and implemented for irrigation purposes. The utilization of treated wastewater for domestic use needs advanced treatment technologies. (Mediterranean, Black Sea)

- ✓ On the subject of "Conserving Natural Ecosystems", the points given below were derived in the meeting took place in Sarajevo, Bosnia Herzegovina on 16-17 April 2008. In order to meet the human needs and ecosystem requirements, preparation of land-use plans is one of the most important factors affecting the allocation of water resources. The amount of water necessary for domestic, agricultural and industrial use could be well determined. However, it is hard to determine adequate ecosystem water requirements. Ensuring the quality of water necessary for the conservation of ecosystems is also important. Ecosystem components should be identified in order to determine the quantity and quality of water required for the functioning of the ecosystem.

- ✓ Along with the same subject, the following issues were pointed out in the meeting held in Istanbul, Turkey on 08-09 November 2008. In the management of water resources including wetlands, with respect to integration and sustainability, conservation of ecosystems is considered as costly. Therefore, the role of education, the socio-economic and environment dimensions are frequently ignored. In

order to integrate the ecological planning of land and water resources, the ecological status of the resources are needed to be determined in advance. For integrated management, technical, economical and ecological studies should be carried out together. Ecosystems are somehow affected by all activities that take place in river basins. During the planning process, protection of ecosystems should be considered by all actors. In most countries of the region, relevant legislation is in place, but when it comes to implementation, there are big gaps. In order to introduce the ecosystem approach, the EU Water Framework Directive could be referred. As a result of the meeting the two most important environmental issues related to water in the Black Sea Region were found to be eutrophication and invasion of species in the water media.

- ✓ On the subject of "Managing and Protecting Surface, Ground, Rainwater and Soil" discussed in Istanbul, Turkey on 08-09 November 2008, the following critical issues were derived. Sustainable utilization of land and water resources must be ensured. In order to protect water resources, irrigation efficiencies and water-saving measures should be improved. There is a close connection between land and water resources, therefore soil conservation and water management should be dealt with together. Both supply and demand management should be considered together. "Polluter pays principle" should be implemented. Water and land-use activities should be optimized taking into account sustainability principles. Implementing agricultural and land-use practices such as afforestation that increase the water retention capacity of soil would be an effective solution in the Black Sea region. Since rehabilitation of polluted groundwater and soil is challenging and quite costly, precautionary measures should be implemented where necessary. Storm water run-off and discharges must be taken into account when designing infrastructures. The region is suitable for creating underground reservoirs to increase water availability and supply.

- ✓ Improving public awareness and participation activities, and promoting education on land and water resources management, ensuring implementation of right to water and emphasizing interconnection between water quality deterioration and human health, according to the regional characteristics are important aspects to be considered. All land and water management practices should take into account the geographical characteristics of the region i.e. if the region is prone to land sliding, it may hinder accessibility to wells, which leads to instability of hydraulic structures. Moreover, considering the meteorological conditions and human-induced activities together, soil erosion becomes a major problem in the region necessitating precautionary upstream measures when building dams and reservoirs to cope with siltation problems.

3.2.4. Key Messages under Theme 4: Governance and Management

The only meeting organized in Jordan was related to Theme 4.

- ✓ On the subject of "Institutional Arrangements, Optimizing Public and Private Roles in Water Services" the following critical issues were pointed out (Amman, Jordan on 26-27 February 2008). PPP seems to be a more appropriate model compared to privatization. The governments should continue on policy making, administrative and legislative work, whereas the responsibility of water management should be left to the local authorities, unions and cooperatives. Furthermore, good governance and international practices ought to be promoted.

- ✓ In the same meeting, under another subject of "Water management strategies and practices in arid and semi-arid regions", it was emphasized that water scarcity and drought are becoming increasingly important issues in the Middle East. Political, financial, technical and capacity constraints ought to be overcome in order to ensure the availability of water resources in the region. Cooperation and joint projects, wherever possible, as well as applying new technologies should be promoted. The "Right to Water" is an issue to

be elaborated more in the international fora. Technology transfer and capacity building is an important issue for the region.

3.2.5. Key Messages under Theme 5: Finance

The two meetings held in Jordan and Turkey dealt with the financing issues, the subject of Theme 5 and the following points were prominent;

- ✓ PPP was a mutually agreed solution in the meeting held in Jordan on 26-27 February 2008. The autonomy of water agencies should be ensured in order to increase their credibility to benefit from the existing surplus money for credit purposes in the global financing institutions with a view to funding infrastructure and water sectors. A tailor made lending system needs to be studied and tested. Therefore, the private sector should be introduced both to debt and equity side. Privatization without any regulation on water management has failed in some cases in the developing countries. Financially high rate of return projects, such as non revenue should be given priority.

- ✓ In the meeting held in Turkey on 08-09 November 2008, a similar result on PPP was derived. The other outcomes were: Well prepared master plans and feasibility reports play a crucial role in financing which will be helpful for defining the priority of the water projects. Instead of going on with the financing arranged by lenders for a project specified by them, financing should be secured for the projects which were ranked as high priority by investors.

3.2.6. Key Messages under Theme 6: Education, Knowledge and Capacity Building

The meetings that were held in Kyrgyzstan and Northern Cyprus were on the topics of Theme 6. The following issues were raised;

- ✓ Training of public was one of the main points in Bishkek meeting. Therefore, integrated training programs should be developed at the regional level. Furthermore, public awareness and concern on water issues should be created. NGOs involvement and media attraction are also essential.

- ✓ Joint and reliable hydraulic and hydrological databases should be established and information exchange on the standards should be ensured. Technological innovations should be followed regularly. Partnerships can be developed for capacity building. New models and techniques should be applied in order to utilize water resources in the most sustainable manner. Regional cooperation, particularly in Aral Sea Basin should be strengthened. (Central Asia)

- ✓ According to the Nicosia meeting, the following issues related on education were raised. Training on the conservation and reuse of water should be initiated at all levels. Children should be introduced to the basic information on the concepts of conservation and reuse of water at early ages. Secondary school education should also include experiments, site visits related to the water issues. At the graduate and expert level, novel methods of water conservation and reuse, optimization of available resources and capacity building should be encouraged by specific programs. Education on water issues should be made part of the community education through dedicated workshops and cultural events. Training modules and workshops based on best management practices should be organized. (Mediterranean)

- ✓ Decision makers and policy makers should work in collaboration with experts to declare regulations and legislation with the aim of continuous improvement. Enhancing communication between technicians and politicians should be strengthened in the region. (Mediterranean)

4. CONCLUSIONS: BRIDGING THE DIVIDES

The main aim of the 5th World Water Forum, as can be understood from its motto, is to *bridge the divides for water*. In this report, in order to *bridge the divides,* solutions were offered to the problems encountered in the sub-region. Therefore, prior to bridging, the divides should initially be clarified. No matter what the wording is, the vital issue is "bridging of all divides", one way or another, i.e., bridging local people, society, culture, etc. to promote merging of joint and sustainable solutions to water issues, problems and conflicts. Bridging may also be systematically perceived by; *(i)* bridging the divides between countries, *(ii)* bridging the divides between the problems and the solutions; *(iii)* bridging the divides between the local points and the Forum topics, and last but not the least *(iv)* bridging the divides between the present and the future conditions. In this regard, it is hoped that this report contributes to the efforts to overcome the problems on water issues by stimulating reader to investigate challenges.

This *In & Around Turkey* report was produced by focusing on the bridging the divides on critical regional water issues emerged during the series of meetings. It is well known that the *divides* are similar at the sub-regional level, thus, *bridging* is accomplished without considering the boundaries of the regional countries. In other words, the *divides* and *bridges* are universal like water which is shared by all humans. The bridges formed were compiled and presented under the themes of the Forum. In this section, conclusion refers to the bridging that covers all the aforementioned components.

The challenging divides under the Theme 1, "Global Change and Risk Management" are *risk management, adaptation policies* and *migration.* The bridges for these divides are;

- Disaster mitigation,
- Migration management,
- Land-use distribution and registration process,

- Emergency plans for disaster management,
- Inundation risk maps,
- Hydro-meteorological monitoring system on real time,
- Network formation (i.e., joint contingency planning and early warning systems),
- Regional and national adaptation strategies, and
- Hydraulic structures.

Among the items mentioned above , disaster mitigation is the only item that directly affects public. This is basically due to improper land-use allocation and illegal settlements, and weak land-use registration process. Land-use planning needs to be determined in parallel to the emergency plans. One of the components of the emergency plans is the inundation maps which ask for well set hydro-meteorological monitoring system and network formation. This may be achieved by regional and national adaptation strategies in general, and through the implementation of hydraulic structures in particular.

Under Theme 2, i.e., Advancing Human Development and the Millennium Development Goals (MDGs), the emerging divides are found as *sanitation, pollution, water scarcity* and *energy.* The corresponding bridges are;

- Migration management,
- Agriculture and industry,
- Modern and practical agricultural practices,
- Energy (hydro and geothermal) plants in water basins,
- Pollution inventory (systematic data base),
- Data and information harmonization,
- Water and wastewater treatment,
- Sanitation services in rural and urban areas,

- New water resources (reuse of treated wastewater, rainwater harvesting, desalination),
- Water-borne disease control,
- EU acquis implementation, and
- Public awareness and participation.

MDGs are the challenging statements of UN of this Century. Migration cuts across all or most MDGs, but one of the closest links are ensuring environmental sustainability. The interconnection between migration and development can have both positive and negative implications on development. In order to prevent negative effects of migration, regional employment opportunities should be increased. Water resources can be a powerful vehicle for addressing most of the MDGs through agricultural activities, water services, sanitation and health. Agricultural sector is, therefore, of utmost importance as it consumes the majority of water resources requiring employment of modern agricultural practices. Energy is another aspect that should be generated in a sustainable manner. On the other hand, this development brings together the environmental deterioration problem if protective measures are not considered in parallel to the sectoral development. To achieve this, sanitation services in rural and urban areas must be satisfied, and water and wastewater treatment plants should be installed. This may also lead to the control of water-borne diseases. Pollution inventory, data collection and processing are important tools that support the decision making process, and thus the installation and operation of those infrastructure services. Those efforts must be continuous and systematic. The most important driving force of all these issues is public awareness and participation.

In Theme 3, (Managing and Protecting Water Resources and their Supply Systems to Meet Human and Environmental Needs) the divides are *basin management, water resources, water storage, water saving* and *transboundary waters*. The related bridges are;

- Integrated river basin management approach,
- Flood management (*incl.* transboundary waters),
- Wetland management,
- Irrigation and drainage,
- Inter-basin water transfer,
- Ecology (Flora-fauna, endemic species),
- Water supply infrastructure,
- Wastewater treatment,
- Storm water drainage,
- Groundwater (identification, contamination, use),
- New water resources (treated wastewater, rainwater, desalination),
- Trans-boundary and international waters,
- Legal framework and EU acquis, and
- Public training and active participation.

The items of Theme 3 predominantly refer to more technical and managerial instruments. However, integrated river basin management approach also covers the political, social and economic issues besides the technical ones. Success of achieving this approach is based on the fulfilment of all the components. Flood and wetland management, irrigation and drainage, inter-basin water transfer if necessary, water supply, wastewater treatment, storm water drainage, abstraction of groundwater and development of new water resources are all engineering practices. These efforts may be accomplished through implementation of legal framework, mobilization of financial sources, and forcing decision makers by means of public awareness and participation.

Institutional cooperation and administration, association and *authorities* are the divides of Theme 4, (Governance and Management), while the bridges are;

- Lack of coordination and communication between technicians and politicians, and
- Gaps and overlaps in laws and regulations.
- Institutional coordination and collaboration,
- National water policy,
- Management by single entity,
- Local authorities,
- Administrative incentives,
- Public Private Partnership (PPP),
- Irrigation associations, and
- Public awareness.

The divides under Theme 4 may be better bridged through the efforts of the local and central governments in a nation and by international collaboration at the administrative level. At every communication step, the lack of coordination among technicians and politicians need to be minimized. Above all, management of water issues by a single entity is recommended despite of its controversial aspects. National water policies are also important in execution of water related tasks and allocation of responsibilities by means of organizations such as PPP and irrigation associations. Among all the items, public participation still bears its key role.

In Theme 5 (Finance), the divides are found to be *Gross National Product, funds and credits* and *financing institutions,* whereas the bridges are;

- Allocation and mobilization of financial resources (upon priorities),
- Cost/benefit analysis,
- Global fund mobilization,
- Governmental and private investments,
- Public Private Partnership (PPP), and

- Pricing of water use.

Similar to Theme 4, finance bridges are the main concern of local and central governments as well as private sector. Apart from the allocation and mobilization of financial resources based on priorities and cost-benefit analysis, participation of private assets to the national investments is another important topic. Privatization of strategic investments such as energy, water supply, etc. is still argued.

Finally, in Theme 6 (Education, Knowledge and Capacity Development), the divides are *general education, knowledge sharing* and *capacity building* and the bridges are;

- Public training (particularly farmers),
- Awareness raise,
- Education at early ages,
- Gender education and participation,
- Innovative technologies,
- Technology transfer and capacity building,
- Data dissemination and information exchange, and
- Historical hydraulic structures.

By declaring the vital importance of general education, knowledge sharing and capacity building, one may propose that the real bridges are public training, awareness increase, gender education and participation through water related issues.

Upon review of all the divides and corresponding bridges, one may easily recognize that the most common issues emphasized in all the meetings of the

Regional Process is the public training and participation, awareness raise and education on conservation of water resources. Moreover,

- realization and implementation of policies concerning adaptation of climate change,
- systematic data collection and information exchange among the stakeholders,
- enhance cooperation among riparian countries,
- strengthening the collaboration between the countries and international organizations dealing with water,
- streamlining the water related policies among the countries in the same region

are among the common issues.

As a final remark, it can be stated that water can be used as a powerful tool for the aim of peace. The idea behind this merit is to know how to employ this tool in the most appropriate manner for the benefit of all sides. The *In & Around Turkey* activities presented a typical example of utilization of this important tool.