



ORGANIZATION OF ISLAMIC COOPERATION  
THE STATISTICAL, ECONOMIC AND SOCIAL RESEARCH AND  
TRAINING CENTRE FOR ISLAMIC COUNTRIES (SESRIC)



## ISSUE BRIEF

# *Water Related Needs & Priorities of OIC Member Countries*

**August 17/2018**



ORGANIZATION OF ISLAMIC COOPERATION  
THE STATISTICAL, ECONOMIC AND SOCIAL RESEARCH AND  
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## Water Related Needs and Priorities of OIC Member Countries

As requested by the OIC Water Council, the OIC General Secretariat and the Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC) undertook the administration of a survey between 23<sup>rd</sup> April and 30<sup>th</sup> May 2018. The survey aimed at gathering information on the efforts taken to implement the OIC Water Vision, identifying key water-related challenges facing OIC countries and actions and strategies to address challenges of water security. In addition, the survey aimed to identify the training needs and capacities of member states, and their requirements in terms of water infrastructure. As of August 2018, the response rate for the survey was 26%, i.e. 15 OIC member countries<sup>1</sup>. The following issue brief is a concise summary of the key findings of the survey in reference to OIC member countries' requirement for technical assistance, capacity building, trainings needs and offerings, and development assistance. For a detailed discussion on the responses of OIC Water Council Survey 2018, please consult Appendix A of this issue brief.

### 1.1. Technical Assistance and Capacity Building

To successfully implement national water strategies, OIC countries need to develop strong institutional capacities that are capable of achieving goals. In this respect, in order to build capacities in member countries, knowledge sharing and transfer is of a vital importance. Similarly, technical cooperation between OIC countries can help leverage the assets and strengths of OIC institutions and improve their overall capacity.

In summary, results of the survey reveal that there is an increasing level of awareness as well as willingness among the OIC member countries to achieve water security through assistive capacity building, transfer of technology, and funding. A majority (80%) of OIC member countries are willing to assist other OIC member countries with assistive capacity building. Almost half (47%) of OIC countries are willing to assist with the transfer of technology. However, assistance in the form of funding and finance is not offered by any OIC member country.

How can your country assist other OIC member states in achieving water security?	
<b>Assistance with Technology Transfer</b>	Bangladesh, Iran, Morocco, Oman, Turkey, and Uzbekistan
<b>Assistance in Capacity Building</b>	Bahrain, Iran, Iraq, Morocco, Nigeria, Oman, Palestine, Senegal, Turkey, and Uzbekistan
<b>Assistance in the form of Funding</b>	None
<b>No Response</b>	Brunei Darussalam, Chad, Guinea, and Niger

Nevertheless, even as majority (80%) of OIC countries indicated a willingness to offer assistance in the form of capacity-building programmes to other OIC countries, only 60% of the OIC member countries have a history of intra-OIC cooperation on water-related issues. For a detailed list of exchange programs that OIC countries have participated in, please consult Table A.2 in Appendix A.

Has your country/institution cooperated with another OIC country in an exchange program (twinning, training, staff exchange etc.) to share information and experience?	
<b>Capacity Building (trainings programs and knowledge sharing) at national and intra-OIC level</b>	Chad, Guinea, Iran, Iraq, Oman, Palestine, Senegal, Turkey and Uzbekistan
<b>Has not participated</b>	Bangladesh and Nigeria
<b>No Response</b>	Brunei Darussalam, Bahrain, Morocco, and Niger

<sup>1</sup> The names of respondent countries are highlighted in Figure A.1 in Appendix A.

## 1.2. Training Needs and Offerings

Generally, the types of trainings offered by OIC countries are varied. More than half of the OIC countries are willing to offer trainings in integrated water resources management (53%). A significant number of OIC countries are also willing to offer trainings in areas including: irrigation systems (47%), water supply and sanitation (40%), groundwater management (40%), and water resource management (40%).

In respect to the training needs of OIC member countries, more than half of OIC member countries identified the need for trainings in 13 of the 16 water-related issue areas (for a detailed list of issue areas, please consult Figure A.10 in Appendix A). The most common training needs for OIC countries are in the areas of water governance (80%), wastewater recycling (73%), desalination (73%), and groundwater management (73%). As shown in Figure A.10 (see Appendix A), a significant number of countries also need trainings on water pollution (67%) and water quality management (67%). Overall, the number of responses for each training need was relatively high – demonstrating a dire need for better training and capacity building activities amongst OIC countries on a diverse range of issues. Linking OIC countries’ training needs and offerings can help policy makers identify areas of potential intra-OIC partnerships and future capacity building programs and exchanges.

Yet, even as OIC member countries’ have substantial needs for water-related trainings; there is a discrepancy between trainings needs and their prioritization amongst OIC countries. The priority accorded to each training area by OIC countries deserves due consideration when policy makers plan water-related strategies, policies, and activities at national, regional, and international level. At present, 53% of OIC countries rank wastewater recycling as a training need of the highest priority followed by groundwater management (47%), desalination (40%), and integrated water resources management (40%). Furthermore, although a large percentage of OIC countries identified water governance as a training need, the difference in each country’s priorities is evident from the fact that only 33% OIC member countries categorize water governance as a high priority need.

Please indicate if your country can offer training in the following areas:	
<b>Water resource management</b>	Bangladesh, Iraq, Morocco, Nigeria, Senegal, and Turkey
<b>Groundwater management</b>	Iran, Morocco, Niger, Senegal, and Turkey
<b>Integrated water resources management</b>	Iran, Iraq, Morocco, Nigeria, Niger, Senegal, Turkey, and Uzbekistan
<b>Irrigation Systems</b>	Bangladesh, Iran, Iraq, Oman, Senegal, Turkey, and Uzbekistan
<b>Water supply and sanitation</b>	Bangladesh, Iran, Nigeria, Oman, Senegal, and Turkey
Please indicate if your country needs training in the following areas:	
<b>Groundwater management</b>	Bangladesh, Bahrain, Chad, Guinea, Iraq, Nigeria, Niger, Oman, Palestine, Senegal, and Uzbekistan
<b>Water quality management</b>	Bangladesh, Bahrain, Guinea, Iran, Nigeria, Niger, Oman, Palestine, Senegal, and Uzbekistan
<b>Desalination</b>	Brunei Darussalam, Bahrain, Guinea, Iran, Iraq, Morocco, Nigeria, Palestine, Senegal, and Uzbekistan
<b>Water pollution</b>	Bangladesh, Chad, Guinea, Iran, Nigeria, Niger, Oman, Palestine, Senegal, and Uzbekistan

<b>Wastewater recycling</b>	Brunei Darussalam, Chad, Guinea, Iran, Iraq, Nigeria, Oman, Palestine, Senegal, and Uzbekistan
<b>Water governance (regulations)</b>	Bangladesh, Bahrain, Chad, Guinea, Iran, Iraq, Nigeria, Niger, Oman, Palestine, Senegal, and Uzbekistan
<b>Please rank the priority level of your country's training needs:</b>	
<b>Groundwater management</b>	Bahrain, Chad, Guinea, Nigeria, Niger, Oman, and Senegal
<b>Integrated water resources management</b>	Brunei Darussalam, Bangladesh, Iraq, Oman, Palestine, and Senegal
<b>Desalination</b>	Bangladesh, Bahrain, Iraq, Iraq, Nigeria, and Senegal
<b>Wastewater recycling</b>	Brunei Darussalam, Bahrain, Chad, Iran, Iraq, Oman, Senegal, and Uzbekistan
<b>Water governance (regulations)</b>	Bangladesh, Chad, Iraq, Niger, and Uzbekistan

### 1.3. Development Assistance

The need to build or upgrade water infrastructure is heavily reliant on the geographical, environmental, and financial conditions in each country. At present, 67% of OIC member countries lack adequate financial means to build or upgrade necessary water infrastructure.

<b>Does your country lack financial means necessary to build or upgrade necessary water infrastructure</b>	
<b>Yes</b>	Bangladesh, Chad, Guinea, Iraq, Morocco, Senegal, Nigeria, Oman, Palestine, and Uzbekistan
<b>No</b>	Brunei Darussalam, Bahrain, Iran, Niger, and Turkey

In OIC member countries, three main infrastructural needs are evident in the survey responses. These are infrastructural needs associated with irrigation systems, watershed and river systems management, and water supply and sanitation for rural and urban areas. Other water infrastructure requirements of member countries include: water storage techniques, integrated water resources management, groundwater management, water governance, flood risk management, desalination, etc. (see Table A.3 in Appendix A).

### 1.4. Main Challenges

Overall, the main challenges facing OIC member countries in the future are changing physical climates and water resource availability. In order to successfully manage these issues, OIC member countries have indicated water governance (knowledge, regulations, and policies), access to finance, and improvement of water and sanitation services as the three main priorities that can ensure a water secure future.

**End of Issue Brief**

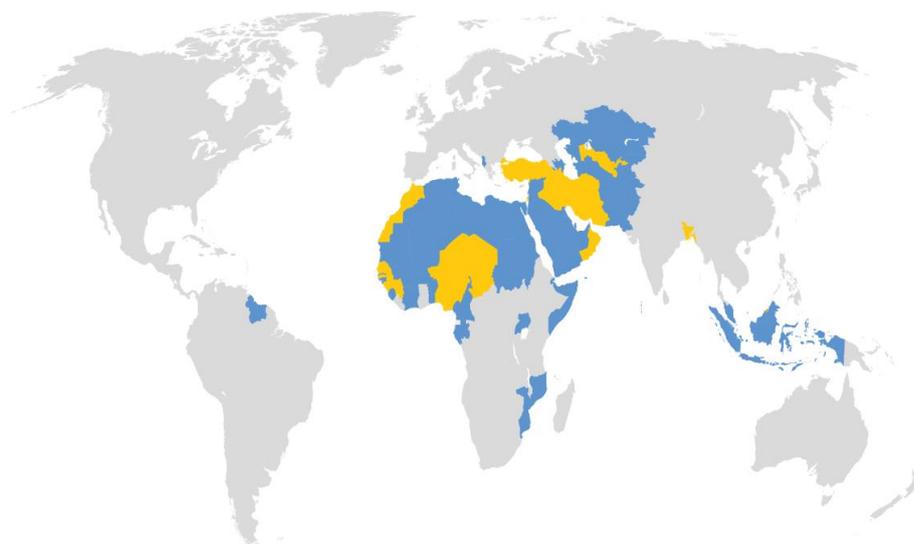
## Appendix A: Implementation of the OIC Water Vision

Over the decades, the OIC has worked to address directly major issues of environmental and social concern such as clean water availability and access to sanitation and, following a direct request from the OIC Water Ministers, the OIC General Secretariat began the process of developing a common vision to address water issues up to the year 2025. Following deliberations at meetings of an Advisory Panel of Experts in Dubai in May 2010 and Astana in June 2011, a draft vision was developed that was later presented to wider communities within the OIC for consultation. The OIC Water Vision was then adopted by the 2<sup>nd</sup> Islamic Conference of Ministers Responsible for Water held in Istanbul in 2012. The OIC Water Vision is a framework of cooperation among OIC member countries, relevant OIC institutions and international organizations in the water sector to improve availability of water particularly potable water in OIC countries. It aims to catalyse improved water security in OIC countries through connecting centres of excellence within the OIC in water science, policy, management and technology development; identifying solutions to water problems through increased dialogue and exchange of experience; and promoting solutions to water security challenges in the national and international agendas of OIC leaders. The 3<sup>rd</sup> Islamic Conference of Ministers Responsible for Water held in Istanbul in 2016 approved the terms of reference for establishing the OIC Water Council. The First Meeting of the OIC Water Council was held in Istanbul in November 2017, and in that meeting an implementation plan for the OIC Water Vision was developed.

Since the adoption of the OIC Water Vision, in 2012, the OIC General Secretariat in collaboration with the Turkish Water Institute (SUEN) and the Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC) conducted the first wave of surveys on the implementation of the OIC Water Vision and future cooperation activities, whose results were reported in the OIC Water Report 2015 and presented to the 3<sup>rd</sup> Islamic Conference of Ministers Responsible for Water held in Istanbul in 2016. In 2018, OIC General Secretariat and SESRIC administered the second wave of surveys on the implementation of the OIC Water Vision amongst OIC countries. The questionnaire aimed at gathering information on the efforts taken to implement OIC Water Vision, identifying key water-related challenges facing OIC countries and actions and strategies to address challenges of water security. In addition to the above aims and in compliance to the request of the OIC Water Council that SESRIC conducts a survey in order to assess the needs and capacities of member states, two new sections were added to the survey carrying the objective of identifying the training needs and capacities of member states and their requirements in terms of water infrastructure. The questionnaire was circulated online through Survey Monkey and emails to 'National Focal Points for the OIC Water Vision' between 23<sup>rd</sup> April and 30<sup>th</sup> May 2018.

The questionnaire consisted of four sections (see Appendix B). In the first section, respondents answered 7 questions about achievements and challenges in the implementation of OIC Water Vision. This section aimed at profiling the overall water security challenges of OIC countries including, but not limited to, water resource availability, consumption, infrastructure, financing, trans-boundary water management, and socio-economic and physical climates. In the second section, there were 5 questions aimed at identifying the training needs and capacities of member states ranging from technological exchange, capacity building, and finance and funding. The third section of the questionnaire consisted of 3 questions investigating the requirements of member states in terms of water infrastructure that needs building or upgrading. And the last section of the questionnaire inquired about the way forward for the OIC countries and their main challenges, priorities and opportunities for the 5-10 years ahead. As of August 2018, 15 OIC countries responded to the questionnaire (see Figure A.1), corresponding to 26% of OIC member countries with representation from diverse geographical regions.

**Figure A.1:** OIC Countries that responded to the OIC Water Council Survey 2018

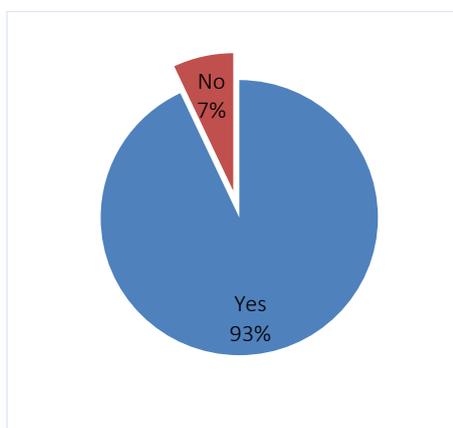


Respondent (highlighted) OIC countries are: Bahrain, Bangladesh, Brunei Darussalam, Chad, Guinea, Iran, Iraq, Morocco, Niger, Nigeria, Oman, Palestine, Senegal, Turkey, and Uzbekistan.

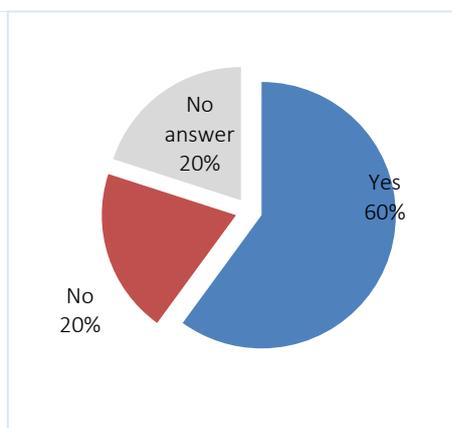
### 1.1. Major Achievements

In most of the countries surveyed (93%), the OIC Water Vision document has already been circulated to the relevant departments and the implementation of various recommended actions and activities is in progress (Figure A.2(a))<sup>2</sup>. Among the 15 respondents, 14 OIC countries have adopted a water security policy at the national level since 2012. Only Senegal responded negatively about the existence of a comprehensive water policy at national level. Additionally, 9 of the 15 respondents have also updated, and /or evaluated their national policy on water issues since the adoption of the OIC Water Vision in 2012. Only Brunei Darussalam, Nigeria, and Oman did not update or evaluate their existing water security policy; whereas, Chad, Palestine, and Niger provided no information about the update or evaluation of their national water security policy (Figure A.2(b)).

**Figure A.2(a):** Has Your Country Adopted a Water Security Policy at the National Level since 2012?



**Figure A.2(b):** Has Your Country Updated or Evaluated Existing National Water Security Policy since 2012?

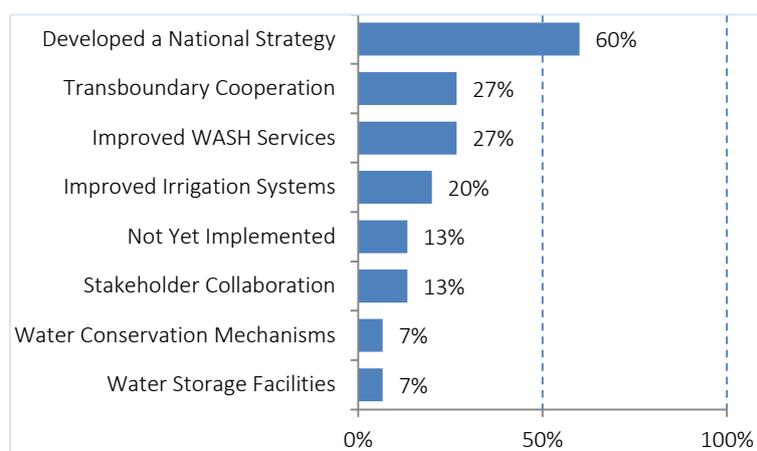


<sup>2</sup> All the figures in this chapter are sourced from responses of the OIC Water Council Survey 2018 conducted by SESRIC.

## Appendix A: Implementation of the OIC Water Vision

Moreover, since 2012 OIC countries have also undertaken various efforts for the implementation of the OIC Water Vision in their respective countries. As shown in figure A.3, 60% of the survey respondents have developed a national strategy and/or plan as an effort towards the implementation of OIC Water Vision in their countries. A further 27% of the respondent countries actively undertook efforts towards transboundary cooperation and improving access to (safe) drinking water and sanitation services as a part of their efforts to implement the OIC Water Vision in their countries. Other efforts undertaken for the implementation of OIC Water Vision include improved irrigation systems (20%), improved stakeholder collaboration on water-related issues (13%), and improvement in water conservation mechanisms and water storage facilities (7%). Only Bangladesh and Palestine responded that the implementation process of the OIC Water Vision had not yet begun in their countries.

**Figure A.3:** Efforts Undertaken for the Implementation of the OIC Water Vision in Your Country



In line with the efforts towards the implementation of OIC Water Vision, respondent countries also experienced major achievements and/or breakthroughs while implementing OIC Water Vision in their countries – as summarized in table A.1 (below). The experiences and achievements of each respondent country are diverse in nature and scope. For instance, Bahrain successfully implemented the principles of water integrated management, Chad, Guinea, and Senegal improved their water and sanitation services, Iran and Turkey made positive development in the field of irrigation, Oman conducted a breakthrough study on their water resources, and Uzbekistan successfully cooperated with its neighbours over the joint use of Amudarya and Syrdarya rivers. Reporting the experiences and achievements of respondent countries is important because such initiatives can be replicated by other OIC member countries customized in accordance to their local needs through an exchange of expertise and knowledge. Knowledge sharing and exchange can also strengthen intra-OIC cooperation and partnerships aiming to resolve common water-related issues.

**Table A.1:** Major achievements and/or breakthroughs while implementing the OIC Water Vision in Respondent Countries

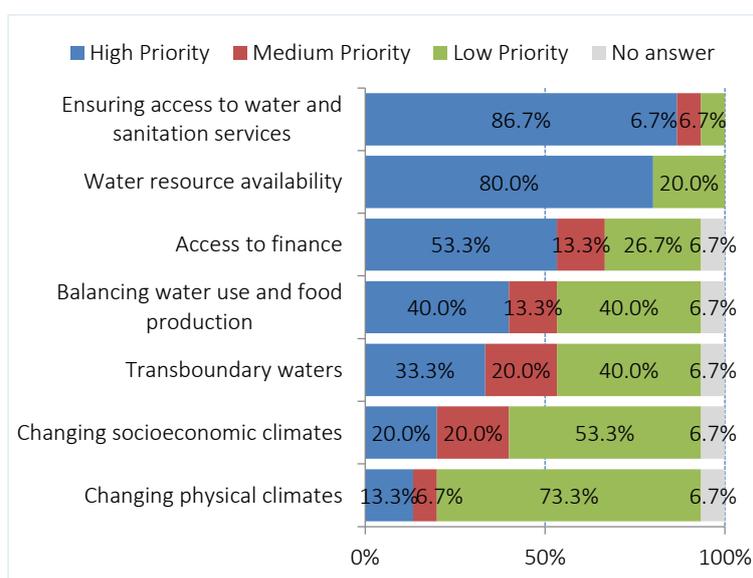
Country	Achievements/Breakthroughs
Bahrain	Implemented the principles of water integrated management.
Chad	Improved the rate of access to water from 21% in 2000 to 53% in 2015.
Guinea	Improved the design of drinking water supply and sanitation projects.
Iran	Updated the National Irrigation Act (NIA) focusing on Participatory Irrigation management. Introduced training for operators and staff in institutions partnering with the Ministry of Agriculture.
Iraq	Participated in the Water Council.

<b>Senegal</b>	Improved WASH services, hydro-agriculture and small-scale irrigation, and the framework for water resource management.
<b>Nigeria</b>	Most of the work in this area is still in preliminary stage.
<b>Oman</b>	Developed and modernized hydrometric monitoring network, implemented exploratory drilling and pilot pumping programme, and also commissioned a study on water situation.
<b>Turkey</b>	Examined the impact of irrigation management on agro-industries and rural-urban migration.
<b>Uzbekistan</b>	Successfully cooperated with neighbouring countries over the joint use of Amudarya and Syrdarya regulated by a UN Convention and improved the efficiency of irrigation technologies.

### 1.2. Major Challenges

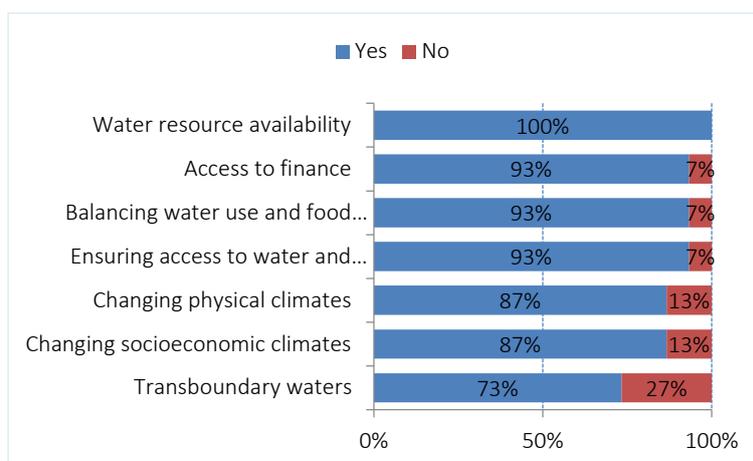
In spite of geographical and environmental diversity, respondent countries exhibit commonalities in their prioritization of water security related challenges listed in the OIC Water Vision. As shown in Figure A.4, ensuring access to water and sanitation services is the greatest challenge to the water security of 87% of the respondents. It is followed by challenges associated with water resource availability (80%), access to finance (53%), balancing water use and food production (40%), transboundary waters (33%), and changing socio-economic climates (20%). At the other end of the scale, changing physical climates is not as big of a challenge for 73% of the respondents.

**Figure A.4:** Please Rank the Following Water Security Challenges from the OIC Water Vision



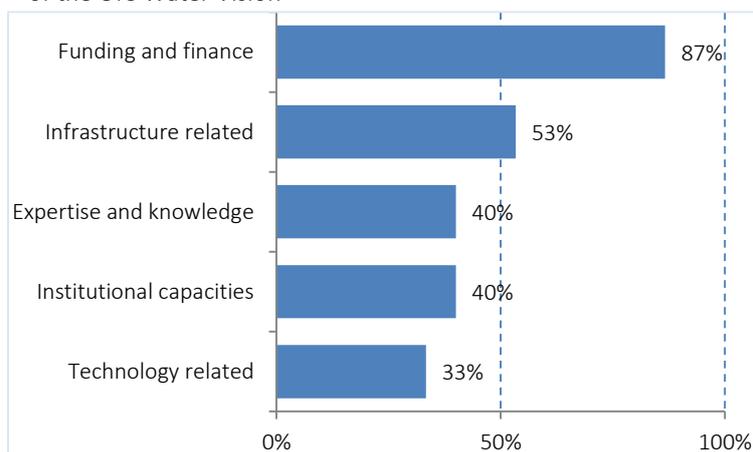
The results of the questionnaire reveal that majority of the respondents have specific policies, strategies and /or action to address all seven major water security challenges listed in the OIC Water Vision. As shown in Figure A.5, 100% of the respondents have a policy to address the water resource availability related issues, 93% for access to finance, balancing water use and food production, and ensuring access to water and sanitation services. Concurrently, 87% of the respondents have a policy to address the challenges of changing socio-economic and physical climates. At the other end of the scale, 73% of the respondents have a policy to address transboundary water-related issues. Among the respondents, nine countries namely: Bangladesh, Guinea, Iran, Iraq, Senegal, Palestine, Niger, Turkey, and Uzbekistan reported having specific policies, strategies and /or action to address the all major challenges listed in the OIC Water Vision.

**Figure A.5:** Has Your Country Developed Specific Policies, Strategies, or Actions for the Following Water Related Challenges?



It is a widely held opinion that financial, institutional, technological, expertise/knowledge, and infrastructure related difficulties and obstacles are hindering the developing world, including many OIC countries, in achieving a water secure future. This is also the case for majority of the 15 respondents. As shown in figure A.6, 87% of the respondents reported facing major obstacles in funding and financing their efforts for implementation of the OIC Water Vision. More than half of the respondents (53%) faced major infrastructural obstacles in implementing the OIC Water Vision. Further 40% of the respondents identified obstacles related to expertise/knowledge and institutional capacities; whereas, only 33% of the respondents mentioned technology as a major obstacle in implementing the OIC Water Vision. At individual country level, all of these five obstacles are a major concern for Senegal and Nigeria. However, for Brunei Darussalam and Bahrain, none of these obstacles are a major concern.

**Figure A.6:** Main Difficulties and Obstacles in the Implementation of the OIC Water Vision

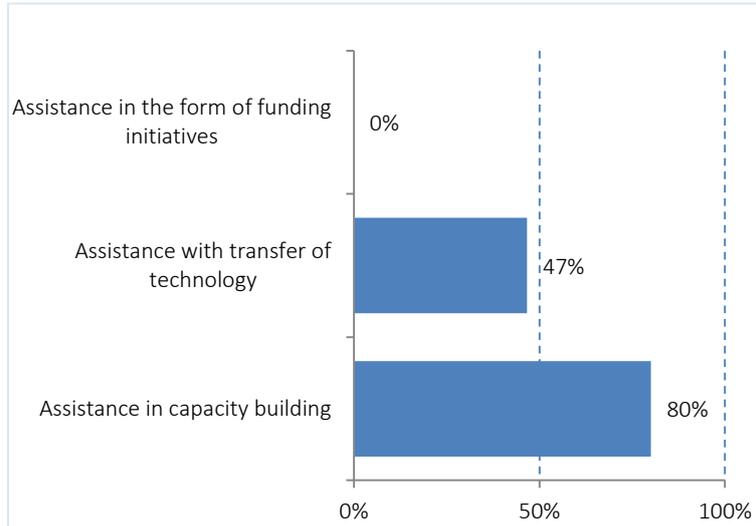


### 1.3. Technical Assistance and Capacity Building

There is a widespread acknowledgement that south-south cooperation has the potential to play an important role in bridging the gap between developing countries by facilitating the exchange of information and transfer of knowledge and expertise. Results of the questionnaire reveal that there is an increasing level of awareness as well as willingness among the OIC member countries to achieve water security through assistive capacity building, transfer of technology, and funding – as shown in Figure A.7. Though funding was recognized as one of the major obstacles in the implementation of the OIC Water Vision, none of the respondents are able to help in the form of

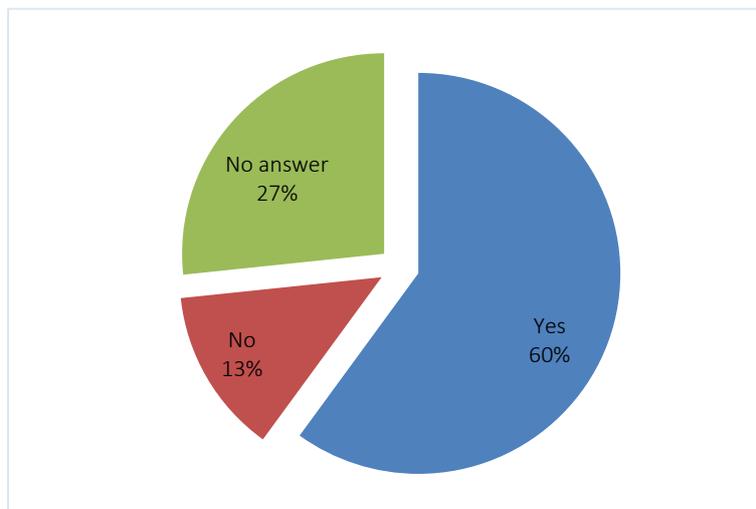
funding initiatives. Meanwhile, 80% of respondents showed interest in offering capacity-building programmes to other OIC countries and almost half of the respondents (47%) expressed their readiness to help other OIC countries to achieve water security by facilitating technology transfer.

**Figure A.7:** Assistance your Country can Offer in Achieving Water Security



However, even when the majority (80%) of the respondents showed interest in offering capacity-building programmes to other OIC countries, only 60% of the respondents have cooperated with another OIC country in an exchange program to share information and experience till date (Figure A.8). These programs pre-dominantly include exchanges on the topic of transboundary water issues or in the form of capacity building programs (trainings and knowledge sharing) between member countries. A brief overview of cooperative exchanges of 9 respondent countries is presented in table A.2 below. Notably, Bangladesh and Nigeria have not cooperated with another OIC country in an exchange program whereas, Brunei Darussalam, Bahrain, Morocco, and Niger provided no information about cooperation through exchange programs with other OIC countries.

**Figure A.8:** Has Your Country Cooperated with another OIC Country in an Exchange Programme to Share Information and Experience?



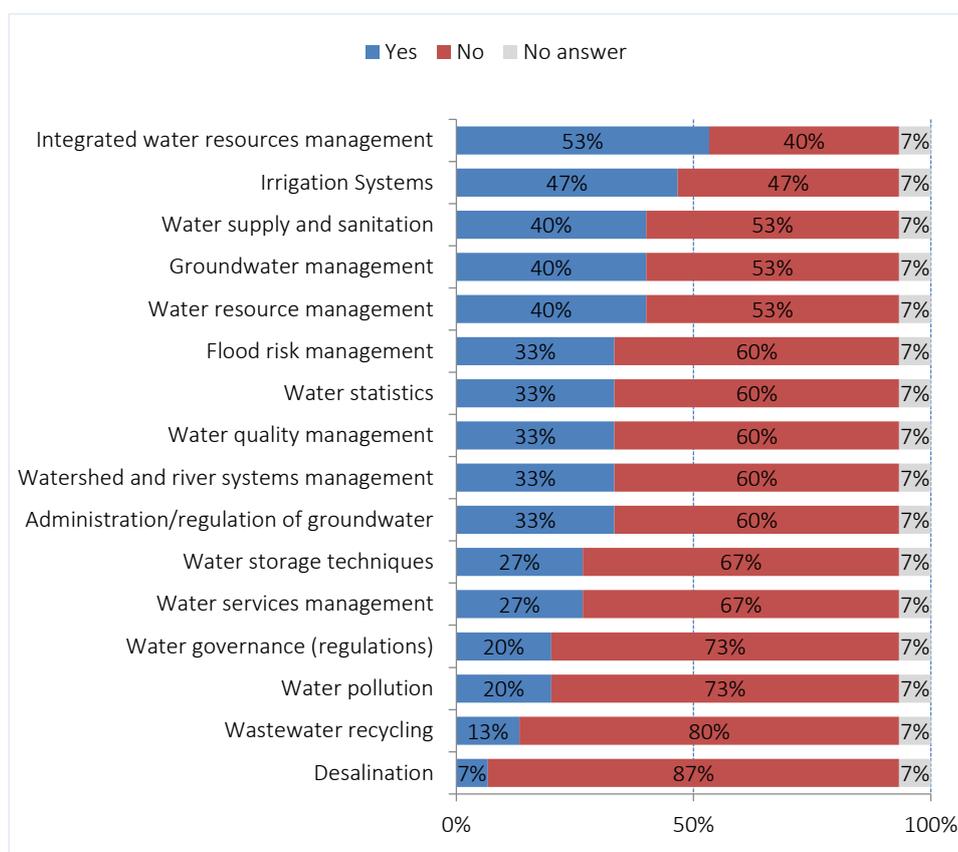
## Appendix A: Implementation of the OIC Water Vision

**Table A.2:** Intra-OIC Cooperation and Exchange Programs in Respondent Countries

Country	Cooperation/Exchange Program Name
<b>Chad</b>	Transboundary waters - continuous cooperation in promoting and participating in the design and operation of common works and projects. Participating countries are: Niger, Nigeria, Cameroon, Libya, CAR and Chad for the Lake Chad Basin Commission (LCBC); Guinea, Côte d'Ivoire, Mali, Burkina-Faso, Benin, Niger, Nigeria, Cameroon and Chad for the Niger Basin Authority (NBA); Egypt, Libya, Sudan and Chad for Nubian Sandstone Tablecloth (JASAD).
<b>Guinea</b>	Capacity building - Guinea Water Society has signed memorandum of agreements to train the company's executives with the following countries: Burkina Faso, Tunisia, and Morocco. There is also a memorandum of agreement between Guinea and Algeria related to the implementation of IWRM (GIRE).
<b>Iran</b>	Irrigation Systems - exchange programme about Participatory Irrigation management and cooperation with Irrigation and Drainage Committee members.
<b>Iraq</b>	Transboundary waters - cooperation with the neighbouring countries Turkey, Iran and Syria in the field of exploiting the shared water resources, but did not live up to the level of agreements required to determine water quotas for each country.
<b>Senegal</b>	Capacity building - training programs are offered to the government to countries including Egypt, Morocco, Algeria, Tunisia. There is also research and development projects with training components for the institutions that participate in these projects
<b>Oman</b>	Capacity building - Human Resources Development Centre
<b>Palestine</b>	Capacity building - cooperation in the field of training, capacity-building and exchange of information and expertise by virtue of MoUs concluded with a group of member states
<b>Turkey</b>	Capacity building - DSI implemented theoretical training in the office and practical training in the field for 6 Ethiopian engineers in 2008. Trainings on Water Resources Management were organized in Turkey in 2010, 2014, 2017 for total 30 water experts from Ethiopia. Trainings of Water Resources Management were organized in Turkey in 2006, 2007, 2008 for total 35 water experts from Egypt, Mali, Zambia, Nigeria, South Africa, Burkina Faso, Ivory Coast and Morocco, as well as in 2011, 2012 and 2013 for total 28 water experts from Mali, Nigeria, Burkina Faso, and Morocco. Training of Water Resources Management were organized in Turkey for total 10 water experts from Uganda, Senegal, Mauritania, Somali in 2016.
<b>Uzbekistan</b>	Transboundary waters - local experts actively participate in realizing joint regional projects.

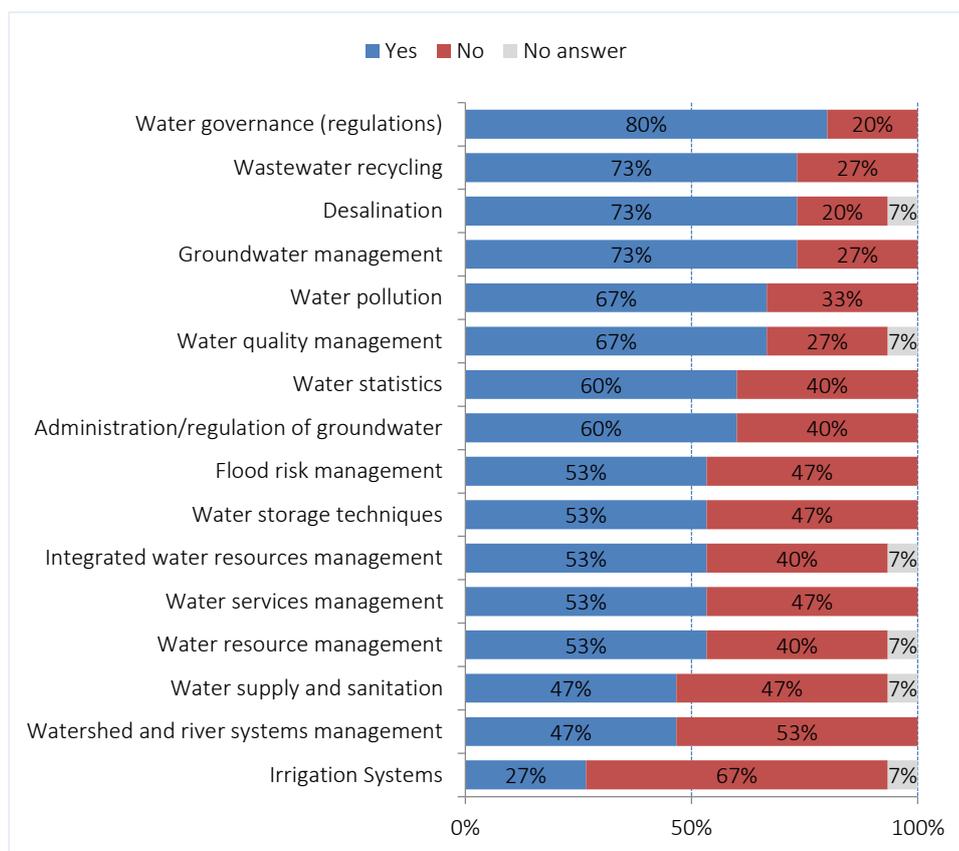
The questionnaire also enquired into various water-related trainings that OIC countries can offer or need. With the exception of Brunei Darussalam, Chad, and Guinea all the respondents identified various water-related trainings that they can offer to other OIC countries as shown in Figure A.9. None of the countries offered trainings in all the areas due to a lack of capability, experience, or expertise. Notably, Senegal is willing to offer trainings in all the areas except desalination, whereas, Palestine can only offer trainings in water governance (regulations). Generally, the types of trainings offered by respondent countries are varied. From a list of 16 water-related training areas, more than half of the respondents were willing to offer trainings in integrated water resources management (53%). A significant number of respondents were also willing to offer trainings in areas including: irrigation systems (47%), water supply and sanitation (40%), groundwater management (40%), and water resource management (40%). On average, five respondents (each) were willing to offer trainings on flood risk management (33%), methods of water data and information collection (water statistics) (33%), water quality management (33%), watershed and river systems management (33%), and administration and regulation of groundwater (33%). And overall, there were not as many respondent countries willing to offer trainings on water storage techniques, water services management, water governance, water pollution, waste water recycling, and desalination.

Figure A.9: Please Indicate if Your Country can Offer Training in the Following Areas



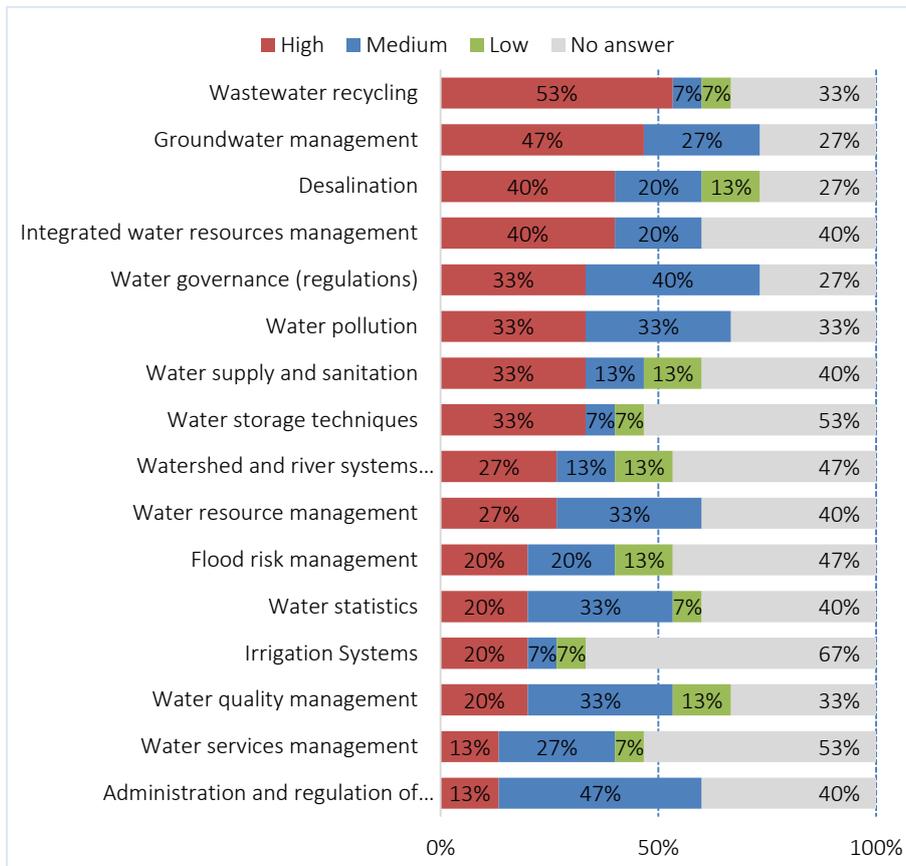
In respect to the training needs of respondent countries, more than half of respondents identified the need for trainings in 13 of the 16 water-related issue areas. Among 15 respondent countries, only Turkey declined the need for training in every water-related issue area. On the other hand, Guinea, Nigeria, and Senegal needed trainings in all 16 areas. The most common training needs for respondent countries were in the areas of water governance (80%), wastewater recycling (73%), desalination (73%), and groundwater management (73%). As shown in Figure A.10, between 50% and 70% of respondents also needed trainings on water pollution (67%), water quality management (67%), methods of water data and information collection (water statistics) (60%), administration and regulation of groundwater (60%), flood risk management (53%), water storage techniques (53%), integrated water resources management (53%), water services management (53%), and water resource management (53%). To add, almost half the respondents also reported a need for trainings in areas of water supply and sanitation (47%) and watershed and river systems management (47%). On the other hand, the fewest number of respondent countries needed training in irrigation systems (27%). Overall, the high number of responses for each training areas reflects on the dire need for better training and capacity building activities amongst OIC countries on a diverse range of issues. An analysis of responses presented in Figure A.9 and Figure A.10 shows a correspondence between trainings needed and offered by respondent countries. Corresponding areas of training needs and offerings can help policy makers identify areas of potential intra-OIC partnerships and future capacity building programs and exchanges.

Figure A.10: Please Indicate of Your Country Needs Training in the Following Areas



However, even as respondent countries' have substantial needs for water-related trainings; there is a discrepancy between trainings needs and their prioritization amongst respondent countries. The priority accorded to each training area by respondent countries deserves due consideration when policy makers plan water-related strategies, policies, and activities at national, regional, and international level. As shown in Figure A.11, 53% of the responses ranked wastewater recycling as a training need of the highest priority followed by groundwater management (47%), desalination (40%), and integrated water resources management (40%). Although a large percentage of respondent countries identified water governance as a training need, the difference in each country's priorities is evident from the fact that only 33% respondents categorized water governance as a high priority need. Along with water governance, respondent countries' training needs for water pollution (33%), water supply and sanitation (33%), and water storage techniques (33%) were also ranked lower on the priority scale. Similarly, between 20% and 30% respondents categorized watershed and river systems management, water resource management, flood risk management, methods of water data and information collection (water statistics), irrigation systems, and water quality management as high priority training needs. Lastly, training needs for irrigation systems and administration and regulation of groundwater were of the lowest priority for respondent countries.

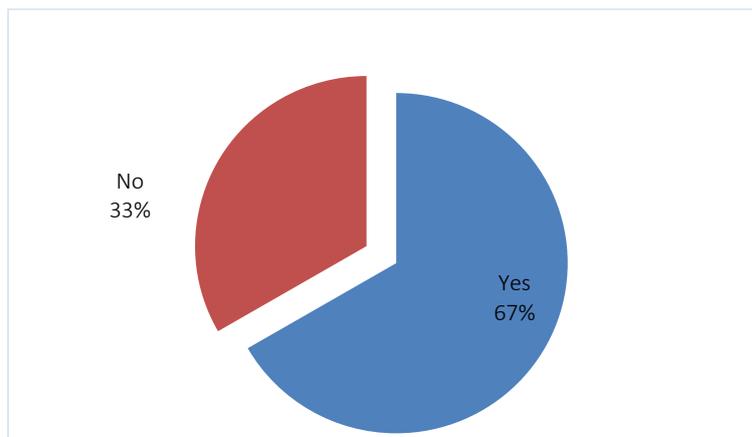
**Figure A.11:** Please Indicate the Priority of Your Country's Training Needs in the Following Areas



#### 1.4. Development Assistance

Among the 15 countries that have completed the questionnaire, 67% countries currently lack financial means to build or upgrade necessary water infrastructure (Figure A.12). A large part of water infrastructure that needs building and upgrading in respondent countries is related to their irrigation systems, watershed and river systems management, and water supply and sanitation to rural and urban areas.

**Figure A.12:** Does your Country Lack Financial Means to Build or Upgrade Necessary Water Infrastructure?



Other water infrastructure requiring upgrades included, but is not limited to, water storage techniques, integrated water resources management, groundwater management, water governance, flood risk management, desalination, etc. (Table A.3). While the need to build or upgrade water infrastructure is heavily reliant on the

## Appendix A: Implementation of the OIC Water Vision

geographical, environmental, and financial conditions in each country, only five countries, namely Brunei Darussalam, Bahrain, Iran, Niger, and Turkey reported having the financial means to build or upgrade necessary water infrastructure in their respective countries.

**Table A.3:** Projects in Respondent Countries that need funds and financing for upgrading and building water related infrastructure

Projects that need upgrading:	
Bangladesh	1. Capital Dredging of River Systems in Bangladesh
	2. Ganges-Kobadak (G-K) Irrigation Project
	3. Buriganga River Restoration project
	4. Early Flood Protection and Improvement of Drainage system in Haor Area
	5. Coastal Embankment Project
Chad	1. Project for the Rehabilitation of Water Supply Structures in Urban Centres (PRCU)
	2. Villages and Pastoral Hydraulics' Project
	3. Drinking Water and Sanitation Supply Project in Rural and Semi-rural Areas
	4. Pastoral Hydraulic Facilities Improvement Project
	5. Drinking Water and Sanitation Supply Project in Secondary Urban Centres
Guinea	1. Drinking water supply implementation Project for the city of Conakry (fourth Water Project of Guinea)
	2. Interior cities Rehabilitation and implementation Project of AEP
	3. Rehabilitation and extension Project of the Guinea Water courses hydrological stations
Iran	1. Development of irrigation and drainage network
	2. Development of modern irrigation system
	3. Restoration and restoration of Qanats
	4. Development of rice field
	5. Agricultural water use and demand management
Iraq	1. Construction of hydroelectric dams and expansion of hydroelectric power
	2. Implement the central and southern part of East Tigris well drain
	3. Construction and installation of stations for measuring river flows
	4. Institutional and legislative reform
	5. Construction of a weir in Muthanna province
Oman	1. Identifying the water needs for the main agricultural crops
	2. Improve the efficiency of the irrigation systems
	3. Monitoring the actual withdrawal rates of groundwater for agricultural purposes
Palestine	1. Developing the sewage system for northern Gaza
	2. Rehabilitation of networks and reservoirs in the southern West Bank
	3. Rehabilitation and restructuring of the internal networks of the northern and southern Gaza Strip
	4. Development and rehabilitation of the sanitation system for southern Jerusalem and East Bethlehem
	5. Development of the sanitation system in the city of Jenin

Senegal	<ol style="list-style-type: none"> <li>1. PEPAM : Millennium Project of drinking water and sanitation</li> <li>2. CADEX and the SODAGRI Projects</li> </ol>
Uzbekistan	<ol style="list-style-type: none"> <li>1. Modernization of existing pumping stations to improve water availability of irrigated lands</li> <li>2. Increasing the irrigated lands water security by improving the technical condition of the main canals</li> <li>3. Strengthening the capacity of water users' associations to improve the efficiency of water resources usage</li> <li>4. Improving the reclamation condition of irrigated lands in dry conditions of Uzbekistan</li> </ol>
<b>Projects that need building:</b>	
Bangladesh	<ol style="list-style-type: none"> <li>1. Ganges/Padma Barrage Project</li> <li>2. Brahmaputra Multi-purpose Barrage Project</li> <li>3. Bangladesh Delta Plan 2100</li> <li>4. Systematic Rehabilitation of the Coastal Polders</li> <li>5. Sustainable Capital Dredging of the vulnerable river systems in Bangladesh</li> </ol>
Chad	<ol style="list-style-type: none"> <li>1. Pastoral and Village Hydraulics Program in the Wadi-Fira Region (PHPVW)</li> <li>2. Project of the achievements of the Deep Drilling in the Nubian Sandstone Zone (PRFP-GN)</li> <li>3. Drinking water supply optimization project (POAEP - CU) of six urban centres: Biltine, Mao, Moussoro, Amdjarass, Mongo, Oumhadjar</li> <li>4. Drinking Water Supply and Sanitation Program in rural Ouaddaï-Biltine (PAEPOB)</li> <li>5. Pastoral Hydraulics Project in the Geographical Ouaddaï (PHPOG)</li> </ol>
Guinea	<ol style="list-style-type: none"> <li>1. Construction project of 13000 water points and 6000 latrines in rural areas</li> </ol>
Iran	<ol style="list-style-type: none"> <li>1. Soil and water conservation projects</li> <li>2. Climate change project</li> </ol>
Iraq	<ol style="list-style-type: none"> <li>1. Rehabilitation of the Mosul dam, which is suffering from gypsum loss which is currently being filled</li> <li>2. Rehabilitation of the irrigation channel Samra - Tharthar to increase discharge from 100 to 250 m<sup>3</sup>/s</li> <li>3. Rehabilitation of the general estuary</li> <li>4. Rehabilitation of hydroelectric dams to improve their efficiency and increase their production</li> <li>5. Development of forest and green belt programs to reduce desert encroachment and reduce dusty storms</li> </ol>
Morocco	<ol style="list-style-type: none"> <li>1. Desalination plant to supply the city of Casablanca with drinking water</li> <li>2. Desalination plant to supply the city of Nador with drinking water</li> <li>3. Water diversion project from northern water basins to southern basins</li> </ol>
Oman	<ol style="list-style-type: none"> <li>1. Increase in the installation of modern irrigation systems</li> <li>2. Rainwater harvesting through building some dams and water reservoirs</li> <li>3. Use of treated wastewater in the irrigation of the economic crops</li> <li>4. Promotion of water resources through the implementation of the rainmaking project</li> </ol>

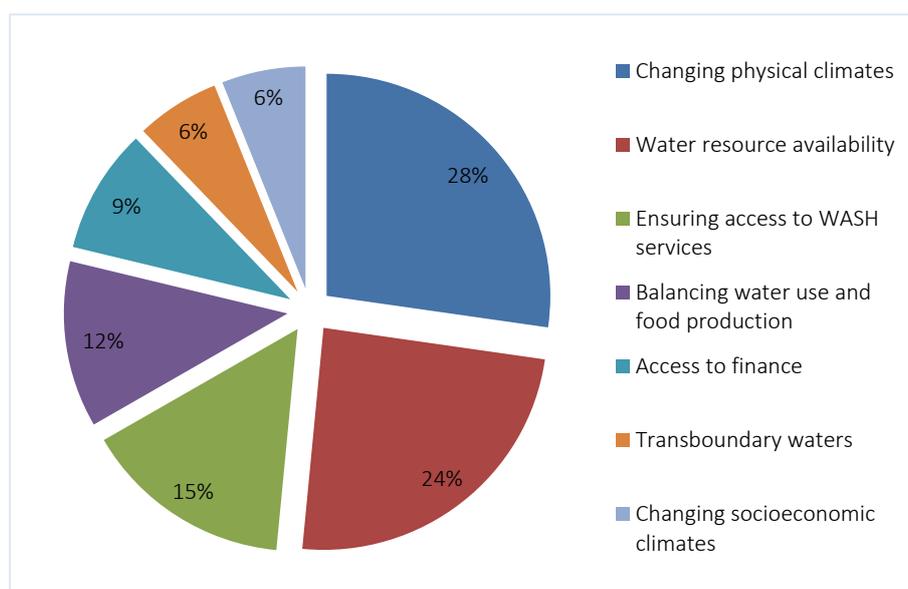
## Appendix A: Implementation of the OIC Water Vision

	5. Use of modern techniques to reduce salinity levels in the wells that are used for irrigation purposes
Palestine	1. Establishment of tanks, conveyor lines and regional water pumping stations for bulk distribution in the governorates of the south, central and northern West Bank
	2. Construction of the northern pipeline for Gaza Strip to serve the central governorates, Gaza and the north
	3. Construction of sewage network for Khan Younis Governorate and development of treatment plant
	4. Establishment of an integrated sewage system for the north west of Jenin Governorate
	5. Establishment of a sewage system for the south of Tubas governorate
Senegal	1. PREFELAG : Project for the restoration of the lake Guiers ecological functions
	2. PUDC : Emergency program of Community Development
	3. PNDIL : National Program for the development of small local irrigation
Uzbekistan	1. Increasing the efficiency of water resources usage on the basis of development and introduction of water-saving irrigation technologies

### 1.5. Challenges, Priorities, and Strategies for the Future

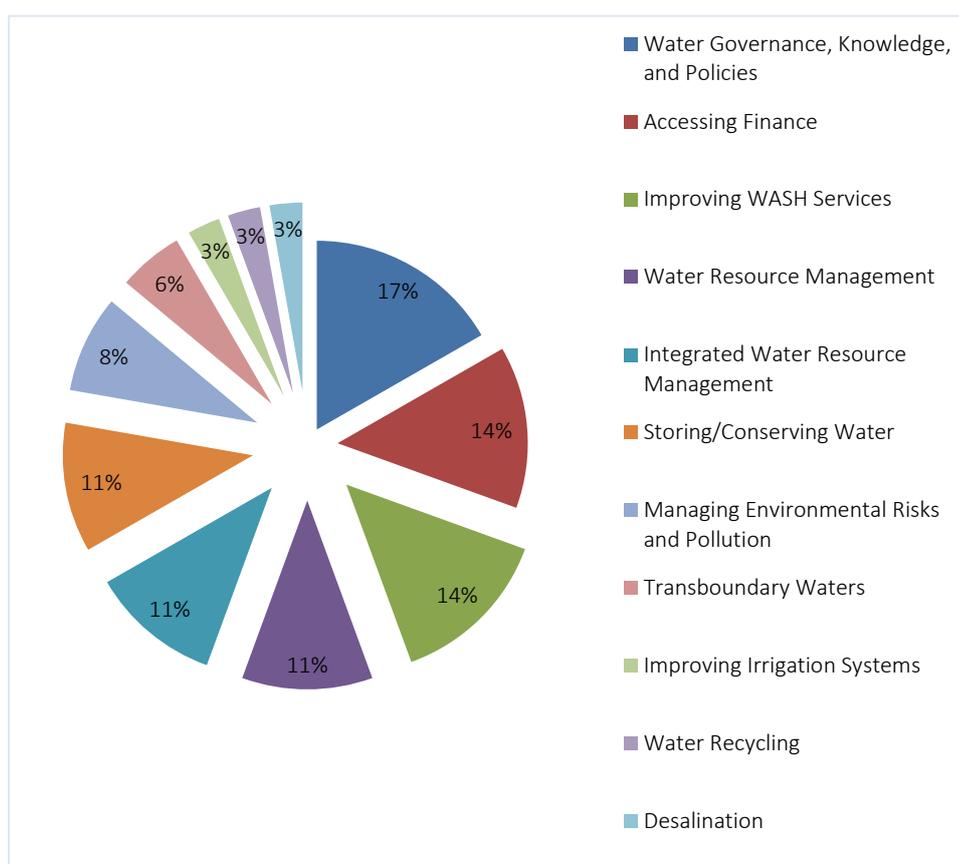
The last section of the questionnaire enquires the main challenges, priorities and strategies for the coming 5-10 years to address the issue of water security in OIC countries. With the exception of Bahrain, Iran, Iraq, and Nigeria, the question related to the main challenges was answered by all the respondents. With respect to respondent countries, as shown in Figure A.13, changing physical climates (28%) and water resource availability (24%) were identified as the major challenge to water security followed by ensuring wider access to the water and sanitation services (15%), balanced water use and food production (12%), and access to finance (9%). Bangladesh and Uzbekistan were the only respondent countries to identify transboundary waters as a main challenge to water security. Whereas, Chad and Niger were the only two countries citing changing socio-economic climates as a main challenge to their countries water security in the future.

**Figure A.13:** Main Challenges Affecting Water Security in Your Country in the Future



On a similar note, development and adoption of water governance, knowledge on water-related topics, and water-related policies was identified as the main priority by 17% of the respondents in order to ensure a water secure future for their countries – as shown in Figure A.14. Among 15 respondent countries, 14% stated that their main priorities were to access finance and improve water and sanitation services in their countries. Furthermore, only a few respondent countries identified their main priorities as water resource management (11%), integrated water resources management (11%), water conservation and storage techniques (11%), managing water pollution and environmental risks (8%), transboundary waters (6%), improving irrigation systems (3%), waste water recycling (3%), and desalination (3%). Out of 15 respondents, Bahrain, Iraq, and Nigeria were the only respondent countries who did not state their main priorities in response to this question.

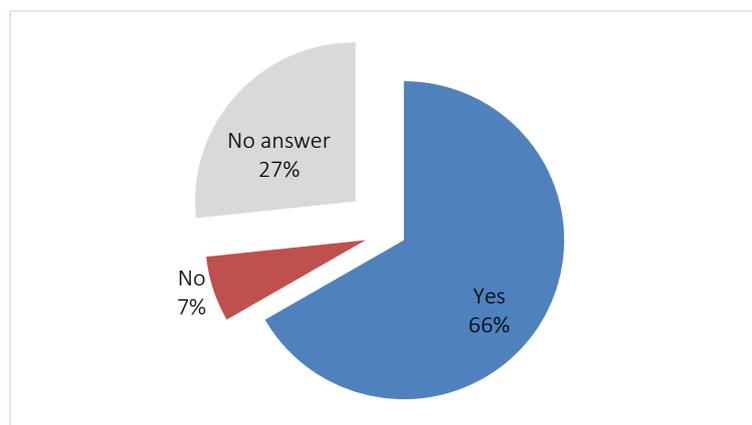
Figure A.14: Main Priorities that can ensure a Water Secure Future



Overall, out of 15 respondents of the questionnaire, 66% of countries indicated that they have strategies for achieving water security to be carried out at the national level over the next 5-10 years (Figure A.15). While Chad responded negatively to the question, Bahrain, Iraq, Nigeria, and Senegal refrained from answering it. As shown in Table A.4 below, almost two thirds (67%) of the respondents have indicated that they are bound to national, regional, and/or international commitments to achieve water security targets in the next 5-10 years (Figure A.16). These water security targets included, but are not limited to, at least one of the following issues: improving the accessibility of safe drinking water and sanitation services, accessing finance and funding for water-related projects, integrated water resources management, transboundary water issues, developing a national strategy/plan for water use and management, and building water storage and conservation facilities.

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**Figure A.15:** National Level Strategies for Achieving Water Security over the next 5-10 years



**Table A.4:** National Level Strategies for achieving Water Security in the future

Country	National Level Strategy
<b>Bangladesh</b>	The implementation of transboundary Ganges/Padma Barrage Project (Bangladesh-India) to improve socio-economic and environmental conditions of South-West and North-West region.
<b>Brunei Darussalam</b>	Ensuring access to clean and safe WASH services through water supply management, and stakeholder engagement for water conservation.
<b>Chad</b>	Seeking funding for the regional investment plan for hydraulic works.
<b>Iran</b>	Establishing a comprehensive water management system for the based on the principles of sustainable development and land use in the catchment areas of the country, integrated water resource management, water conservation, water storage techniques through dams, aquifer schemes, irrigation networks, flood risk management, improving water statistics, and transboundary water issues.
<b>Morocco</b>	The existing National Water Strategy, National Water Plan, and Directorate Plans of Watershed.
<b>Niger</b>	Mobilization of financial resources strategy.
<b>Oman</b>	The Arab Strategy for Water Security in the Arab World , GCC Unified Water Strategy 2015-2035, National Strategy for Wetlands, National Strategy for Addressing the Problem of Salinity in Oman, and Strategy on Sustainable Agriculture and Rural Development 2040.
<b>Palestine</b>	Developing an operational strategic plan to achieve water security within available resources.
<b>Senegal</b>	Improving access to clean and safe WASH services and irrigation systems for a period beyond the next 5-10 years.
<b>Turkey</b>	Completion of various water storage facilities.
<b>Uzbekistan</b>	Developing transboundary water resource management scheme for Amudarya and Syrdarya river basins.

## Annendix B: OIC Water Council Survey 2018

### Welcome to the OIC Water Council Survey 2018.

This questionnaire is being conducted to support the broad objectives of the Implementation Plan for the OIC Water Vision which was approved by the OIC Water Council in its first meeting held in Istanbul in the period 15-16 November 2017. The questionnaire intends to collect information on: the achievements and challenges in the implementation of the OIC Water Vision; training needs and capacities of the Member States; requirements of Member States in terms of water infrastructure; and challenges, priorities and strategies of the Member States for the 5-10 years ahead.

The results will be reported in the *OIC Water Report 2018* which will be *presented to the 4<sup>th</sup> session of the Islamic Conference of Ministers Responsible for Water Affairs* and to the *2<sup>nd</sup> Meeting of the OIC Water Council*.

This survey is expected to take approximately 45 minutes. Please contact SESRIC ([research@sesric.org](mailto:research@sesric.org)) for any further inquiries.

Your participation in this survey is highly appreciated.

**Brief Info about OIC:** Organization of Islamic Cooperation (OIC) is the second largest intergovernmental organisation after the United Nations, with the membership of 57 states in four continents. The OIC is the collective voice of the Muslim world to ensure and safeguard their interest on economic, social, and political areas. For more information, please check its official website: [www.oic-oci.org](http://www.oic-oci.org)

**Brief Info about SESRIC:** The Statistical, Economic, Social Research and Training Centre for Islamic Countries (SESRIC) is a subsidiary organ of the OIC based in Ankara, Turkey. The Centre is broadly responsible for collecting statistics, studying current socio-economic developments and organizing training programmes for the Member States. For more information, please check its official website: [www.sesric.org](http://www.sesric.org)