United Nations
Educational, Scientific and
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Regional Centre
on Urban Water Management
(under the auspices of UNESCO)

13th Governing Board Meeting

New Proposals & Projects

23 February 2023

Tehran, Iran

New proposals (Comments/Commitments initially raised by RCUWM Governing Board members and International Organizations in the Meeting)

No	Proposal Title	RCUWM Counterpart	Involved RCUWM Member States
1	Best Practices in Groundwater Management at Regional Scale		Oman, Pakistan, Qatar
2	Transferring Experiences and Technical Knowledge about Integrated River Management based on Restoration, Rehabilitation and Maintenance of River Balance		Bangladesh, Pakistan
3	Preparation of a report/book on "Water Governance in RCUWM Governing Board (GB) Member States"	UNESCO-IHP	Iran
4	Development of a Regional Collaborative Platform for Adaptation of Urban Water Systems to Climate Change	UNESCO-IHP	Armenia
5	Development and Implementation of a Regional Drought Monitoring, Prediction and Risk Management System		Iran, Pakistan
6	New Technologies in Water and Wastewater Treatment and Recycling	UNESCO-IHP	Bangladesh, Iran, Pakistan, Qatar
7	Skill Improvement for Urban Water Practitioners and Technicians		Iran, Iraq, Tajikistan
8	Improving Water Quality in the Region: from Capacity Building to Capacity Development and Developing Standards for Water Sector		Bangladesh

Proposal 1: Best practices in groundwater management at regional scale

Introduction:

In order to achieve Target 6.5 of SDG6 entitled “by 2030, implement integrated water resources management at all levels” and appropriate establishment of water governance which insists on policy-making and water resources management as a way to achieve sustainable development, since Integrated Water Resources Management (IWRM) requires technical, economical, institutional, policy, administrative and contribution instruments, it should be implemented in a manner that by using aforementioned instruments basis of appropriate water governance be provided.

On the other hand, according to the motto of world water day in 2022 (Groundwater: Making the invisible visible) and the seventh thematic working groups of UNESCO committees on Intergovernmental Hydrological Programme (IHP) (i.e., groundwater and human settlements), one of the important and effective factors for appropriate water resources management is precise and righteous management of groundwater resources.

Intensified dependency of arid and semi-arid regions on groundwater resources, population growth, and increasing demand for water resources and also occurring drought events and land subsidence in recent years has led to overexploitation of groundwater resources and not taking quantitative and qualitative criteria/privacy of water resources in recent decades has caused irreparable damages to such vital resources, so that most of available and strategic water sources are destroyed or endangered. Moreover, human activities in nature and the implementation of development plans without considering sustainable development principles, the integrity of surface and groundwater resources, and soil and water conservation have caused intensified crises.

One of the main questions about groundwater resources management is which strategy and the most targeted plan are suitable to address groundwater challenges. And what is the best structure to implement plans and achieve goals? What are the targets, strategies, plans, and executive structure of the RCWUM Governing Board (GB) member states? it is recommended that the targets, strategies, plans, and executive structure of these member states are evaluated and discussed.

Objectives:

- Stabilization of annual drop in groundwater level and recovery/recharge major part of the deficit of groundwater reservoirs
- Controlling land subsidence caused by overexploitation of groundwater resources
- Optimization of groundwater level network monitoring and online evaluation of groundwater level in different plains and evaluation of groundwater level fluctuations
- Increasing reliability of water supply for different uses

- Enhancing quality of groundwater resources and preventing pollutants
- Controlling withdrawals from groundwater resources with advanced new instruments

Scope and Target Group:

RCUWM governing board member states, particularly countries with arid and semi-arid dominant climate (countries with high water stress are in priority)

Outline of activities:

- Getting familiar with the experiences of RCUWM governing board member states about targets, strategies and plans of groundwater resources management
- Getting familiar with the experiences of RCUWM governing board member states about the appropriate executive structure for groundwater resources management

Expected Outcomes:

- Analyzing/ Evaluating the plans and actions implemented in RCUWM governing board member states for groundwater resources management
- Achieving the best strategy and designing the most basic action plan for groundwater resources management
- Procurement of an appropriate executive structure for groundwater resources management

Proposal 2: Transferring experiences and technical knowledge about integrated river management based on restoration, rehabilitation and maintenance of river balance

Introduction:

According to extent of rivers in RCUWM Governing Board (GB) member states and relationship between rivers with other natural phenomena and human societies, effective management of rivers not only can control the flood risk usually caused by inappropriate human activities but also can make possible effective operation for everyone.
Therefore, countries in order to conservation and correctly operation of rivers, try to organize their long-term plans based on an integrated management perspective and river restoration and maintenance of river balance condition in a sustainable development framework. Some of the plans that can make this perspective possible are systematic floodplain management, improving the river restoration and rehabilitation approach, giving for room for the river, and development and use of geographic information databases. As a result, sharing experiences of RCUWM GB member countries could make it possible to achieve the final goal which is integrated and sustainable river management based on restoration, rehabilitation, and maintenance of river balance condition in sustainable development.

Objectives:

- Conservation of rivers based on restoration and sustainable development
- Appealing public contributions to the conservation and operation of rivers
- Decreasing flood risk and damage
- Strengthening general and specialized knowledge in the field of integrated river basin management especially in arid and semi-arid regions
- Knowledge sharing on the case studies and successfully implemented plans in the region

Scope and Target Group:

- RCUWM GB member states focusing on experiences of countries which have high potential of flooding

Outline of Activities:

Organizing a joint workshop consisting of several thematic and technical sessions on the following topics:

- Getting familiar with advanced new methods for river training and also releasing and opening former floodplains and waterway, especially by restoration and rehabilitation of rivers.
- Getting familiar with new policies and advanced methods of land use management in floodplains

- Getting familiar with decision support systems including geographic information
- databases specifically designed and developed for river management

Expected Outcomes:

- Achieving the best pattern for floodplain management
- Past experiences of RCUWM GB member states in the implementation of river restoration, rehabilitation and improvement plans
- Completion and development of geographic information databases for river management

Proposal 3: Preparation of a report/book on "Water Governance in the RCUWM Governing Board (GB) Member States"

Introduction:

Competition to access water resources is increasing as a result of population and economic growth and climate change in RCUWM GB member states. Most of these states are located in arid and semi-arid areas facing severe challenges in meeting future water requirements. Most of these challenges could be addressed through effective water governance. There are ongoing efforts in most RCUWM GB member states to further improve how water is governed. In this process, sharing experiences and lessons learnt in water governance reforms can be useful in guiding ongoing efforts.

Objective/ Motivation:

The objective of this project is to develop a report or book explaining current water governance settings in the RCUWM GB member states including general or to some agreed upon extent of detailed description of organizational/managerial, financial, legal and institutional, and social capacities. It can also include lessons learnt from ongoing or recent efforts dedicated to water governance reforms.

Scope and Target Groups:

Major target groups for this project are water sector government officials, legal system and public sector stakeholders in RCUWM GB member states. Research institutes active in the field of water governance and management in the member states can also participate in this project.

Outline of Activities:

1. Establishment of a workgroup from representatives of RCUWM GB member states.
2. Developing questionnaires for gathering information about water governance status in the member states
3. Processing gathered information
4. Developing the report/book
5. Organizing workshops for the RCUWM GB member states to share the main outcomes of the study.

Expected Outcomes:

1. A comprehensive document explaining water governance capacities and reforms in the RCUWM GB member states
2. Networking between RCUWM GB member states for sharing success and failure stories in water management and governance
3. Educational workshops

Proposal 4: Development of a regional collaborative platform for adaptation of urban water systems to climate change

Introduction:

Climate change is negatively affecting the entire globe. However, cities as the main population settlements and locations for huge economic activities are highly vulnerable locations in this phenomenon. Such a vulnerability can be attributed to the climate change impacts on the water cycle, more frequent and sever extreme weather events and more uncertainties in forecasting systems. These issues are creating serious threats for water supply, wastewater and stormwater systems as well as cities management planning and development.

The RCUWM Governing Board (GB) member states are also facing the aforementioned challenges that require urgent and wisely adaptation policies. Defiantly, it can be enhanced and strengthen by knowledge sharing, collective actions and regional collaborations. For this aim, development of a collaborative platform is an effective initiation.

Objectives:

The most important objectives of this proposal are as follows:

- Sharing and introducing the adopted polices, implemented measures and developed tools by the member countries;
- Foster an online professional community of practice around climate change adaptation and supporting research and development;
- Recording the crises that initiated from climate variability in the region of the RCUWM GB member states;
- Developing standards in which the risk of climate-based events can be indicated for cities through a relevant labeling system.

Target Groups:

Major target groups for this project are policymakers, mangers, water authorities, municipalities, universities and private sector as well as civilians as the main elements.

Outline of Activities:

- Development of the required web-based infrastructure to support the platform;
- Introducing successful measures of the GB member states through suitable media using the facilities of platform;
- Introducing the challenges and engaging the research centers to address them;
- Role of media in the climate change adaptation of cities
- Planning for a number of workshops between member states and relevant international agencies to address the objectives of this proposal such as:

- How the climate change/climate variability are affecting the cities of member states?
- What have been the applied measures to manage the climate-based events and how the effectiveness of measures is evaluated?
- How can civilians be involved in the adaptation measures?
- How can private sector be prompted to invest in the adaptation measures?
- What should be the role of insurance companies to increase resiliency of cities?
- How the global climate databases can be applied for the forecasting and warning systems?

Expected Outcomes:

- Improving knowledge exchange among GB member states to adapt urban water systems to climate change
- Providing a number of resilience management guidelines/publications regarding adaptation of cities to climate change;
- Developing a network of universities, research centers and experts from GB member states for joint studies on the objectives of this proposal

Proposal 5: Development and implementation a regional drought monitoring, prediction and risk management system

Introduction:

The Middle East and Central Asia are highly vulnerable to drought and water scarcity due to significant climatic variability, limited system resilience, and the lack of integrated mitigation, risk management, and planning strategy. In the past decades, severe droughts have caused much damage to the economy, society, and environment of these regions and it is expected to increase due to climate change. Hence, it is vital to develop a Regional Drought Management System (RDMS) to reduce social vulnerability and enhance local resilience to drought impacts.

The project will be implemented in two phases. In the first one, a web-based system for regional drought monitoring and prediction will be developed using available data in global databases (such as NCEP/NCAR[1], CRU[2], ECMWF[3] and so on). The system accuracy is gradually improved using local observational data and information collected from the volunteer countries.

In the second phase, the required policies and programs for mitigating the impacts of drought in the RCUWM Governing Board (GB) member states will be determined using their experiences in the field of drought management and the collaboration of their academic and research capacities. Moreover, all the achieved results for both phases will be presented in the form of educational programs (such as workshops, courses, technical sessions, and so on) to the countries' representative.

Objective/ Motivation:

The goals of this project are to create tools, determine policies, and provide training in order to enable the RCUWM GB member states for managing ongoing and future droughts, properly. These goals will be pursued through the following activities:

1. Production of an online and user-friendly system for drought monitoring and prediction,
2. Preparation of the required policies and actions for droughts mitigation in the Middle East and Central Asia,
3. Improvement research and knowledge about drought management and promotion of advanced technologies for water scarcity adaptation in the RCWUM GB member states.

[1] National Centre for Environmental Prediction/National Centre for Atmospheric Research

[2] Climatic Research Unit

[3] European Centre for Medium-Range Weather Forecasts

Scope and Target Groups:

The target groups for this project are water sector managers, policy–makers and organizations in charge of water resources management in the RCWUM GB member states. The geographic domain of the RDMS could be Afghanistan, Armenia, Azerbaijan, Bahrain, Iran, Iraq, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Syria, Tajikistan, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan, and Yemen.

Outline of Activities:

The project is planned in two phases as stated below:

First phase:

1. Development of suitable indicators for single and integrated monitoring of meteorological, hydrological and agricultural droughts,
2. Evaluation, monitoring and prediction of drought in the current situation and by considering climate change effects based on achieved data from global databases,
3. Development of an online and user-friendly drought monitoring and forecasting system
4. Training and human capacity building for using the drought monitoring and forecasting system,
5. Creating the database of local weather data of the RCWUM GB member states in order to use it for continuously improving the accuracy of achieved results of the system.

Second phase:

1. Reviewing the RCWUM GB member states experiences in the field of proper drought management,
2. Deriving operational measures for proper drought management using the good experiences of the RCWUM GB member states and conducting additional research,
3. Determining the thresholds for starting drought management measures, defining level-based measures, and training the responsible bodies and organizations to implement management measures,
4. Proposing effective policies for proper drought management,
5. Education and capacity building to improve public awareness about drought management.

Expected Outcomes:

1. Creation of a drought monitoring information database, including satellite data, local ground-based information, and so on,
2. Development a user-friendly system for drought monitoring and prediction,
3. Preparation of a plan for confronting drought, including indicators, drivers, management measures at the regional level,
4. Preparation of effective drought management policies at the regional level,
5. Enhancement of the public and specialized awareness in the field of drought management in the region.

Proposal 6: New technologies in water and wastewater treatment and recycling

This proposal has two sub-projects and a proposed establishment as follow.

6.1. New Technologies in Water Treatment Plants

Introduction:

The concern over increasing needs for drinking water and awareness for development of systems to improve water quality both for drinking purposes and for effluents from wastewater treatment and industrial facilities have provided incentives to develop new technologies and improve performance of existing technologies.

Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials as one of the sub goals of SDG 6 indicates the need for improvement in recycling, on the other hand, the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally is an upcoming challenge faced more and more every day. Hence, there is an urgent need to strengthen scientific knowledge and adopt cost-effective new technologies in water and wastewater treatment and recycling. This project responds to these needs by introducing the latest green technologies such as detoxification and wastewater recycling by solar-catalytic treatment, advanced oxidation process (AOP), adsorption, etc. As another important issue, reduction of sludge either by using sludge as a resource or sludge reduction in handling units through cell lysis and cryptic growth, Uncoupled metabolism, endogenous metabolism and microbial predation is yet to be considered in many countries, requiring additional effort in this project.

Objectives/ Motivation:

What motivates the implementation of this project is to introduce the latest cost-effective

technologies in treatment and recycling of water and wastewater, further enhance the scientific network of experts and key partners in order to develop future collaboration opportunities and improve water and wastewater treatment and recycle systems among the RCUWM Governing Board (GB) member states.

The ultimate objective of this project is supporting RCUWM GB member states to strengthen their scientific, technical and policy capacities to promote new technologies in water and wastewater treatment, recycling and manage human health and environmental risks caused by emerging pollutants in water and wastewater by compiling strategies for energy consumption -specially using solar panels- and carbon foot print minimization in wastewater treatment, presenting nature-based solutions for resilient and smart wastewater treatment as well as sludge management, improving water quality and promoting safe reuse of wastewater. This would lead to green, decentralized and Improved systems, for the aforementioned countries by forming a scientific network.

Scope and Target Groups:

Major target groups for this project are water and wastewater industry researchers, practitioners and policy-makers both within and outside the water sector, and other stakeholders from all GB member states.

Outline of Activities:

A. Promoting scientific research and strengthen the knowledge based on the latest technologies in water and wastewater treatment and recycling
B. Supporting scientific exchange and collaboration in aforementioned areas
C. Fostering capacity building and awareness raising on new strategies for energy consumption and carbon foot print minimization, sludge management and cost-effective treatment and recycling methods by membrane, etc. in wastewater treatment as well as nature-based solutions for resilient and smart wastewater treatment
D. Holding a concluding international conference to present results of the project activities, including case-study reports, technical and policy guidelines, experts' meetings reports, designated platforms and awareness raising materials.

Expected Outcomes:

1.A series of technical and policy case-studies on water and wastewater technologies in different GB countries
2.Technical and policy guidelines, complemented by findings of case-studies, to assist science-based policy-making on addressing emerging pollutants and safe wastewater reuse
3.Multi-stakeholder events like experts' meetings, workshops and international conferences for scientific exchange and expert collaboration to provide a platform for further scientific discussion on related issues.
4.Establishment of an international and comprehensive network of experts and institutions to facilitate scientific exchange and collaboration between developed and developing countries amongst RCUWM GB member states.

6.2. Improving the methods of using wastewater collection and treatment systems by creating and developing capacities and holding training courses

Introduction:

Today, in most countries of the world, wastewater treatment is considered as one of the important methods of environmental protection and public health promotion. The development of infrastructure for the collection and treatment of wastewater and the optimal maintenance and operation of it is one of the important concerns of countries. Therefore, the existence of efficient, trained and experienced personnel to maintain and operate these systems is one of the essential needs. Aquifer, industrial, aquaculture, etc. are used. As a result, maintaining the quality of the effluent and complying with national

standards depends on the optimal design, implementation and operation of these systems.

By creating a suitable educational platform and communication channels between experts in order to exchange information and transfer experiences between countries in the region, it is possible to improve the quality of wastewater treatment plants and their use in various applications.

Objectives/ Motivation:

- Holding training courses with the aim of improving the level of knowledge and transferring experiences.
- Visiting important wastewater treatment plants in Iran and other countries in the region and planning to communicate between experts and users of wastewater systems.
- Carrying out research projects in order to optimize and improve wastewater treatment and sludge management processes.
- Collection and classification of wastewater treatment methods that are energy efficient and have less carbon footprint.

Scope:

Training and capacity building of experts and operators of sewage system systems

Outline of Activities:

1. Preparing a report on wastewater treatment plants and their operating status in the countries of the region (number, type of process, population covered, wastewater quality, and sludge management)
2. Studying and analyzing reports
3. Planning for theoretical and practical training of experts and operators of wastewater treatment plants.
4. Planning to create communication networks between wastewater users through regional visits and communication site.
5. Planning for research and development activities in the field of improving and upgrading wastewater treatment processes.
6. Improving and improving the processes of wastewater collection and treatment

Expected Outcomes:

1. Qualitative improvement of effluent from wastewater treatment plants
2. Process optimization, reducing energy consumption and capacity building.
3. Training of manpower in the countries of the region.

❖ ***Proposed Establishment: Regional Cooperation on Non-Conventional Water Resources***

Introduction

Water and wastewater services are categorized as 'essential services', and therefore continuity of these services notwithstanding external disruptions is critical. Around 60% of the global population lives in areas of water stress where available supplies cannot sustainably meet demand for at least part of the year. Urbanization and economic growth in many countries, including the State of Qatar and I.R. Iran are two major factors contributing to an increase in urban water demand. Conventional water provisioning approaches that rely on precipitation, river runoff and easily accessible groundwater are overexploited and insufficient to meet growing freshwater demand.

These have highlighted the critical importance of non-conventional water resources to overcome water-related sustainable development challenges in arid regions. Utilizing non-conventional water resources is an emerging opportunity to narrow the water demand-supply gap.

Water utilities across the globe have reported following motivations to invest and develop non-conventional water resources:

- Limiting the impacts of increasing water demand on the level of water and wastewater services delivered and ensuring business continuity.
- Managing water scarcity and extreme hydrological events (e.g. drought) by steady supply of non-conventional water to urban water utilities
- Non-conventional water resources provide opportunity for implementing the necessary climate change adaptation strategies and planning.
- High potential of investment by private sectors and developing business with third parties (e.g. industry and municipalities), to become meaningful actors in the management process of non-conventional water development plan.
- Non-conventional water is the only available water resources in some arid areas or areas difficult to access.

The *Global Facility for Non-Conventional Water (GFNC)* will be launched and hosted by the Regional Centre on Urban Water Management (RCUWM) to bring together relevant governmental officials, decision makers, researchers and experts, utility managers, technology and industry sectors as well as users to share their strategies, perspectives, experiences, innovations, best practices and lessons learned in non-conventional water resources development and operation.

Non-Conventional Water Resources

According to the latest report of UN Water on "Analytical Brief: Unconventional Water Resources" published in June 2020, there is a multitude of non-conventional water

resources that can be tapped. Non-conventional water resources range from Earth's seabed to its upper atmosphere and capturing them needs a diverse range of technological interventions and innovations.

Harvesting water from the air consists of rain enhancement through cloud seeding and collection of water from fog, while capturing water on the ground addresses micro-scale capture of rainwater where it would otherwise evaporate; all these techniques address local water shortages. On the groundwater front, tapping offshore and onshore deep groundwater and extending sustainable extraction of undeveloped groundwater are important options in areas where there is potential for more groundwater resources. Reusing water is the key to water conservation and enhancement opportunities which lead to fit-for-purpose use of treated municipal wastewater and agricultural drainage water. Additional opportunities to develop water resources exist in the form of desalinated potable water.

Regional Cooperation on GFNC Pioneered by the State of Qatar and I.R. Iran

Vast areas of the countries located in the West and Central Asia are situated in the subtropical high-pressure belt region of the northern hemisphere, mostly covered by deserts, where the precipitation is low, and its distribution is highly variable. The area is water-stressed (inherently and due to higher water demand in growing economy and urban areas), societally vulnerable, and prone to severe water scarcity. Additionally, global warming will increase the risk of climate change and more prolonged droughts. Even in regions that may not experience a significant decline trend in rainfall, a higher temperature can increase water loss due to evaporation and scale up water consumption, putting greater stress on water supplies. In addition to the above-mentioned constraints, there is also an increasing trend of emerging pollutions and overwhelming health threats such as COVID-19.

In this regard, regional cooperation toward launching and supporting spread activities of Global Facility for Non-Conventional Water (GFNC) among RCUWM Governing Members is crucial to support technical and non-technical aspects of non-conventional water resources.

GFNC Objectives

- Exchanging technical and non-technical experiences and information
- Promoting research and innovation
- Conducting training courses and capacity building activities
- Improve non-conventional water management and governance
- Contribution to UNESCO-IHP and other relevant international/regional organizations

Venue and Host

GFNC Secretariat will be established in the premises of the Regional Centre on Urban

Water Management (RCUWM) based in Tehran with the capacity to develop satellite GFNC offices in member countries.

Thematic Areas of the Global Facility for Non-Conventional Water (GFNC)

1. Governance, laws and policies, institutional arrangements
2. Technology, innovation, and engineering
3. Social and environmental considerations
4. Operation and maintenance
5. Economic, financial issues and trend analysis
6. Training courses and capacity building
7. Promotion of public awareness

Priority Areas: Desalinated Water and Water Reuse

Desalinated water is on a path to where it is likely to be the most acceptable alternative water supply source in the majority of arid and semi-arid regions in the world. The advancements in the reverse osmosis desalination technology are very dynamic. New but more efficient seawater desalination membranes and membrane technologies, and equipment improvements are released every few years. The reverse osmosis membranes of today are many times smaller, more productive, and cheaper than the first working prototypes. The steady reduction of desalinated water production costs is expected to accelerate the reliance on the desalinated water as attractive and competitive non-conventional water resources by 2030. The rate of adoption to desalination water will depend on the magnitude of water stress and availability and cost of the conventional water resources.

Municipal wastewater and agricultural drainage water are two main sources for water reuse and a non-conventional water resource. Private as well as public water companies need to explore opportunities to valorize the reuse of water and hence expand their variety of uses. This shift needs to be accompanied by analyzing demand and market opportunities as well as identifying feasible business models. Against this background, a challenge to be addressed is to explore financial and economic instruments to promote water reuse and make this an attractive option on water markets and beyond. In doing so, information on current costs of water reuse projects, tariffs and subsidy arrangements as well as the overall acceptance and issues of awareness rising should be further investigated.

Proposal 7: Skill improvement for urban water practitioners and technicians

Introduction:

The use of technologies for water supply and treatment as well as the qualification of specialized personnel in this sector are subject to a variant of standards worldwide, as are education and training in these areas. In many countries, a large proportion of non-industrial sewage flows untreated into rivers, lakes and seas. In regions with inadequate technical education in the water supply and treatment sector, even simple water supply and treatment utilities cannot be properly planned. Therefor maintenance of existing plants and equipment couldn't be ensured and their performance may not be precisely optimized. High water losses during transportation as well as deficiencies in treatment cannot be rectified and may affect the economy and the health of the local societies. In view of these challenges, access to technical education in the water and wastewater sector provides important leverage for improving and securing the quality of water supply and wastewater disposal in a sustainable manner. Hence, technicians must be equipped with basic skills, technical knowledge and local expertise.

Objective/ Motivation:

This project focuses on future-oriented water technology, considering local needs and capabilities. Vocational Training (VT) is a critical success factor for a future-oriented development of sustainable water management. RCUWM in close cooperation with universities and international experts from interested Governing Board (GB) member states intends to develop VT courses that promote practical, activity-oriented learning on water supply and wastewater treatment processes.

Scope and Target Groups:

Major target groups for this project are technicians involved in construction, operation and maintenance sectors from GB member states including hydraulic technicians, wastewater treatment technicians, specialists for pipe, sewer and industrial services. An estimated 60 partially sponsored participants will be invited to VT courses on the following fields: Leakage detection and repair methods, Pipeline repairing processes, installing water splits, Water quality sampling, Installing wastewater splits.

Outline of Activities:

In order to improve technicians' knowledge, this project has two main elements:

A. Conducting VT training courses and capacity buildings

B. Organizing an international professional competition for specialists in water and wastewater engineering.

Expected Outcomes:

1- Improved knowledge of technicians via organizing VT courses
2- Filled technical gaps among practitioners and technicians

❖ ***Proposed Event 1: Improving the Reliability of Water Transfer Lines and Supply Network (depending on easing restriction for international travel)***

Introduction

The reliability of a Water Distribution System (WDS) including water transfer lines and urban supply networks is an indicator of sustainable urban water management. It plays an important role in the design, operation, and proper maintenance planning. The reliability of water transfer lines and supply networks is classified as mechanical and hydraulic components. While mechanical reliability represents the capability of WDS providing continuous and long-term operation with minimal repair, modification, and replacement of parts, hydraulic reliability is the ability to deliver water to individual consumers in the required quantity and under a satisfactory pressure. The role of pipelines in the supply network is an important issue for a comprehensive urban water supply management. More than 60 percent of the cost of an urban water supply system belongs to the pipeline networks. Therefore, reliability analysis of water transfer lines and distribution networks is an important issue.

Ration and Motivation

Providing sufficient water of appropriate quality and quantity is the most important issue for urban water managers. The water distribution system plays a vital role in preserving and providing a desirable life quality to the public, of which the reliability of supply is a major component.

In this ration, UNESCO Regional Centre on Urban Water Management (RCUWM) intends to organize the Training Workshop on "Improving the Reliability of Water Transfer Lines and Supply Network" as approved during 10th RCUWM Governing Board Meeting (GBM) on 5 December 2019 as part of the project proposal No. 7 on Skill Improvement for Urban Water Practitioners and Technicians. Understanding theoretical and practical backgrounds, sharing best practices, and know-how for increasing lifetime of WDS with minimum operation and maintenance costs are the main objectives of this training workshop.

Date and Venue

The workshop will be held either in Tehran or Kashan (a historical city in the Isfahan Province and about 250 km south of Tehran) of Iran. The workshop is planned to be organized in 2023.

Tentative Agenda

It would be a three-day training workshop consisting of a one-day discussion based on the hydraulic and mechanical components of reliability of water transfer lines and supply network followed by a two-day technical tour to manufacturing and supplying pipes site for a better understating of the pipe production process as well as material characteristics.

Participating Countries:

The main audiences will be decision-makers and practitioners in public and private sectors dealing with water supply plans and projects. The number of participants is expected to be around 25 participants from the RCUWM governing board member states and organizations in Afghanistan, Armenia, Azerbaijan, Bangladesh, Egypt, India, Iran, Iraq, Lebanon, Qatar, Syria, Oman, Pakistan, Turkey and Uzbekistan. Participation from other countries is also welcome upon receiving their interest.

Logistics Arrangements and Registration

All domestic costs in Iran including accommodation, local transportation to the venue and visiting sites, meals, technical and sightseeing tour/s will be covered by RCUWM and other supporting organizations during the period of the event while the participants are required to cover their international airfares as well as their visas to travel to Iran. RCUWM will facilitate the visa issuing process by providing invitation letters. UNESCO as well as interested sponsors may provide financial support to a few participants to cover their international flight tickets.

Proposed Event 2: New technologies in Leak Detection and Non-Revenue Water and Regional Training Workshop (depending on easing restriction for international travel)

Introduction:

In scarce countries such as Iran, maintaining valuable water resources is one of the most important measures in the field of water resources management. In this regard, an important and effective activity in water management networks and reducing water revenues without income is significant financial benefits and Blue has water for suppliers. In order to take measures related to the reduction of non-revenue water in Iran, it is necessary to have new knowledge and technologies in the field of related activities such as leak detection and leakage in transmission lines of distribution networks and water branches. Design and implement separate measurement areas or ***independent measurement areas*** (DMA) - subscriber meter management and data transmission systems - Network hydraulic modeling and intelligent management of distribution networks and new performance-based contracting (PBC)-based performance investment models.

Objectives/ Motivation:

- Reduce water loss
- Reduce permissible expenses without income
- Improving the level of knowledge of experts
- Familiarity with new and modern technologies in the world
- Transfer of manufacturing technologies into the country
- Transferring experiences gained in Iran to other countries in the region

Scope:

- Applied Research
- Training and capacity building
- Developing and strengthening regional and international cooperation

Outline of Activities:

- Holding a training course
- Visiting new technologies in developed countries
- Determining the relevant indices
- Improvement of manufacturing technologies
- Investigating the areas of bilateral cooperation with leading countries
- Providing an investment platform Iran

Expected Outcomes:

- Familiarizing with new and up-to-date technologies in the world
- Transferring manufacturing technologies into the country
- Transferring experiences gained in Iran to other countries in the region

Proposal 8: Improving water quality in the region: from capacity building to capacity development and developing standards for water sector

Introduction:

The pressures of population and economic growth and climate change are expected to further exacerbate water stress in Member States of RCUWM. Water quality is an important aspect of water management that needs further efforts on the national as well as regional levels. There is a need to improve national policies and regional cooperation with the ultimate aim to improve water quality with particular attention to urban water quality. Water quality labs and data that they are produced are very important in this regard as well as the capacity of experts and officials in the field of water quality.

Objective/ Motivation

An important motivation of the project is the creation of a working group on water quality with the participation of representatives from interested RCUWM Member States. The objective of the project is to contribute to the development of efficient and coordinated national/regional policies with regard to water-quality aspects and improved coordination of joint assessment, monitoring and exchange of information on water quality.

Scope and Target Groups:

Major target groups for this project are water quality managers, policy makers and practitioners in water quality laboratories. An estimated 15 partially sponsored participants will be invited to hands-on training courses on water quality from sampling to lab-based tests in the first phase.

Outline of Activities:

A step-by-step plan is proposed to develop an effective and coordinated national/regional water quality working group. The project has three main elements:

A. Conducting hands-on and lab-based training courses and capacity buildings
B. Networking experts and developing database
C. Improving (e.g. renovation, modernization, certification) facilities and laboratories

Expected Outcomes:

1. Organizing hands-on training courses (sampling, standard tests, emerging pollutions, etc.)
2. Renovating/establishing water quality labs in member countries
3. Networking of water quality labs in the region and certifications
4. Establishment of a regional reference lab in an interested member country, which will act as a reference body for water quality in the region, and will monitor the implementation of WHO programs in the area, including the quality aspects the Water

Safety Plan. It will also act as a reference for the disputes on the quality of common water bodies.

Timeline:

A hands-on and lab-based training course for about 15 managers and experts from countries in the region is proposed to be conducted in the second half of 2023. The project will be continued with other phases until December 2024 after discussion at RCUWM Governing Board meetings.

Venue/Host:

The host organization for the first phase of training course would be National Water and Wastewater Engineering Company (NWWEC) of Iran in close cooperation with a Reference Water Quality Lab located in Tehran Water and Wastewater Engineering Company. The lab has more than 50 years' experience and has been internationally certified for several water quality tests.

Proposed sub-project: How to prepare and develop criteria and standards in water sector (Let's write the standard for standard)

It is necessity to prepare and formulate criteria and regulations in the water sector that could be as technical policies and institutional instruments to achieve IWRM goals. Standard is a discipline based on science, technologies and humankind experiences that are utilized as principles, rules and systems to make coordination and unity of procedure, increase mutual understanding, develop industry, save the national economy and maintain public health and safety.

Standards play a key role in advancement of industry and economy. Standards in water and wastewater industry in different steps of implementing plans including the inception, conceptual design to detailed studies, investment, launching and operation and also management could play an important and effective role. Thus, standards make a solid foundation for improving and developing of industry and economy.

Standard makes scientific and technical foundation for policy making in water, sanitation, safety and environment sectors. On the other hand, increasing the qualitative and quantitative levels of standards and technical criteria and enhancing the level of using them between stakeholders requires focusing on all steps in the standardization process. In addition to needs assessment, preparing, designing and reviewing standards and technical criteria, dissemination of culture and education of standards, evaluating the results of utilizing them and monitoring and supervision of standardization process is critical.

Objectives:

- Transferring knowledge and experiences about the procedure of needs assessment, development, and evaluation of standards and technical criteria in the water sector
- Promoting the quantitative and qualitative levels of standards and technical criteria in the water sector
- Modifying policies and educational plans and promoting how to utilize approved and published criteria and standards

Scope and Target Group:

RCUWM GB member states, particularly those countries with more experience in developing standards and technical criteria

Outline of activities:

Organizing a joint workshop entitled “how to formulate a standard to develop standards and criteria in the water sector?”. This workshop should answer some questions as stated below:

- Achieving the best procedure of needs determination, development and monitoring of standards and technical criteria in water and wastewater sectors
- How to monitor and evaluate issued criteria and promote utilizing them
- How stakeholders contribute to the needs determination, developing and monitoring of standards and technical criteria
- Diversity, scope, and classification of standards and technical criteria in the water and wastewater sectors
- How to develop and monitor standards and criteria which have inter and/or multi-sectoral applications
- How to finance the standard preparation and either how to make income?

Expected Outcomes:

- Transferring knowledge and experiences in the field of standard preparation and criteria in the water and wastewater sector
- Developing international collaborations in the field of needs determination and standard preparation and monitoring in the water and wastewater sector