

**Draft Concept Notes**

For the approved proposal in the Governing Board Meeting

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**Regional Centre on Urban Water Management (RCUWM)**

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**Proposal 1. Promotion of Public Awareness on Climate Change and Water-related Disasters (e.g. flood and drought) in the Region**

**Final Outcomes**

An important motivation of the proposal was promoting public awareness on climate change and its impacts on water-related disasters taking benefits of modern new media techniques. The objectives of this proposal was to develop 7 state-of-the-arts motion graphics in local languages and using social media to go viral the produced motion graphics for promotion of public awareness.

7 state-of-the-arts motion graphics have been developed and could be downloaded in Arabic, English, Farsi and Urdu. The key message is encouraging people to make small and minor changes to their daily behavior and personal habits.

**Summary Contribution**

This project has been approved and financially supported by UNESCO Tehran Cluster Office.

**Proposal 2: Improving Water Quality in the Region: from Capacity Building to Capacity Development**

**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

**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 2020. 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.

**Proposal 3. Regional Training Workshop on “Advances in Remote Sensing Application in Water Resources Management in Asia”, Muscat - Oman, 17-19 Feb. 2020**

**Final Outcomes**

Around 60 participants from member states of RCUWM Governing Board, of whom 37% were female and from states including Azerbaijan, Bangladesh, Egypt, Germany, India, Iran, Iraq, Oman, Pakistan, and Turkey participated in this event. Also participants from Kuwait (Institute of Scientific Research) and Qatar (UNESCO Doha Office) attended this workshop.

The main objectives of this regional training workshop have been to:

* introduce recent developments in remote sensing information and satellite-based products (e.g. precipitation and soil moisture) as well as their applications,
* promote the exchange of experience and knowledge among participants and,
* discuss development and application of Decision Support System (DSS) using remote sensing information.

**Summary Contribution**

This project has been partially supported by Ministry of Regional Municipalities and Water Resources of Oman.

**Proposal 4: New Technologies in Water and Wastewater Treatment and Recycling**

This proposal has to sub-projects as follow.

**4.1: 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:**

1. Promoting scientific research and strengthen the knowledge based on the latest technologies in water and wastewater treatment and recycling
2. Supporting scientific exchange and collaboration in aforementioned areas
3. 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
4. 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.

**4.2: 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.

**Proposal 5: Regional Drought Monitoring**

**Introduction:**

The Middle East and Central Asia are vulnerable to drought and water scarcity due to significant climatic variability, limited system resilience, and lack of integrated mitigation, risk management, and planning strategy. Most of the Middle East and Central Asia is located in semi-arid, arid and hyper-arid regions. In past decades, severe droughts have devastated the region resulting in substantial impacts on agriculture, economy, environment, public health, land degradation, deforestation, desiccation of major lakes, and international treaties over transboundary rivers. Hence, developing and implementing a Regional Drought Management System (RDMS) including drought monitoring and prediction capabilities, operation, policy-making, training and capacity development is critical to reduce social vulnerability and to enhance local resilience to drought impacts.

Similar to the capacity development joint initiative, developed by WMO, UNCCD, UNW-DPC, FAO, and CBD which resulted in national drought management policies for Eastern and Southern Africa and the Near East and North Africa, Asia- Pacific, Latin America and the Caribbean, and Eastern European Countries, this project aims at developing drought policies for the Middle East and Central Asia countries.

**Objective/ Motivation:**

The main objective of the project includes developing, validation and implementing RDMS for the Middle East and Central Asia especially for RCUWM Governing Board (GB) member states. The overarching goal is to provide reliable information that can be used towards a multi-national drought mitigation, risk management and planning strategy supporting RDMS through:

1. Producing an online and user-friendly portal of drought monitoring and prediction system

2. Preparation of response and action to cope with droughts for the Middle East and Central Asia in the framework of national drought management policies

3. Improving the scientific basis for water scarcity adaptation, drought policies and role of climate change in water-related disasters

**Scope and Target Groups:**

Major target groups for this project are water sector managers, policy makers and practitioners in water resources management. The project holds a research and educational identity. Geographic domain for the RDMS is proposed to 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 RDMS has three major components as stated below:

1. Monitoring and prediction: To collect and analyze required data
2. Operation: To operate/ implement a Regional Drought Monitoring / Prediction System in the West and Central Asia in order to provide timely information before or during the early onset of drought to prompt action within a drought risk management plan to reduce potential impacts
3. Policy Formulation: To formulate and adopt the effective national drought policies including proactive mitigation and planning measures, risk management
4. Training and Capacity Development to support the RDMS including building public awareness and developing educational programmes in order to exchange experts, knowledge, best practices and training courses on drought monitoring, prediction and early warning systems

**Expected Outcomes:**

1. Drought monitoring information database on multiple indicators and data sources including satellite observations and local ground-based information
2. Developed user-friendly system for dissemination of the drought information
3. Formulated effective national drought management policies for the region
4. An effective action plan on how to work out drought mitigation strategies in the region

**Proposal 6: Developing National Hub for Water-related Startups to Share Experiences at Regional Level (under the Water Entrepreneurship Support Programme Umbrella)**

**Introduction:**

Enhancing the water sector with concrete, hands-on innovations based on validated business models, promises a critical step towards sustainable water governance. In Iran, these solutions are driven by a nascent, but growing entrepreneurial community, which starts to receive the deserved attention by public and development actors. Seeking to build a strong ecosystem of innovative young water entrepreneurs, Iranian actors have accumulated strong expertise in context understanding and delivering on the ground support. This expertise is about to be complemented by SwissWaterInnovations’ expertise in supporting water entrepreneurs and a respective enabling environment globally. Using the national and international experience of business innovations in water as well as SwissWaterInnovations’ international activities and network, the ground is set for Iran to effectively stimulate its water entrepreneurship community and establish linkages to neighbouring markets and regional stakeholders with equivalent needs and priorities. This presents, in essence, a key component of the Blue Peace Initiative by the Swiss Government, which aims at using water as a means for regional collaboration and peace.

**Objectives/ Motivation:**

A thriving entrepreneurial ecosystem for Sustainable Sanitation and Water Management (SSWM) in Iran that enables the initiation, development, and implementation of innovative entrepreneurial solutions to ensure the availability and sustainable management of water and sanitation for all.

**Outline of Activities:**

1: Capacity Development and Enabling Environment

Key ecosystem actors (decision-makers, enablers, financing entities) engage to create and enhance the entrepreneurial ecosystem for water and sanitation

2: Capacitate Business Accelerators and other Support Actors

Iranian and regional business accelerators and further actors supporting water entrepreneurs are capacitated to offer enhanced support services to high potential water and sanitation enterprises

3: Innovate Entrepreneurial Solutions

Entrepreneurs are enabled to develop, sustainably implement and scale their water and sanitation solutions on a local, national, regional and international level

**Timeline:**

This project would take 2 years in 2020 and 2021.

**Proposal 7: Adaptation of Urban Water Systems to Climate Change**

To be drafted.

**Proposal 8. Centre on Socio-Environmental Impact Assessment of Desalination Brine**

**Introduction:**

Limited water resources are one of the characteristics of the MENA Region. The threat to the sustainability of freshwater resources, on one hand, and the existence of saline and brine water zones as potentials, on the other hand, tend to develop the use of desalination technology -as a solution to overcome water scarcity- rational. Desalination technology is hailed as a positive answer to worldwide water shortages, and is being developed and encouraged in areas that are close to oceans but lacking in freshwater supplies. However, desalination is not a fail-safe process and is carried with many environmental repercussions.

It is essential to have a comprehensive overview of the current and future status of desalination systems development and their negative impacts, especially to apply integrated management on the environment of the region.

**Objectives/ Motivation:**

An important motivation for this project is the establishment of the Centre on Socio-Environmental Impact Assessment of Desalination Brine with the participation of representatives from interested RCUWM Governing Board (GB) member states, specifically those located in MENA Region. The objective of the project is collecting data on desalination plants and their impacts as well as brine management methods by holding a workshop and presenting experts’ country reports in this regard. Having held this workshop, a pool of experts with distinguished scientists will gather as a scientific committee to produce a monograph on desalination plants and their impacts.

After these two phases, the scientific committee will prepare a proposal to establish a regional centre on managing desalination systems in the Middle East in cooperation with interested RCUWM GB member states.

**Scope and Target Groups:**

Major target group and audiences of this project will be experts, practitioners and managers of the MENA Region working on desalination brine topics.

This project is practical research, training and capacity building, synergy and networking type.

**Expected Outcomes:**

1. Holding workshops, meetings and symposiums for sharing the knowledge, best practices and country reports on the desalination brine impacts
2. Forming a synergy among experts, practitioners and managers to produce a monograph for the region and on the subject
3. Promote activities of regional cooperation on desalination brine
4. Establishment of the Centre on Socio-Environmental Impact Assessment of Desalination Brine

**Proposal No. 9: Water Scarcity Adaptation**

**Introduction:**

Water scarcity can be defined as the lack of access to adequate quantities of water for human and environmental uses within a country, a basin, or in a region. However, despite its frequent use, there is no consensus on how water scarcity should be defined or how it should be measured. Furthermore, because of the complexity added by high population density, these issues will become all the more acute in the urban context. Many indicators have been developed to assess the level of water stress and scarcity across the world. Each indicator accounts for a specific aspect of water scarcity, but it has its limitations. Improved water scarcity adaptation capacity requires significant capacity building, awareness raising, and water governance reforms that provide an enabling environment for improved water productivity, which this project would be implemented in this regard.

**Objective/ Motivation:**

An important motivation of the project is the development of a holistic dashboard on water scarcity practical indicators with the participation of representatives from the interested RCUWM Governing Board (GB) member states. The objective of this project is to develop a comprehensive water scarcity Atlas considering all aspects of water scarcity for RCUWM GB member states. The Atlas demonstrating the water scarcity status will also support the ongoing water scarcity adaptation planning and policies in the region. Moreover, capacity building on water scarcity definitions and adaptation policies will be conducted.

**Scope and Target Groups:**

Major target groups for this project are managers, policymakers and stakeholders in the water sector. A workshop on water scarcity Atlas and resulting policies will be held.

**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. Developing a comprehensive water scarcity Atlas

B. Development of a collaborative platform to coordinate, guide and provide water scarcity policies to GB member states

C. Holding training courses and workshops (capacity building)

**Expected Outcomes:**

1. A comprehensive water scarcity Atlas in GB member states
2. Networking of water scarcity adaptation policies in GB member states
3. Educational workshop

**Proposal 10: 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

**Proposal 11: New technology in Leak Detection and Non-Revenue Water and Regional Training Workshop**

**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 DMA - subscriber meter management and data transmission systems - Network hydraulic modeling and intelligent management of distribution networks and new 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 12: Survey and Completion of Essential Water Data in the Region through the Global Water Data and GTN-H (Proposed by ICWRGC)**

To be drafted.