



PROJECT DOCUMENT
[Libya]

Project Title: Enhancing National Capabilities to Improve Water Security in Libya
Project Number: 00133966
Implementing Partner: UNDP
Start Date: 1 January 2023 **End Date:** 31 December 2026 **PAC Meeting date:** 27 May 2024

Brief Description
Libya is grappling with a pressing water crisis, primarily due to its predominantly arid desert landscape. Most of its population resides in coastal regions, where arable land is limited, while central and southern areas face severe aridity and have smaller populations. The country heavily relies on groundwater, which results in its over-extraction, seawater intrusion, and a projected water deficit of 4,200 million cubic meters by 2025. In response to this issue, the project will make substantial contributions towards increasing water security, which aims simultaneously to guarantee the three pillars of sustainability (economic, social and environmental) and to address the diversity of risks and threats related to water. This “dual aim” is recognized by UN-Water, who define water security as “the capacity of a population to safeguard sustainable access to adequate quantities and of acceptable quality water for sustaining the livelihoods, human well-being and socio-economic development. The project is structured around three main outputs seeking to strengthen national water governance and institutional frameworks by fostering collaboration among stakeholders, institutional capacity development, and integrating the water-energy nexus and climate change into decision-making processes to promote sustainability (Output 1), focusing on improving the national water infrastructure through development and implementation of a comprehensive management strategy, taking into account synergies between the water-energy nexus and climate change and prioritizing operational and maintenance efficiency (Output 2), and aiming to empower local communities for water security by implementing strategies and promoting public awareness of sustainable water usage practices, tailored to geographical and resource variations (Output 3). Together, these outputs aim to establish a resilient, well-informed, and proactive approach to water management in Libya. This approach addresses both immediate and long-term needs while adapting to the challenges posed by climate change.

Contributing Outcome (UNSDCF, CPD, RPD): UNSDCF Outcome 4.1 By 2025, people in Libya, including the most vulnerable and marginalized, have increased resilience to the impacts of climate change, water scarcity, and environmental degradation. UNDP CPD Output 3.2 Capacities to improve water security and water energy nexus are enhanced. Outputs 1 and 2 - GEN2 Output 3 – GEN3	Total resources required:	21,289,719.54	
	Total resources allocated:	2,814,024.23	
		UNDP TRAC:	36,500
		Donor:	Italy, Denmark
		Government:	
		In-Kind:	
	Unfunded:	18,439,195.31	

Agreed by (signature):

UNDP	
Christopher Laker: Resident Representative a.i United Nations Development Programme _ Libya Date: 04-Jul-2024	DocuSigned by: 53F7AA00844C461...

I. DEVELOPMENT CHALLENGE

Extending across approximately 1.667 million square kilometers in northern Africa, Libya grapples with a mounting water crisis possessing significant threats to both national security and economic stability. The vast expanse of its territory is dominated by arid desert regions, underscoring the gravity of the issue.

The demographic distribution within Libya exacerbates the water crisis with the majority of the population concentrated in coastal areas, where limited arable land benefits from comparatively higher levels of rainfall. In contrast, the central and southern regions suffer from aridity and consequently support smaller populations due to meagre rainfall.

Stretching for around 1,900 kilometers along the Mediterranean Sea, Libya is positioned prominently among nations facing acute water scarcity. Forecasts indicate droughts recurring roughly every five years, exacerbating water scarcity and threatening economic well-being while potentially stoking political and social tensions.

Libya heavily relies on groundwater as its primary water source, constituting an estimated 97% of the nation's available water resources. Surface water resources, originating from wadis, dams, and springs, comprise about 3%.

Water stress becomes evident when considering the projected water deficit of approximately 4,200 million cubic meters by the end of 2025. Agriculture is the largest consumer of water, accounting for around 85% of usage, while urban domestic consumption stands at approximately 12%. Industrial purposes utilize 3% of the available water. Water consumption patterns fluctuate between rural and urban areas, ranging from 150 to 300 liters per person per day.

The challenges facing Libya in managing its water resources are numerous and interconnected, creating a complex situation that hinders effective solutions. These challenges include:

1. Absence of enabling environment is one of the root causes of Libya's critical level of water security. Political instability, conflicts and a rentier economy hinder the development of effective water policies, planning, and legal framework needed for guiding and coordinating water resources management, development, and use. Libya's rentier economy, relying heavily on oil revenues, inadvertently fosters inadequate investments in sustainable water management and the over-exploitation of finite fossil water resources.
2. Poor water governance and inadequate institutional framework stemming from fragmented institutions, limited funding, lack of coordination and insufficient technical capacities led to over-exploitation of fossil water resources and insufficient investment in sustainable water management. Effective governance is pivotal in ensuring that Libya's water resources are allocated fairly and sustainably, furthering the overarching goal of poverty reduction and social inclusion. Investing in technical expertise and institutional capacity in water management can generate job opportunities and combat unemployment, particularly among marginalized youth who often contend with a dearth of economic prospects and accelerate adoption of advanced technologies for more efficient resource management.
3. Inexistence of relevant management instruments, such as water resources assessment and development guidelines and adequate financial instruments (absence of water tariffs and inefficient revenue collection), prevents the decision-makers from making rational and informed choices between alternative actions, and thus encourages unsustainable water use.
4. Groundwater overextraction surpassing the natural recharge rate of aquifers exacerbates water scarcity and hastens the intrusion of seawater, affecting both the quality and quantity of available water. Coastal regions in Libya suffer from seawater intrusion, contaminating groundwater due to over-extraction. Lack of proper mitigations worsens contamination from various pollutants.
5. Agriculture dominates consuming over 80% of Libya's water resources while mainly relying on inefficient outdated irrigation methods, significantly exacerbating groundwater depletion. Thus, improving water management in agriculture stands as a linchpin for the livelihoods of a significant portion of the population, who depend on farming for their income and sustenance. Implementing sustainable agricultural practices becomes pivotal in the drive to alleviate poverty and reduce disparities among rural communities.

6. The state-owned, Man-Made River (MMR) project, has been compromised as a reliable water supply, primarily due to substantial water losses caused by leakage and evaporation resulting from the aging infrastructure, inadequate management and maintenance, and insufficient funding. Chronic mismanagement, marked by extensive investments in agriculture and unregulated coastal aquifer use without considering sustainability, serves as the crisis' bedrock.
7. Outdated desalination plants and mostly inactive wastewater treatment facilities contribute to environmental contamination and health risks. Addressing these issues carries the promise of improved public health outcomes, thereby lessening the burden of waterborne diseases that disproportionately affect marginalized communities.
8. Climate Change characterized by rising temperatures, shifting precipitation patterns, and increased aridity compounds the stress on already scarce water resources. As temperatures change circulation patterns, Libya will become dryer and may lose 7% of its rainfall by 2050.¹ Implementing sustainable water management practices and constructing resilient infrastructure can help the nation adapt to changing climatic conditions, safeguarding vulnerable communities from the adverse repercussions of climate change.
9. Urban water supply challenges coming from population growth and infrastructure failures increase urban water demand, leading to intermittent availability. The burgeoning population, particularly in urban areas, amplifies the demand for water resources, straining existing supply systems. Ensuring consistent access to clean water emerges as a crucial facet of urban residents' well-being, with the potential to contribute substantially to poverty reduction and enhanced living conditions. Urbanization and water extraction for irrigation have influenced local and regional responses water cycle and precipitation intensity², the latter increasing the likelihood of flood risk.
10. Water security issues at the local community level: areas without access to the MMR and desalination supplies face challenges such as high drilling costs, declining groundwater levels, seawater intrusion, and pollution risks. A lack of public awareness and education about water conservation perpetuates wasteful practices, particularly within the agricultural sector. Education and awareness campaigns centered on water conservation and sustainable resource management empower communities to partake in water-saving practices. Such educational initiatives hold the potential to curb water wastage and promote more equitable resource distribution.

Effectively addressing Libya's water crisis requires a strategic focus on the aforementioned causes that exacerbate the water stress, holding also paramount importance in the quest for poverty reduction and the mitigation of inequality and exclusion. This imperative is underscored by several compelling reasons.

Economically, water scarcity disrupts various sectors, notably agriculture and industry. The water crisis can also be a potent catalyst for social and political tensions, potentially escalating into conflicts and displacement. Thus, effective water resource management can foster economic stability, mitigating the risk of economic inequality and exclusion resulting from water-related disruptions. Addressing water scarcity assumes a pivotal role in bolstering social stability and reducing the risk of exclusion and inequality stemming from such conflicts.

Finally, addressing issues linked to political instability and governance can pave the way for improved water resource management and the formulation of equitable policies that benefit all strata of society.

¹ See also Zeleňáková, M.; P. Purcz, I. Gargar and H. Hlavatá (2013). Comparison of precipitation trends in Libya and Slovakia. In: WIT Transactions on Ecology and The Environment 172, pp. 365-374.

² IPCC Sixth Assessment Report, Chapter 8: Water Cycle Changes, 2021, pg. 1057

STRATEGY

Project strategy and structure

The objective of the project is to *assist the Libyan government in implementation of the Integrated Water Resources Management (IWRM) approach to improve its existing capacities to enhance water security and water-energy nexus*. Libya will benefit from an IWRM framework based upon enhanced climate-informed water governance and institutional framework, improved management of water infrastructure and concrete IWRM interventions at the national and local community levels.

As the support by the national level bodies, such as the Ministries of Water Resources, Planning, Agriculture, Local Governance, public enterprises, such as the Man-Made River Authority (MMRA), General Water and Wastewater Company (GWWC), General Desalination Company (GDC) and others, as well as the municipal authorities, is crucial to successful adoption of the IWRM approach, the project will work on building their capacities and coordination mechanisms.

The project, which builds upon the Improved Water Security in Libya project currently implemented by UNDP, is based on RBM principles, therefore the processes of planning, implementing, monitoring and evaluation, translated into the above outlined approaches, will come into effect through three clearly defined development pathways:

The first development pathway will support the Libyan government institutions in setting clearer long-term strategic policy objectives and the advancement of institutional governance, while the establishment of a comprehensive and sustainable framework for water resource management will be the transformative outcome. Carefully tailored National Water Security Strategy shall deepen the understanding of the water crisis, formulate long-term goals to combat water scarcity, aid the Man-Made River Authority (MMRA) and bolster strategic planning and institutional development across other water organizations. The rationale behind this approach lies in the critical importance of strengthening water governance and institutional frameworks to foster informed decision-making, transparency, and sustainability. The identified assumptions under this pathway are referring to the maintained political and economic stability and the government's commitments to adequately allocate and budget resources for capacity building. These assumptions must be met for the output to materialize in long term transformative change.

The second development pathway aims at fostering improved maintenance and development of national water infrastructure via development of relevant strategies, operational and maintenance (O&M) plans and feasibility studies, thus clarifying mandates and institutional arrangements. The approach involves enhancing short-term water solutions and addressing much needed diversification of water sources by exploring and developing less conventional technologies, such as desalination and solar energy. The rationale for this approach stems from the imperative need to efficiently manage water infrastructure to meet present and future water demands while optimizing energy consumption. Here, the project will explore digital solutions for improving water resource management, such as data analytics for decision support, remote monitoring of water infrastructure run by the MMRA as the major water supply operator, and digital communication for public awareness campaigns, aligning with the digital transformation trend in water management and lessons learned from technology-driven projects.

The identified assumptions point to the commitments of the involved benefiting institutions to adequately maintain and develop the water infrastructure and implement the developed strategies.

The third development pathway will lead to strengthened local community resilience by empowerment to adapt and respond adequately to growing pressures on the water sources due to increased demand and climate changes. Local level targeted approach will engage local population with due consideration to the vulnerability of the poorest segment of the population and will ensure that women and vulnerable groups participate in, benefit from, and make decisions related to community resilience building. In prioritized communities where specific measures will be implemented, expected transformative changes towards improved resilience will effectuate through tailored community based

participatory IWRM schemes and awareness raising and stakeholders and youth engagement campaigns, which may also generate socio-economic benefits and lead to improved livelihoods.

Key assumptions identified here relate to the full participation of targeted communities and municipalities, including financial commitments to (co)financing in the implementation of IWRM measures, hence the ownership over the IWRM schemes, awareness and access to information at local levels need to be established.

By combining the three pathways, the project supplements a *top-down policy reform* implemented through Output 1 with *bottom-up local community resiliency support* from Output 3, thus addressing in parallel the policy space and grass roots resiliency initiatives.

The project contributes significantly to multiple Sustainable Development Goals (SDGs) and aligns with the United Nations Sustainable Development Cooperation Framework (UNSDCF) for 2023-2025. It directly addresses SDG 6 by enhancing water resource planning and governance, improving water infrastructure management, and ensuring access to clean and safe water for all Libyans. Additionally, it indirectly supports SDG 7 by optimizing energy usage in water supply systems, contributing to sustainable energy use. The project empowers local communities (SDG 11) by raising awareness about sustainable water usage practices, promoting resilient communities and sustainable urban development. Furthermore, it acknowledges the impact of climate change (SDG 13) on water resources and addresses vulnerabilities while advocating for sustainable water management practices. Indirectly, it contributes to SDGs 1 and 10 by reducing water scarcity's disproportionate impact on vulnerable communities, supports public health (SDG 3) through enhanced water quality, and potentially creates job opportunities (SDG 8) related to water resource management. As result by improving governance and institutional capacity, the project aligns with SDG 16's goals and demonstrates its commitment to building effective partnerships for sustainable development (SDG 17) through collaboration with various partners, including UNICEF, FAO, AfDB, and the World Bank.

Further, the project contributes to the third pillar of the UNDP Country Programme Document (CPD) for 2023-2025, "Promoting sustainable green growth and enhancing resilience to climate change", aiming particularly to: support institutions in improving water security (c), promote efficient use of water resources at the grass-roots level through advocacy and awareness-raising (d), and support cross-sectoral, risk-informed and inclusive planning to enhance the nexus between energy, water and food security (e). Thus, the project directly contributes to reaching the CPD Output 3.2 - Capacity to improve water security and water energy nexus are enhanced. Finally, the project links with the UNDP Strategic Plan Output 4.1 – National resources protected and managed to enhance sustainable productivity and livelihoods and thus SP Indicator 4.1.1 – Number of people directly benefitting from initiatives to protect nature and promote sustainable use of resources.

The project draws upon a solid foundation of credible evidence to inform its approach, ranging from a few UNDP projects implemented before the Libya conflict, more than a decade and a half ago, to the more recent research findings on groundwater over-extraction and the seawater intrusion into the freshwater sources in the coastal areas, lessons learned from the Man-Made River project, studies exploring the impact of climate change on water resources, etc.

Particularly valuable lessons on the resilience of the water supply infrastructure to the natural disasters have been gathered through the response efforts to the catastrophic disaster that struck Libya in September 2023, when Storm Daniel wreaked havoc on the coastal cities in the northeast, including Benghazi, Derna, Al Bayda and Soussa and those beyond the coast, such as Al-Marj and Shahhat, thus affecting approx. 1.5 million people or 22 percent of Libya's population. The disaster triggered the collapse of the two dams on the Wadi Darnah River, tragically releasing millions of cubic meters of water downstream, inundating the riverplain and resulting in extensive flooding of Derna, a city with population of 120,000. Total water and sanitation infrastructure damages and losses have been estimated to USD 157 million while recovery and reconstruction needs mounted to USD 234 million (using satellite data).³ As a follow up to

³ The World Bank Report "[Libya Storm and Flooding 2023 Rapid Damage and Needs Assessment](#)" (RDNA), supported by the UN and EU

the RDNA, the project team conducted by ground truthing a detailed assessment of damages and losses in the water and wastewater distribution main infrastructure with a strategy for its rehabilitation.

Theory of Change

The envisaged transformative change is the increased livelihood resilience of approximately 6.8 million people living in Libya to climate-enhanced water stress by catalyzing a shift to a holistic, climate-responsive integrated water resource management and adaptation approaches based on enhanced water governance and institutional framework, improved water infrastructure management and concrete IWRM schemes and interventions at both institutional and local community levels. Project's theory of change is grounded in a comprehensive approach to address Libya's water crisis, integrating various components to ensure sustainable water security. This approach is informed by credible evidence, good practices, and lessons learned from previous work by UNDP and other organizations. By targeting immediate and underlying causes, the project aims to contribute significantly to poverty reduction and economic stability in Libya. Better water management further strengthens social inclusion and cohesion at community level, vulnerable groups, households and so on.

If Libyan national effective water resource planning and governance are enhanced by adopting a comprehensive and sustainable framework, then strategic improvements can be actualized, which will enable more effective allocation of public investments in water infrastructure and lead to a more coordinated rational and sustainable utilization of water resources. And

If a comprehensive management strategy is developed to maintain and advance the national water infrastructure, conducting a thorough assessment to identify vulnerabilities and areas for improvement, and prioritizing targeted maintenance projects and operational adjustments in collaboration with state-owned enterprises and other relevant partners, then the system will meet current and future demands more effectively. And

If local communities are empowered through the development and implementation of tailored water management plans, and if public awareness is amplified regarding sustainable water usage, particularly efficient irrigation practices.

Then, a resilient, informed, and proactive approach to water security adaptive to the diverse geographic and resource conditions across the region can be achieved.

II. RESULTS AND PARTNERSHIPS

Expected Results

This project aims to improve the resilience of 6.8 million people living in Libya to climate-enhanced water stress through the implementation of holistic, climate-responsive integrated water resource management and climate adaptation approaches based on the below key three outputs, meticulously designed to address both immediate water needs and long-term resilience in the face of climate challenges.

Output 1. Enhanced water governance and institutional framework

The project will support consolidation and advancement of water governance and institutional framework through a review of existing policy and enabling environment, institutional mapping, capacity and gap assessment, promotion of coordination among national stakeholders, the establishment of a comprehensive and sustainable framework for water resource management, and the integration of the water-energy nexus and climate change. These activities are driven by the aim to improve decision-making, resource allocation, transparency, and sustainability in water resource management.

Activity 1.1 Develop a long-term national strategy to address water scarcity

The project aims to provide a contextual foundation for the development of a sustainable National Water Security Strategy (NWSS), incorporating an assessment of current water availability, infrastructure, and usage patterns. Additionally, it will analyze the geopolitical and socioeconomic factors influencing water resource management in Libya, with a focus on collaboration and coordination among stakeholders.

Tasks:

- 1.1.1 Comprehensive assessment of Libya's current water situation, including availability, quality, and distribution of water resources. Preparation of groundwater depletion vulnerability maps and drought risk hazard maps, assessment of aquifers, demand needs assessment, and business case on the water production cost to inform the development of a long-term water scarcity strategy. Evaluate potentials for sustainable water resources development and management
- 1.1.2 Situation analysis, water resources, and infrastructure assessment, identifying gaps, cost analysis of water production by MMRA, General Desalination Company of Libya (GDC) and General Company for Water and Wastewater (GCWW), climate vulnerability assessment, gap analysis based on situation analysis, including mainstreaming issues, policies formulation, and National Water Security Strategy finalization

Activity 1.2 *Building the Man-made River Authority's (MMRA) strategic planning, institutional and organizational capacities*

As follow-up to the meeting and discussions and correspondence between UNDP and MMRA, crowned by the Memorandum of Understanding (MoU) signed in April 2023, the project will commit to supporting institutional and organizational development capacities of the MMRA through the following tasks:

Tasks:

- 1.2.1 Facilitate a review of the 2019 - 2023 MMRA Strategic Plan, collaborate with the MMRA to align its goals with the national water resources planning, and develop the 2024 - 2028 Strategic Plan
- 1.2.2. Assessing the MMRA in terms of the mandate, resources requirement, technical capacity, technical enabling environment, data sharing and data access and technical means and tools for coordination with other institutions, creating a long-term institutional development plan, developing training programme and delivering prioritized training to practitioners and decision-makers

Activity 1.3 *Assess and develop capacities of national and sub-national institutions in integrated water resources management (IWRM) and strengthening coordination mechanisms for effective, climate-resilient IWRM*

The project will conduct a functional analysis of the institutions to: (i) analyze existing resources (staffing and budgetary) including sufficiency of staffing levels, existing capacity and tools; (ii) analyze existing policies, procedures and protocols, national guidance documents or codes of practice; (iii) extend capacity assessments and gap analyses and development of institutional development plans addressing resourcing, technical and financial needs of these institutions. The project will conduct stakeholders analysis and governance analysis focusing on IWRM, and design capacity building interventions through the following tasks:

Tasks:

- 1.3.1 Institutional mapping to identify relevant national and sub-national institutions involved in water resources management, institutional capacity assessment, and gap analysis to include functional, resourcing, technical and financial capacities. Development of a long-term institutional capacity development plan addressing resourcing, technical and financial needs. Develop a bespoke training programme for climate informed integrated water resources management and embed in relevant national institutions to improve the technical capacity, knowledge base and a long-term adaptation planning for IWRM
- 1.3.2 Provide technical support and facilitate work of national coordination mechanisms on IWRM
- 1.3.3 Deliver prioritized trainings to practitioners, decision-makers and communities

Activity 1.4 *Assess depletion rate and lifespan of three major groundwater aquifers*

Libya is increasingly reliant on its non-renewable, fossil water reserves. There are three main reserves contained in fossil water aquifers. These include the Nubian Sandstone Aquifer System (Egypt, Libya, Chad, Sudan), the North-West Aquifer System (Libya, Tunisia, Algeria, Morocco) and the smaller Murzuq. Each of these aquifers is exploited by the MMR, local municipalities and the agriculture. The project aims to assess the future capacity of the aquifers to continue to meet the water needs for domestic, agriculture and industry given the current rate of increasing demand. Having this information would allow Libya to develop a more sustainable water management system. The information will also contribute to reducing water scarcity and ensuring water and food security.

Tasks:

- 1.4.1 Establishing a comprehensive groundwater basin database, which is pivotal for enhancing understanding of hydrogeology. This process entails gathering data from diverse water sources, encompassing hydrogeological parameters, water abstraction rates, and water quality indicators. Furthermore, thematic maps such as geological, hydrogeological, piezometry, and water quality maps will be developed to depict spatial patterns and correlations. Additionally, maps delineating water withdrawals in irrigated regions will be created to aid in informed decision-making concerning water resource management.
- 1.4.2 Assessment of the water potentials of the aquifer basins through structural mapping with estimated water storage, establishing water balance by numerical modelling simulating water withdrawal scenarios, determination of the lifespan of each aquifer system based on future withdrawal scenarios
- 1.4.3 Inputs data and results of scenarios are agreed through exchanges, validation workshops and surveillance of agricultural areas in the field (ground truthing)

Output 2. Improved water infrastructure management

The project aims to improve the maintenance and development of the national water infrastructure by drafting and implementing a comprehensive management strategy focused on operational and maintenance (O&M) efficiency while exploring synergies where applicable between the water-energy nexus and climate change. The initiative will conduct multiple assessments of existing systems within various water institutions to identify vulnerabilities and areas for improvement. By considering the interdependencies between water and energy systems, the process will then prioritize targeted maintenance projects and operational adjustments that not only help to meet current and future water demands but also optimize energy usage.

Activity 2.1 *Increase resilience of the water infrastructure in disaster prone areas*

High vulnerability and exposure to natural disasters of the water infrastructure in Libya was revealed during the disastrous flooding caused by the Storm Daniel that struck the northeast Libya in September 2023. In line with recommendations of the Libya Storm and Flooding 2023 Rapid Damage and Needs Assessment, the project will undertake the damage and loss assessment of heavily affected water infrastructure, and work on improving and sharing climate change induced risk knowledge through introduction of watershed modelling tools and technologies for strategic disaster (flood) risk assessment.

Tasks:

- 2.1.1 Conduct damage assessment of water infrastructure affected by devastating floods caused by Storm Daniel in September 2023 in the northeast of Libya, collecting data by ground truthing and developing a strategy, including a costed and phased workplan for rehabilitation of the water supply and wastewater distribution mains
- 2.1.2 Undertake detailed review and assessment of the selected critical wadi water infrastructure, i.e. the dams in use, in terms of structural integrity and susceptibility to the disaster risk, focusing on Soussa, Derna and Ghat

watersheds. The project will focus on the five dams of the largest capacity from the assessment by the General Water Authority of Libya⁴ (GWA) from 2011

- 2.1.3 Collaborate with the Ministry of Water Resources on development of the feasibility studies and detailed design of new critical infrastructure units (dams, reservoirs). The focus will be kept on the five dams of the largest capacity as proposed by the GWA
- 2.1.4 Conduct preliminary disaster (flood) risk assessments of the above watersheds. Improve knowledge of climate change-induced disaster (flood and drought) risk, and risk knowledge sharing through the introduction of the watershed basin (hydrological, hydraulic) modelling tools and technologies for strategic disaster risk assessment of the three largest and flood-prone watersheds: Soussa, Derna and Ghat
- 2.1.5 Develop water supply and wastewater master plans for the six cities with heavily damaged water infrastructure during the natural disaster caused by Storm Daniel in September 2023: Derna, Sousa, Qubah, Shahat, Sahel Al Jabal and Al Baydah

Activity 2.2 *Improve efficiency of the Man-Made River arterial water mains through technical studies*

Tasks:

- 2.2.1 Conduct a study on utilizing seismic waves technology for detecting integrity defects in the concrete pipelines of the MMR project and develop a set of recommendations on the pipeline management
- 2.2.2 Developing a roadmap for the smart digital transformation of the MMRA water supply system to support enhancing the efficiency and effectiveness of water supply management services by proposing improved data management, processes, and interaction between water supply components and digital platforms
- 2.2.3 Assess and evaluate thoroughly the MMR project pipeline and the water well fields integrity, determine the longevity of the pipeline and design action steps on pipeline rehabilitation and integrity improvement

Activity 2.3 *Developing unconventional water sources (desalination plants)*

Libya's desalination industry is currently operating with limited support and experiencing serious setbacks. Given Libya's water challenges, desalination could provide added value and an opportunity to conserve groundwater aquifers in the country's south. This could be accomplished by shifting the focus from groundwater resources to desalination plants in coastal cities that could potentially provide water directly to most of Libya's population. However, the low utilization factor and high capital investment required negatively affect the unit cost of desalted water. Thus, feasibility strategies should be developed to further reduce production costs considering all phases from site selection and design to operation and maintenance. Joint developmental objectives between UNDP and General Desalination Company of Libya (GDC) that have been defined through an MoU include:

- 2.3.1 Undertaking feasibility studies and detail design for upgrading the existing sea water desalination plants to the Reverse Osmosis (RO) technology and construction of new ones
- 2.3.2 Collaborating with the GDC on building its capacities to procure, design, build and operate desalination facilities effectively through knowledge, training programs, etc.

Activity 2.4 *Introducing solar energy solutions in community water supply systems*

Piloting a transformative approach to addressing electricity shortages and ensuring continual and sustainable access to clean water for marginalized communities relying on shallow aquifers for water supply, through the following tasks:

- 2.4.1 Assess the feasibility of integrating solar energy solutions into small community water supply systems, focusing on adapting submersible pumps for shallow aquifers, water monitoring systems and small treatment units to solar power operation

⁴ General Water Authority used to be the main government agency dealing with water resources and management

- 2.4.2 Enhance capacities and engage communities in absorbing solar energy solutions through workshops equipping communities with knowledge and motivation to embrace solar energy technologies for sustainable water provision.
- 2.4.3 Equip and integrate the community water supply systems with hardware for solar electricity generation, technical support, and hands-on training on operation, management and troubleshooting

Activity 2.5 *Improving management of wadi surface water Infrastructure*

In arid and semi-arid regions, groundwater serves as the primary water source. Aquifers can be depleted, but they can also be recharged by excess seasonal wadi surface water during the rainfall season. For that, understanding wadi hydrology is crucial. This activity focuses on enhancing the management of wadi surface water resources by coordinating and managing spate and groundwater and by controlling water balance for optimal utilization during dry and wet periods. This goal will be pursued through the following tasks:

- 2.5.1 Introducing Integrated Watershed Management Strategies that involve assessment of surface water potential, capacity building, and capacity development of responsible national and local institutions in holistic approaches within specified pilot wadi watershed basins in Green Mountain (Northeast Libya) and Nafusa Mountain (Northwest Libya), considering ecological, social, and economic factors. Moreover, the focuses on water conservation practices to enhance overall water resource management effectiveness
- 2.5.2 Appraising the feasibility of new wadi infrastructure, such as dams and artificial reservoirs, and exploring innovative water harvesting techniques tailored to the unique hydrological conditions of the pilot wadi watersheds. The assessments will evaluate technical, economic, and environmental feasibility, as well as potential benefits and risks associated with each infrastructure option

Output 3. Strengthened climate resilience of water-stressed local communities

The project aims to accomplish two closely linked objectives: firstly, reduce the threats to the resilience of water resources and ecosystems, as well as the well-being of local communities by equipping them to adapt and respond adequately to growing pressures on the water sources due to increased demand and climate changes. This will be done by devising and executing customized water management strategies that explore potential synergies within the water-energy nexus and enhancing public awareness regarding sustainable water usage practices. By aligning efforts to empower local communities with those aimed at raising public awareness, and by incorporating considerations related to the water-energy nexus and climate change, the project aims to establish a resilient, well-informed, and proactive approach to water security that can adapt to the varied geographical and resource circumstances found throughout the region.

Activity 3.1 *Assess community dynamics over water access and develop local-level Integrated Water Resource Management (IWRM) plans*

The project will use data gathered during the situation analysis and water resources assessment stage of the development of the National Water Security Strategy (NWSS) to identify the regions and communities at the highest risk of water-stress, and apply short-term solutions to improve the local water supply by using existing, traditional methods that include assessing the integrity and maintenance of existing wells, mapping current water storage, distribution as well as the private water delivery sector.

Subsequently, the project will study local community dynamics, including gathering additional sex-disaggregated data on water access, usage, and consumption practices and collaborate with communities to develop and validate customized, climate-resilient, responsive and conflict sensitive Integrated Water Resource Management (IWRM) plans through participatory planning processes. The project will use a set of measures to ensure women's participation in the planning activities, such as advocating for women's participation to raise awareness and reduce resistance, providing institutional support, including tailored trainings, to women's groups and organizations as outlined in the below activities, etc.

Tasks:

- 3.1.1 Asses the local community dynamics, water access, and consumption practices and prioritize communities through needs-based assessment
- 3.1.2 Collaborate with the communities to create and validate customized, inclusive IWRM plans through participatory planning

Activity 3.2 *Improve sustainability of local community water supply systems*

In parallel with the development of the local IWRM plans, the project will support building of the sustainable water infrastructure management systems at the community level in line with the National Water Security Strategy. Interventions required to increase water supply systems sustainability will be identified.

Given Libya's tradition of household-centered water conservation and use, locally based water solutions and the role of women in them will be thoroughly assessed so that adequate improvement measures can be designed. Special attention will be paid to the design of water utilities to enable full access thereto for women and girls, youth, elderly, and other vulnerable categories. Pilot digital solutions will be developed using open-source software for smartphone water intake and yield monitoring.

A no-regret option will be to conduct maintenance on existing water wells, install solar water pumping systems and improve access to water facilities to the vulnerable groups. The intervention design will insist on the use of locally sourced building materials, enterprise, trades people and workforce.

Project will create adequate water systems management structures (with 30% inclusion of women) or pilot local water associations to manage, operate, maintain communities' water systems and raise awareness on the water usage, conservation and contemporary irrigation techniques, in collaboration with the General Water and Wastewater Company's (GWWC) municipal offices and the concerned local authorities, and develop their capacities for efficient operation and maintenance of the water infrastructure. Interventions in community water infrastructure will be prioritized by using, among others, creation of the efficient, women inclusive, management structures and/or local water associations criteria.

Tasks:

- 3.2.1 Organize community meetings and surveys to understand the specific water infrastructure needs and challenges faced by different groups within the community. Document existing water sources, their condition, and accessibility, with a focus on identifying areas requiring maintenance or improvement
- 3.2.2 Collaborate with local water authorities and community members to create a comprehensive maintenance plan for pipelines, water wells, and pumping stations. Prioritize maintenance tasks based on urgency and available resources, ensuring sustainable operation of existing infrastructure
- 3.2.3 Conduct a feasibility study to assess the suitability of solar-powered pumping systems for the community's water supply needs. Evaluate the cost-benefit ratio, considering initial investment, operational costs, and long-term sustainability
- 3.2.4 Explore and implement open-source software solutions for monitoring water intake and yield, utilizing smartphones for data collection and analysis. Train community members, especially youth, on the use of digital tools for efficient water management.
- 3.2.5 Facilitate the creation of local water management associations or strengthen existing structures to oversee the operation and maintenance of water infrastructure. Ensure representation from diverse groups, including women, youth, and vulnerable populations, within these management bodies.

Activity 3.3 *Increase women's participation in the IWRM issues*

Alongside the participatory development of the community, IWRM plans from the Act. 3.1, the project will conduct a analysis of women's roles and level of engagement in water management and economic activities, the level of women's engagement with local authorities, and power dynamics in the private and public spheres highlighting any resistance to their participation and consumption and water management patterns. An assessment to identify the existing knowledge on water management issues and learning needs will be undertaken to inform the training and capacity building, the

nature of dialogues among women, as well as how to engage with men in the communities to minimize resistance and get their support.

Based on the results, the project will design and facilitate *community engagement workshops* targeting both men and women population, including women-run nongovernmental and civil society organizations (NGOs and CSOs) to build their capacities to increase the understanding of implications for water management as part of an effort to empower women so that they can acquire knowledge and skills to participate meaningfully in water management issues, including involving women in influential roles at all levels of water management, particularly at the local water supply utilities, and ensure women's voices and perspectives shape the local water security initiatives and policies. A conflict-sensitive workshops implementation modality will be adopted.

Tasks:

- 3.3.1 Facilitate community engagement workshops in prioritized communities, ensuring the participation of both men and women. Employ a conflict-sensitive approach to workshop implementation to address any potential tensions or conflicts related to women's participation
- 3.3.2 Provide capacity building support to women-run non-governmental and civil society organizations (NGOs and CSOs) to enhance their understanding of women's participation in water management. Empower these organizations to advocate for women's participation in influential roles within water management institutions and policy-making processes.
- 3.3.3 Gather feedback from workshop participants to evaluate the effectiveness of the workshops in increasing understanding and awareness of women's participation in water management

Activity 3.4 *Raising public awareness on IWRM, water use and conservation*

Public engagement is a powerful mechanism for tracking progress and ensuring accountability of national development priorities, including the IWRM. The successful implementation of the IWRM hence requires the active involvement of all citizens and stakeholders such as civil society, academia, and the private sector. To ensure the engagement of the public in implementing the IWRM a variety of innovative approaches are necessary to reach communities even in the most remote areas of the country.

Tasks:

- 3.3.1 Develop a comprehensive public awareness strategy and an action plan focused on establishing an online community, enhancing brand awareness, and disseminating information about IWRM through local and relevant communication channels. This engagement initiative should encompass educating communities about the impacts of climate change on water resources, promoting the importance of conservation, advocating for the adoption of contemporary and efficient irrigation practices, and emphasizing the necessity of groundwater resource restoration to mitigate extreme events. Additionally, the strategy should prioritize empowering women and vulnerable groups by providing them with information and resources to adopt sustainable water management practices
- 3.3.2 Create a campaign calendar outlining key actions, important dates, and other pertinent information essential for executing the public awareness campaign effectively. This calendar will serve as a roadmap for coordinating and implementing various outreach initiatives aimed at raising awareness about IWRM and related topics
- 3.3.3 Generate ideas for developing knowledge products geared towards enhancing capacity at different levels to effectively disseminate information about IWRM and promote community-based solutions. These knowledge products should be designed to educate and empower stakeholders, including policymakers, practitioners, and community members, on the principles and practices of IWRM. Additionally, they should highlight innovative solutions and best practices for sustainable water management, with a focus on addressing the specific needs and challenges of different communities.

- 3.3.4 Monitoring and evaluating awareness campaign effectiveness, crucial for assessing their impact and identifying areas for improvement. This task involves implementing systematic processes to track the performance of the campaigns and measure their outcomes against predetermined objectives.

Resources Required to Achieve the Expected Results

The total projected cost of the project USD 21,289,719.54, and it is anticipated to be supported by multiple donors in stages. As a country in crisis, Libya has many flexible donor instruments at the disposal and allocated via annual budgets.

The Government of the Italian Republic has already provided USD 2.114 million to achieve several target indicators from the Outputs 1 and 2.

The project also plans to approach the European Union that has planned a multi-year project covering environment, climate change, energy and water, with annual budgets released.

The following human resources are required to implement the project:

- **Project Manager (PM)** will be leading, supervising the implementation and having the overall responsibility for management of the project, including timely and efficient delivery of its technical, operational, financial and administrative outputs, as well as overall coordination with the UNDP team, the project beneficiaries, and implementing partners.
- **National Senior Water Advisor (NSWA)** will provide strategic guidance to UNDP and partners to improve the governance, performance and sustainability of the Libyan Water Sector, including the MoWR, MMRA, Municipalities and Local Offices etc. The Specialist will review all UNDP interventions, ensuring that they are oriented to improving water security but with sustainable effect. The NWSA will support the cooperation with partners, such as USAID, UNICEF, FAO, UNEP and the other multilateral and bilateral actors involved in the water security sector. The NWS will also represent the UNDP at the various workshops and conferences as required and participate/contribute to the Water Sector Working Group. The NWS will support the related national counterparts in the development and implementation of a Libyan National Water Strategy. This includes ensuring proper coordination with the Ministry of Water Resources (MoWR) Ministry of Local Governance (MoLG) and the authorities at local level as well as the National Desertification Committee. In the framework of the activities to be implemented with the Man-Made River Authority (MMRA), the NWS will support the implementation of the MMRA infrastructure improvement projects through technical oversight and consultations with key stakeholders.
- **National Water Policy Specialist (NWPS)** will follow upon the implementation of the Output 1 and ensure synergy between all the planned activities.
- **Field Engineer (FE)** will be responsible for overseeing and monitoring the development interventions in the local water supply systems, from the needs assessment and the work scope development to procurement and implementation of civil works and installation of equipment. FE will also monitor development of the feasibility studies and design of desalination facilities, structural assessment of water infrastructure, etc.
- **Project Associate (PA)** will be responsible for the project financial management, including preparing requests for advance of funds and/or direct payments, monitoring budget expenditures, maintaining proper records of approved project budgets and their revisions, and submitting expenditure and project budget status reports, human resources, operations, resources management, accounts receivables, monitoring and following up the finance dashboard.
- **Project Administrative Assistant (PAA)** will provide support to the Project Manager in the implementation of tasks critical for the achievement of project results (communication, contracts, agenda, visas, venue reservations, etc.), including maintaining project files and records, making pertinent logistical arrangements

(including arranging for the procurement of equipment, supplies, and services), and assuming overall responsibility for administrative matters. In addition, the PA will arrange external and internal meetings; provide support in drafting Terms of References (TORs), concept notes (CNs) and other background papers as requested by the PM.

The project receives support from several departments/units of UNDP Libya Country Office:

- **Programme Management Group** will provide strategic guidance and enhance programmatic support to the project, ensuring cross-unit cooperation and coordination of the project with other interventions in Libya and partnership with the Libyan authorities at all levels. Responsible for management of higher-level relationships with Government counterparts relevant for the alignment of the action with the national development priorities and to ensure its sustainability. Also, the Project Management Unit will provide financial reporting and ensure that objective monitoring and evaluations are designed and managed to assess the relevance, effectiveness, efficiency, impact and sustainability of the project results.
- **Programme Management and Support Unit (PMSU)** provides quality assurance and oversight related to the UNDP Policies and Procedures for quality programming, result-based management, budgeting and financial management, and internal and donor reporting
- **Operations Units** provide procurement, finance, human resources, security, administrative services support to the implementation of all projects, in compliance with the UNDP operational policies and procedures
- **Communications and Partnerships Unit:** the project implementation and reporting is supported by the UNDP communications, women's inclusion and partnerships units, who provide regular and need-based advisory and support service

The UNDP Regional Bureau for Arab States will provide strategic advice both to UNDP Country Office and to national stakeholders, supporting the development of National Water Strategy and local climate resilient water management plans including in project concept development and financing as well as supporting public dialogue engagement.

Partnerships

UNDP will work in partnership with both national and international actors. At a programmatic level, each actor has already identified their focal points who will remain in constant contact with UNDP's project team. At a strategic level, UNDP and its partners as well as diplomatic actors will coordinate with UNICEF, FAO, the World Bank and the AfDB.

At a national level, the main government partners include the Ministry of Planning (MoP), Ministry of Water Resources (MoWR), the Man-made River Project Execution and Management Authority (MMRA), the General Desalination Company of Libya (GDC), the General Company for Water and Wastewater (GCWW), as well as the Ministry of Local Government and the Prime Minister's Office.

Communications and Advocacy

The main objective of the communication activities will be to promote the activities undertaken by the project, visibility of the donors, secure the political commitment and support from broader public, policy makers and community leaders for success, and build successful water management structures at community levels.

The generic process of knowledge needs identification, knowledge generation and dissemination will be conducted through different project stages. A focus will be kept on "know-how" knowledge area where technical knowledge and information generated under the Output 3 community dynamics and water supply systems assessment, IWRM participatory planning and interventions on improving water supply systems, will be made freely and easily available during community workshops, online (UNDP web site and social medial accounts) and through peer-to-peer relationships. Project will support creation of the virtual communities of practice (CoPs) to follow on face-to-face interactions for the community members to find a solution, specific data, or to seek a connection that can help with addressing specific or immediate challenges they may face ("know-where" and "know-who" knowledge areas).

A final report will be developed to document and share knowledge, to facilitate adoption of the methodology in community dynamics and water supply systems assessment and sustainability improvement. Due attention will be given to the successes in formation of community water supply management structures and water associations, as well as the piloted digital solutions in water monitoring through use of smart phones. Communication material on the benefits of digital systems will be developed to enhance awareness of end-users.

Risks and Assumptions

There are several contextual and structural risks to this project which have been considered and, to the extent possible, mitigated.

Major risk project is facing is the interminable nature of the conflict in Libya that may affect both the delivery of services and infrastructure projects and distract local actors and stakeholders to prioritize other issues rather than those of the project. This risk will be mitigated by maintaining high level of awareness through continuous and direct engagement and consultations with international and local partners. Such an approach should allow for timely logistical and tactical adjustments to be made. Tactical nature of these adjustments will not affect the overall project outcome or outputs. If broader changes are needed, a guidance will be sought from the Project Board first.

Another risk that eventual changes and turnover in government staff and/or administrative reforms in Libya may result in replacing priorities that are not fully aligned with the expected results of the project. The project will address this risk by placing its developmental objectives in line with the governmental cooperation goals under the several MoUs signed or about to be signed with the relevant high-level governmental institutions and utilities (MMRA, MoWR, etc.). The project plans to have strong involvement at the local community level. Regardless of government change and the priorities set at national level, the community focus will be maintained. Output 1 of the project will also be aligned with the existing planning policies to ensure that project results are integrated in the government planning and policy frames for longer term implementation and monitoring. The project will maintain constant consultations with high-level government representatives and will carry out lobbying and advocacy campaigns in support of the integrated water management and climate change adaptation. This will reduce the impact of the risk to the minimum level.

The reliance of many Libyan households on the groundwater from the shallow aquifers poses a major water security risk. The excessive exploitation of groundwater in coastal areas reduces groundwater levels and increases its salinity in these shallow aquifers, driving many wells out of service. The consequences of this reduction in groundwater levels heavily affects the quality of vegetation cover and agricultural production as access to fresh water is made more costly and difficult, and additionally drives up the salt precipitation in the soil, making it less arable. The project should contribute significantly this risk reduction through the community IWRM plans aiming to improve water consumption and conservation practices.

Stakeholder Engagement

UNDP seeks to contribute to the overarching aspiration that all people in Libya, including women, youth and vulnerable and marginalized groups, benefit equally from sustainable peace and enhanced rule of law, democratic governance, livelihoods and a climate-resilient future.

Target beneficiaries are all the citizens of Libya and particularly those residing in the communities at greatest risk from water shortages. In addition, UNDP Libya will engage, as necessary, local governments in the prioritized locations, national institutions and academia.

South-South and Triangular Cooperation

Given the transboundary nature of Libya's ground water resources, particularly the Murzuq and Nubian Sandstone Aquifers, UNDP will work closely with the [Sahara and Sahel Observatory - Observatoire du Sahara et du Sahel \(OSS\)](#), the

inter-governmental organization established between the riparian states to support its members in the sustainable management of their natural resources in a particularly disadvantageous climate change context, including monitoring and managing aquifer levels and exploitation rates. The OSS is supporting Libyan authorities, particularly the Ministry of Water Resources, to accurately and effectively monitor the health of Libyan aquifers including the Murzuq Aquifer.

Also, the project intends to establish an effective partnership with the [Joint Authority for the Study and Development of the Nubian Sandstone Aquifer System \(NSAS\)](#), shared by four countries in the North East Africa (Chad, Egypt, Libya and Sudan), the world's largest "fossil" groundwater aquifer, covering some two million square kilometers.

Digital Solutions

The project will advance digital solutions to help solve complex problems. This includes evaluating the most effective ways to improve the integrity and sustainability of MMRA infrastructure and to monitor and assess its performance over time. This information will strive to utilize the most effective technologies to gather and record the relevant data.

Sustainability and Scaling Up

Sustainability and scaling up are core design principles for the project. The overarching strategy is based on using international aid to help catalyzing the conditions for national actors and international investors to then move into, grow and reform the Libyan water sector. This entails removing the obstacles and lowering the risks that currently keep these actors from engaging in depth. It also entails attempting to reform the incumbent institutions to be part of the solution, not the problem.

RESULTS FRAMEWORK⁵**Intended Outcome as stated in the UNSDCF Libya (2023 – 2025) Programme Results and Resource Framework: #4.1**

By 2025, all people in Libya, including the most vulnerable and marginalized, have increased resilience to the impacts of climate change, water scarcity, and environmental degradation.

Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:

Indicator 3.2. Level of water stress: freshwater withdrawal as a proportion of available freshwater resources.

Baseline (2018): 817%⁶ Target: TBD with Government

Applicable Output(s) from the UNDP Strategic Plan: 4.1 Natural resources protected and managed to enhance sustainable productivity and livelihoods

Project title and Quantum Project Number: Enhancing National Capabilities to Improve Water Security in Libya - 00133966

EXPECTED OUTPUTS	OUTPUT INDICATORS ⁷	DATA SOURCE	BASELINE		TARGETS (by frequency of data collection)				DATA COLLECTION METHODS & RISKS
			Value	Year	Year 2023	Year 2024	Year 2025	Year 2026	
Output 1 <i>Enhanced water governance and institutional framework (Gen 2)</i>	<i>1.1 Status of the National Water Security Strategy (NWSS)</i>	- Government' s/ ministries/ MMRA websites - Institutional reports/ meeting minutes	No	2022	No	No	<i>Yes- NWSS developed, and adopted by the national Water Sector Committee</i>	-	- Desktop research & analysis - Institutional reports - Institutional capacity assessment scorecards - Surveys - Focus groups - Ground truthing - Data repositories - Remote sensing
	<i>1.2 % increase in MMRA institutional capacity to</i>	Water Sector Committee	0	2022	0	0	20%		Risks:

⁵ UNDP publishes its project information (indicators, baselines, targets and results) to meet the International Aid Transparency Initiative (IATI) standards. Make sure that indicators are S.M.A.R.T. (Specific, Measurable, Attainable, Relevant and Time-bound), provide accurate baselines and targets underpinned by reliable evidence and data, and avoid acronyms so that external audience clearly understand the results of the project.

⁶ Freshwater withdrawal as % of total renewable water resources

⁷ It is recommended that projects use output indicators from the Strategic Plan IRRF, as relevant, in addition to project-specific results indicators. Indicators should be disaggregated by sex or for other targeted groups where relevant.

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Output 2 Improved Water Infrastructure Management (Gen 2)	2.1 A) <i>Number of the existing critical infrastructure units assessed in terms of structural integrity and susceptibility to the disaster risk</i> B) <i>Number of new critical infrastructure units (dams) for which feasibility studies (FS) and detail designs were conducted</i>	- Technical design documentation of existing critical infrastructure, desalination facilities, solar plants, etc.	0	2022	0	0	0	A) <i>5 existing dams assessed in terms of structural integrity and susceptibility to the disaster risks</i> B) <i>FS and detail design prepared for 5 new dams</i>	- Infrastructure surveys using structured questionnaires - Interviewing local officials - Ground truthing - Disaster risk assessments - Virtual rain gauge networks development using satellite imagery - Watershed basin hydrological and hydraulic modelling
	2.2 <i>Number of preliminary disaster (flood) risk assessments for major flood prone wadi watersheds developed</i>	- Environmental and social impact assessments (ESIAs) - As-built design - Digital Elevation Models (DEMs)	0	2022	0	0	0	<i>3 preliminary disaster (flood) risk assessments for the Derna, Soussa and Ghat watersheds completed and adopted</i>	Risks: - Political instability or changes in leadership of partnering national institutions which may affect commitments to implementation of the agreed projects - Unavailability of historical hydrometeorological data records either in digital or hard copy format
	2.3 <i>Number of the city water supply master plans developed</i>	- Satellite imagery – meteorological data from ERA5	0	2022	0	0	0	<i>6 townships affected by the disastrous floods in 2023 with water supply master plans developed</i>	

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	2.4 a) <i>Increase in operational efficiency (%) of the MMRA as the largest water supply operator in Libya</i> b) <i>Reduction in energy consumption (%) of the MMRA as the largest water supply operator in Libya</i>	- Hydrological data from the National Meteorological Centre (NMC) – historical records	0	2022	0	0	a) 10% b) 5%	- -	- Unavailability of design documentation, including as-built design of the existing critical infrastructure, water desalination plants, etc.
	2.5 <i>Increase in designed capacity (%) of the General Desalination Company for three existing seawater desalination plants in Derna, Sousa and Butabah upgraded</i>		66,500 (m ³ /day)	2022	0	0	0	A) 120,000 m ³ /day (80%)	
	2.6 <i>Increased efficiency (%) in the wadi water resources management</i>		0	2022	0	0	0	20%	
Output 3 Strengthened climate resilience of water stressed	3.1 <i>Number of people (% women) benefiting from the improved sustainability of community water supply</i>	- Technical design documentation of community	0	2022	0	0	40,000 (51% women and youth) – TBD after initial assessment	-	- Community surveys, stakeholder consultations, data analysis

local communities (Gen 3)	3.2 a) <i>Number of communities with the operational IWRM plans in place</i> b) <i>Increase (%) in women's involvement in managerial roles throughout the water sector, particularly at the local water supply utilities, water committees and associations</i>	water supply systems (if available) - Hydro-meteorological data from National Hydrometeorological Centre - Census & water consumption data	0	2022	0	0	a) 10 b) 20%	-	- Rapid appraisal of community water supply infrastructure - Membership lists of the water boards, utilities and water associations managing committees - Community water supply parameters monitoring water quality, energy consumption monitoring - Campaign implementation, media monitoring, public surveys
	3.3 % of women and youth attending in community engagement workshops on IWRM reporting favorably on the skills gained						70%	-	- Stakeholder engagement events, collaboration agreements, stakeholder surveys
	3.4 % of people targeted by public awareness campaigns on IWRM, water usage, conservation and contemporary irrigation reporting favorably on the knowledge gained						70%	-	Risks - Community resistance to planning, disputes over water access - Limited reach of awareness campaigns, budget constraints - Technical challenges in procurement and installation of water supply systems equipment - Fading interest in awareness campaigns, budget constraints

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MONITORING AND EVALUATION

In accordance with UNDP's programming policies and procedures, the project will be monitored through the following monitoring and evaluation plans: *[Note: monitoring and evaluation plans should be adapted to project context, as needed]*

Monitoring Plan

Monitoring Activity	Purpose	Frequency	Expected Action	Partners (if joint)	Cost (if any)
Track results progress	Progress data against the results indicators in the RRF will be collected and analyzed to assess the progress of the project in achieving the agreed outputs.	Quarterly, or as required for each indicator	Slower than expected progress will be addressed by project management.		n/a
Monitor and Manage Risk	Identify specific risks that may threaten achievement of intended results. Identify and monitor risk management actions using a risk log. This includes monitoring measures and plans that may have been required as per UNDP's Social and Environmental Standards. Audits will be conducted in accordance with UNDP's audit policy to manage financial risk.	Quarterly	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.		n/a
Learn	Knowledge, good practices and lessons will be captured regularly, to build upon the knowledge base sourced from other projects and partners and shared further.	At least annually	Relevant lessons are captured by the project team and used to inform management decisions.		n/a
Project Quality Assurance	The quality of the project will be assessed against UNDP's quality standards to identify project strengths and	Biennially	Areas of strength and weakness will be reviewed by project management		n/a

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Monitoring Activity	Purpose	Frequency	Expected Action	Partners (if joint)	Cost (if any)
	weaknesses and to inform management decision making to improve the project.		and used to inform decisions to improve project performance.		
Review and Make Course Corrections	Internal review of data and evidence from all monitoring actions to inform decision making.	At least annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.		n/a
Project Report	A progress report will be presented to the Project Board and key stakeholders, consisting of progress data showing the results achieved against pre-defined annual targets at the output level, the annual project quality rating summary, an updated risk long with mitigation measures, and any evaluation or review reports prepared over the period.	Annually, and at the end of the project (final report)			n/a
Project Review (Project Board)	The project's governance mechanism (i.e., project board) will hold regular project reviews to assess the performance of the project and review the Multi-Year Work Plan to ensure realistic budgeting over the life of the project. In the project's final year, the Project Board shall hold an end-of project review to capture lessons learned and discuss opportunities for scaling up and to socialize project results and lessons learned with relevant audiences.	At least annually	Any quality concerns or slower than expected progress should be discussed by the project board and management actions agreed to address the issues identified.		n/a

Evaluation Plan⁸

Evaluation Title	Partners (if joint)	Related Strategic Plan Output	UNSDCF/CPD Outcome	Planned Completion Date	Key Evaluation Stakeholders	Cost and Source of Funding
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⁸ Optional, if needed

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Final Evaluation	n/a	Environment	4.1 By 2025, all people in Libya, including the most vulnerable and marginalized, have increased resilience to the impacts of climate change, water scarcity, and environmental	2027	MoP, MoWR, MMRA	USD 70,000 (project funded)
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III. MULTI-YEAR WORK PLAN ⁹¹⁰

All anticipated programmatic and operational costs to support the project, including development effectiveness and implementation support arrangements, need to be identified, estimated and fully costed in the project budget under the relevant output(s). This includes activities that directly support the project, such as communication, human resources, procurement, finance, audit, policy advisory, quality assurance, reporting, management, etc. All services which are directly related to the project need to be disclosed transparently in the project document.

EXPECTED OUTPUTS	PLANNED ACTIVITIES	Planned Budget by Year (USD)			RESPONSIBLE PARTY	PLANNED BUDGET (USD)		
		2024	2025	2026		Funding Source	Budget Description	Amount
Output 1: Enhanced water governance and institutional framework (Gen 2)	1.1 Develop a long-term national strategy to address water scarcity	210,300	210,300		UNDP	Government of Italy	Multiple	420,600
	1.2 Building the Man-made River Authority's (MMRA) strategic planning, institutional and organizational capacities	200,000	200,000		UNDP		Multiple	400,000
	1.3 Develop capacities of national and sub-national institutions in integrated water resources management (IWRM) and strengthening coordination mechanisms for effective, climate resilient IWRM	100,000	200,000					300,000
	1.4 Assess depletion rate and lifespan of three major groundwater aquifers		400,000	570,000	UNDP		Multiple	970,000
	Technical support and monitoring	10,000	10,000	10,000				30,000

⁹ Cost definitions and classifications for programme and development effectiveness costs to be charged to the project are defined in the Executive Board decision DP/2010/32

¹⁰ Changes to a project budget affecting the scope (outputs), completion date, or total estimated project costs require a formal budget revision that must be signed by the project board. In other cases, the UNDP programme manager alone may sign the revision provided the other signatories have no objection. This procedure may be applied for example when the purpose of the revision is only to re-phase activities among years.

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	Output 1 Activities Total								2,120,600
	Delivery Enabling Services (12%)								254,472
		Sub-Total for Output 1							2,375,072
Output 2 Improved water infrastructure management (Gen 2)	2.1 Improving sustainability of water management systems through increased resilience of water supply infrastructure			500,000	1,600,000	UNDP			2,100,000
	2.2 Improve maintenance of the MMR arterial water mains through several technical studies		420,050	135,500			Gov't of Italy	Multiple	555,550
	2.3 Developing unconventional water sources (desalination plants)			2,500,000	2,500,000				5,000,000
	2.4 Introducing solar energy solutions in community water supply systems			370,000	1,000,000				1,370,000
	2.5 Improving wadi surface water Infrastructure			400,000	600,000				1,000,000
	Technical support and monitoring		10,000	10,000	10,000				30,000
	Output 2 Activities Total								10,055,550
	Delivery Enabling Services (12%)								1,206,666
		Sub-Total for Output 2							11,262,216
Output 3: Strengthened climate resilience of water stressed local communities	3.1 Assess community dynamics over water access and develop local-level Integrated Water Resource Management (IWRM) plans		200,000	200,000				Multiple	400,000
	3.2 Improve sustainability of local community water supply systems		200,000	900,000				Multiple	1,100,000
	3.3 Increase women's participation in the IWRM issues		220,000	250,000		UNDP		Multiple	470,000

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(Gen 3)	3.4 Raising public awareness on IWRM, water use and conservation	100,000	300,000				Multiple	400,000
	Technical support and monitoring	10,000	10,000	10,000				30,000
	Output 3 Activities Total							2,400,000
	Delivery Enabling Services (12%)							288,000
		Sub-total for Output 3						2,688,000
		Total for all Outputs						16,325,288
Project Management Costs	Audit and evaluation							152,000
	Project management staff							1,819,240
	General Expenses (office, security, accommodation, etc.)							707,000
	Vehicles and office equipment							514,000
	Sub-total Project Management Costs							3,192,240
TOTAL DIRECT COSTS								19,517,528
Indirect Costs	General Management Services (GMS 8%) ¹¹							1,561,402
	UN Coordination Levy (1%)							210,789
GRAND TOTAL								21,289,719.5

¹¹ For EU funded part of the project, GMS of 7% shall apply

IV. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

The project will be implemented by the UNDP under the Direct Implementation Modality (DIM) in line with UNDP's Programme and Operations Policies and Procedures. UNDP will assign the Project Manager (PM) and National Water Specialist, in addition to advisory and technical support from compliance and fiduciary units, who will be conducting procurement and financial management under the project.

UNDP shall maintain close bilateral communication with the Donors throughout implementation of the project. The PM will continue to engage the Project Board (PB) as oversight, and advisory entity. The PB and the Donors will provide guidance and monitor implementation progress through narrative and financial reporting and play an active role in the final project evaluation. In addition, the PB will be responsible for ensuring that the project remains on course to deliver products of the required quality to meet the outputs defined. The PB's role will include: (i) providing overall leadership, guidance and direction in successful delivery of outputs and their contribution to the country level outcomes, ensuring the project remains within any specified constraints; (ii) overseeing project implementation; (iii) approving all work plans and budgets, at the proposal of the Project Manager (PM), for submission to UNDP-Donors; (iv) approving any major changes in plans or programmes; (v) reviewing annual progress reports and end project report; (vi) ensuring commitment of resources to support implementation; (vii) arbitrating any conflicts within the project and/or negotiating solutions between the project and any other stakeholders.

The composition of the Project Board includes the following roles:

- 1) An Executive: individual representing the project ownership to chair the group (UNDP CO Libya Resident Representative).
- 2) Senior Supplier: individual or group representing the interests of the parties concerned which provide funding and/or technical expertise to the project. The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. Representatives of the Donor will act as Senior Supplier.
- 3) Senior Beneficiary: individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries. Representatives of the beneficiary Government of Libya will perform the role of Senior Beneficiary.

Relevant government Ministries and other entities and stakeholders will be consulted as needed. This may include civil society organizations (CSOs), private sector and a number of international development organizations, including other UN Agencies.

Cost Efficiency and Effectiveness

This Project will build upon existing partnerships including the ongoing work on the water security. As such, the start-up, and associated costs of creating relationships with national actors and those of hiring core programmatic staff will be reduced. The ongoing, Improved Water Security in Libya project, funded by the Government of the Republic of Italy, has already assessed the contributions of national actors as well as their needs, and coordinated its efforts with other partners involved in similar endeavors. Further, it has initiated development of a National Water Security Strategy, and activities on building planning, operational and technical capacities of the MMRA as the largest water supply operator in Libya, under the Outputs 1 and 2.

To solidify its partnerships, UNDP has signed cooperation the Memorandum of Understanding (MoUs) with the Man-made River Authority (MMRA) and is about to sign MoUs with Ministry of Water Resources (MoWR), Ministry of Planning (MoP) and General Desalination Company of Libya (GDC).

The project will leverage the efforts of other existing Country Office capacities and programming, such as the Energy and Environment Pillar's Support to Energy Transition and Climate Change Mitigation in Libya Programme.

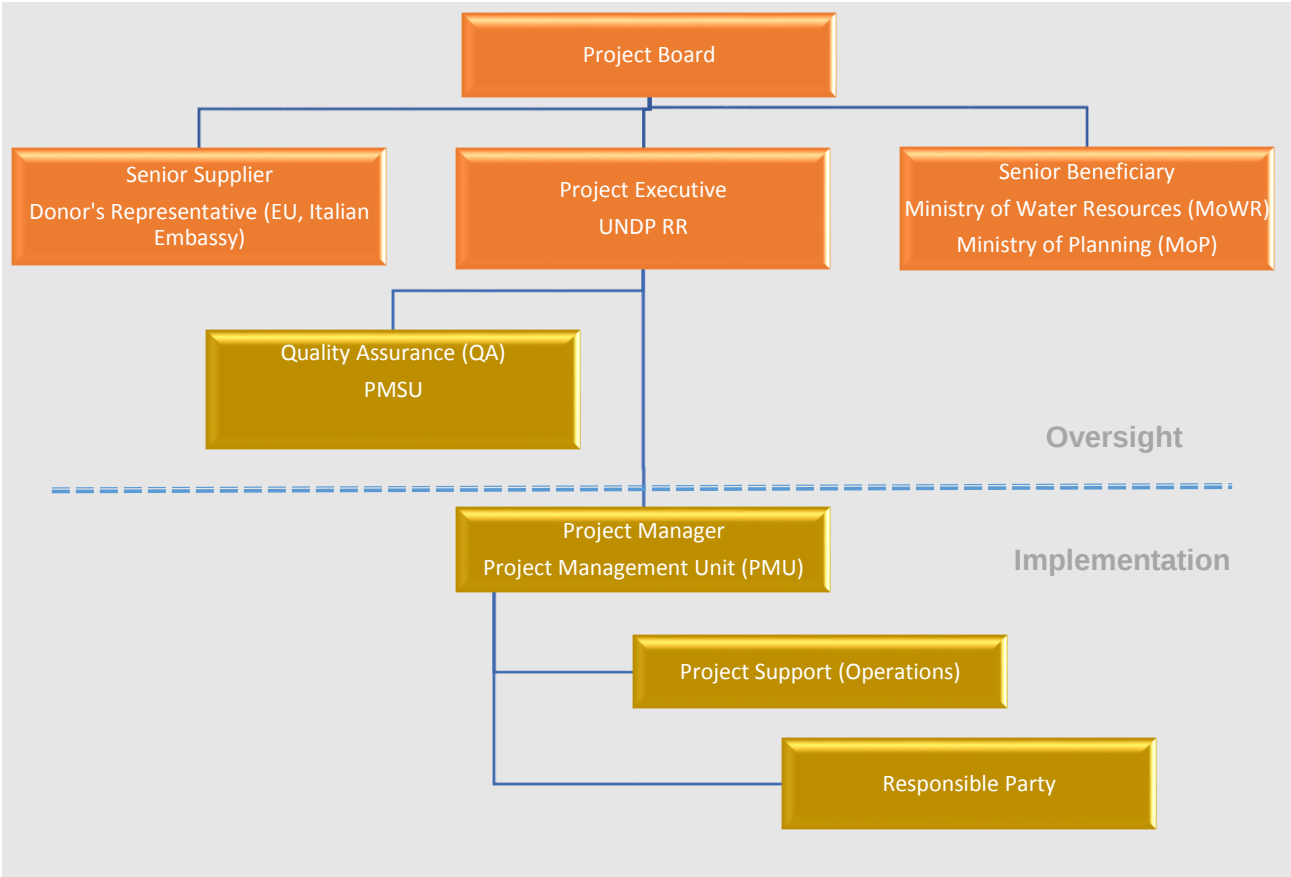


Figure 1 - Project Operational Structure

V. LEGAL CONTEXT

Where the country has signed the [Standard Basic Assistance Agreement \(SBAA\)](#)

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of (country) and UNDP, signed on (date). All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.”

This project will be implemented by UNDP in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

VI. RISK MANAGEMENT

1. UNDP as the Implementing Partner will comply with the policies, procedures and practices of the United Nations Security Management System (UNSMS.)

2. UNDP as the Implementing Partner will undertake all reasonable efforts to ensure that none of the [project funds]¹² [UNDP funds received pursuant to the Project Document]¹³ are used to provide support to individuals or entities associated with terrorism, that the recipients of any amounts provided by UNDP hereunder do not appear on the United Nations Security Council Consolidated Sanctions List, and that no UNDP funds received pursuant to the Project Document are used for money laundering activities. The United Nations Security Council Consolidated Sanctions List can be accessed via <https://www.un.org/securitycouncil/content/un-sc-consolidated-list>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.
3. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).
4. UNDP as the Implementing Partner will: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.
5. In the implementation of the activities under this Project Document, UNDP as the Implementing Partner will handle any sexual exploitation and abuse (“SEA”) and sexual harassment (“SH”) allegations in accordance with its regulations, rules, policies and procedures.
6. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.
7. UNDP as the Implementing Partner will ensure that the following obligations are binding on each responsible party, subcontractor, and sub-recipient:
 - a. Consistent with the Article III of the SBAA *[or the Supplemental Provisions to the Project Document]*, the responsibility for the safety and security of each responsible party, subcontractor and sub-recipient and its personnel and property, and of UNDP’s property in such responsible party’s, subcontractor’s and sub-recipient’s custody, rests with such responsible party, subcontractor and sub-recipient. To this end, each responsible party, subcontractor and sub-recipient shall:
 - i. put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
 - ii. assume all risks and liabilities related to such responsible party’s, subcontractor’s and sub-recipient’s security, and the full implementation of the security plan.
 - b. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the responsible party’s, subcontractor’s and sub-recipient’s obligations under this Project Document.
 - c. Each responsible party, subcontractor and sub-recipient (each a “sub-party” and together “sub-parties”) acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the sub-parties, and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.

¹² To be used where UNDP is the Implementing Partner

¹³ To be used where the UN, a UN fund/programme or a specialized agency is the Implementing Partner

- (a) In the implementation of the activities under this Project Document, each sub-party shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").
- (b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, each sub-party, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment or creates an intimidating, hostile or offensive work environment. SH may occur in the workplace or in connection with work. While typically involving a pattern of conduct, SH may take the form of a single incident. In assessing the reasonableness of expectations or perceptions, the perspective of the person who is the target of the conduct shall be considered.
- d. In the performance of the activities under this Project Document, each sub-party shall (with respect to its own activities), and shall require from its sub-parties (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include: policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, sub-parties will and will require that their respective sub-parties will take all appropriate measures to:
- (i) Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA;
 - (ii) Offer employees and associated personnel training on prevention and response to SH and SEA, where sub-parties have not put in place its own training regarding the prevention of SH and SEA, sub-parties may use the training material available at UNDP;
 - (iii) Report and monitor allegations of SH and SEA of which any of the sub-parties have been informed or have otherwise become aware, and status thereof;
 - (iv) Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and
 - (v) Promptly and confidentially record and investigate any allegations credible enough to warrant an investigation of SH or SEA. Each sub-party shall advise UNDP of any such allegations received and investigations being conducted by itself or any of its sub-parties with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the relevant sub-party shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.
- e. Each sub-party shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such confirmation. Failure of the relevant sub-party to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.
- f. Each responsible party, subcontractor and sub-recipient will ensure that any project activities undertaken by them will be implemented in a manner consistent with the UNDP Social and Environmental Standards and shall ensure that any incidents or issues of non-compliance shall be reported to UNDP in accordance with UNDP Social and Environmental Standards.
- g. Each responsible party, subcontractor and sub-recipient will take appropriate steps to prevent misuse of funds, fraud, corruption or other financial irregularities, by its officials, consultants, subcontractors and sub-recipients in implementing the project or programme or using the UNDP funds. It will ensure that its financial management, anti-corruption, anti-fraud and anti money laundering and countering the financing of terrorism policies are in place and enforced for all funding received from or through UNDP.

- h. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to each responsible party, subcontractor and sub-recipient: (a) UNDP Policy on Fraud and other Corrupt Practices (b) UNDP Anti-Money Laundering and Countering the Financing of Terrorism Policy; and (c) UNDP Office of Audit and Investigations Investigation Guidelines. Each responsible party, subcontractor and sub-recipient agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.
- i. In the event that an investigation is required, UNDP will conduct investigations relating to any aspect of UNDP programmes and projects. Each responsible party, subcontractor and sub-recipient will provide its full cooperation, including making available personnel, relevant documentation, and granting access to its (and its consultants', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with it to find a solution.
- j. Each responsible party, subcontractor and sub-recipient will promptly inform UNDP as the Implementing Partner in case of any incidence of inappropriate use of funds, or credible allegation of fraud, corruption other financial irregularities with due confidentiality.
Where it becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, each responsible party, subcontractor and sub-recipient will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). It will provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.
- k. UNDP will be entitled to a refund from the responsible party, subcontractor or sub-recipient of any funds provided that have been used inappropriately, including through fraud corruption or other financial irregularities, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the responsible party, subcontractor or sub-recipient under this or any other agreement.

Where such funds have not been refunded to UNDP, the responsible party, subcontractor or sub-recipient agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to such responsible party, subcontractor or sub-recipient for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud, corruption or other financial irregularities, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

- l. Each contract issued by the responsible party, subcontractor or sub-recipient in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from it shall cooperate with any and all investigations and post-payment audits.
- m. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project or programme, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.
- n. Each responsible party, subcontractor and sub-recipient shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to its subcontractors and sub-recipients and that all

the clauses under this section entitled “Risk Management Standard Clauses” are adequately reflected, *mutatis mutandis*, in all its sub-contracts or sub-agreements entered into further to this Project Document.

VII. ANNEXES

- 1. Project Quality Assurance Report**
- 2. Social and Environmental Screening (SES) Template**
- 3. Environmental and Social Management Framework (ESMF)**
- 4. Risk Analysis ([Risk Register template](#))**
- 5. Project Board Terms of Reference and TORs of key management positions, developed from the standard Project Board TOR**