

NDC Private Sector Engagement Project

# Engaging private sector in NDC implementation - Assessment of private sector investment potential for the water sector in coastal areas

EXECUTIVE SUMMARY

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UNDP's work on climate change spans more than 140 countries and USD \$3.7 billion in investments in climate change adaptation and mitigation measures since 2008. With the goal to foster ambitious progress towards resilient, zero-carbon development, UNDP has also supported the implementation of the Paris Agreement on Climate Change by working with countries on achieving their climate commitments or Nationally Determined Contributions (NDCs).

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The NDC Support Programme provides technical support for countries to pursue a “whole-of-society”, integrated approach that strengthens national systems, facilitates climate action and increases access to finance for transformative sustainable development. The programme helps countries address these financial barriers by deploying a structured approach for scaling up sectoral investments and putting in place a transparent, enabling investment environment. Beyond direct country support, UNDP facilitates exchanges and learning opportunities on NDC implementation at the global and regional level by capitalizing on our close collaboration with the UNFCCC and other strategic partners. The Programme, which works in contribution to the NDC Partnership, is generously supported by the German Federal Minister for the Environment, Nature Conservation, and Nuclear Safety (BMU), the German Federal Ministry of Economic Cooperation and Development (BMZ), the European Union and the Government of Spain.

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# EXECUTIVE SUMMARY

Transforming Nationally Determined Contributions (NDCs) into tangible actions that lead to long-term zero-carbon and climate-resilient development requires financing. Access to finance is fundamental to realize the objectives set by the NDCs. However, countries continue to face challenges in securing the financial resources needed to achieve their NDC targets. The private sector is expected to provide a significant share of the financing required.

To increase private investment in NDC targets, it is important that the private sector stakeholders engaged in markets and industries understand the business environment, the current market and the investment potential in specific sectors.

This report estimates the private sector investment potential for delivering NDC sectoral targets for the water sector in coastal areas in Tunisia through assessments of the NDC targets, the enabling environment, the current market and Tunisia's investment potential.

## CLIMATE RISK PROFILE AND CLIMATE TARGETS

Tunisia is particularly exposed to climate change and its economy, population and ecosystems are highly vulnerable. Tunisia is expected to experience more frequent and more intense extreme climate change-related events, including rising temperatures, falling precipitation, floods and droughts, in coming years. These will have a significant impact on the country's agriculture, economic development and water resources.

Tunisia's climate risk profile shows that the country's water resources are likely to decline due to rising temperatures, droughts, rising sea levels and decreased precipitation. Achieving water resource resilience is essential to the country's water security. Water is also essential to Tunisia's key economic sectors, such as agriculture and tourism. Agriculture remains the backbone of the country's economy, employing about 16 percent of the labour force and accounting for 10.2 percent of gross domestic product (GDP). Water is especially important for irrigated agriculture. Tourism represents up to 6.5 percent of GDP and employs six percent of the labour force. It is also a water-intensive sector.

With some 385 m<sup>3</sup> per capita of renewable blue water resources (defined as surface and groundwater resources) available per year, Tunisia is already experiencing water scarcity. Climate change is expected to exacerbate water scarcity over the coming years, with the decrease in conventional water resources estimated at about 28 percent by 2030. Surface water decline would approach 5 percent by the same year. Furthermore, with the expected rise in sea level, losses resulting from the salinization of coastal aquifers due to this rise would total about 50 percent of the aquifers' current resources by 2030. Forty percent of Tunisia's groundwater potential and approximately 6 percent of total water resources that can be mobilized are located in coastal areas.

In the agriculture sector, projections suggest that drought would reduce irrigated areas for cereal crop production by 20 percent by 2020, primarily affecting Tunisia's central and southern regions. Rain-fed areas are also expected to be impacted. Estimates show that they could decrease by about 30 percent by 2030. This will also impact the most vulnerable populations, especially women, who hold more than 70 percent of jobs in agriculture and forestry.

In the tourism sector, water scarcity is also expected to have an impact on hotel operating costs related to water resource management. Areas that are over frequented (including coasts and islands), leisure facilities (including swimming pools and golf courses), and infrastructure (including hotels) are likely to experience water supply shortages that will have a direct impact on seaside tourism.

In its NDC, Tunisia describes its objectives in terms of climate change adaptation. The country emphasizes the importance of securing additional non-conventional water resources, such as reused treated wastewater and desalinated water. In the context of this report, the analysis will focus on actions that can catalyse private sector investment in developing and operating wastewater treatment and desalination facilities.

## **ENABLING ENVIRONMENT**

The existence of an enabling policy environment, including related legislation, laws, programmes and plans, is crucial to achieve the sustainable development targets in any country. Tunisia's overall development policy is governed by a national development plan to 2020 under which sectoral policies are developed. This National Development Plan 2016-2020 outlines the need to achieve sustainable development driven by the implementation of a green economy and sets out several objectives related to the water sector, such as achieving 50 percent wastewater reuse.

### **CLIMATE-CHANGE RELATED POLICIES**

Tunisia's climate change policies include the National Strategy on Climate Change, NDC (submitted in 2015) and communications to the UNFCCC (the Second Biennial Update Report, submitted in 2016, and the Third National Communication, submitted in 2019). Water sector policies seek to alleviate water scarcity by, among other actions, encouraging the use of non-conventional water resources, including treated wastewater. However, wastewater reuse for agriculture is limited. It is prohibited for irrigating vegetables but may be carried out for other crops with authorization from the Ministry of Agriculture.

### **WATER SUPPLY-RELATED POLICIES**

Tunisia's policy and regulatory framework for water resource use is outdated. The country has developed strategies to better manage available water resources, but lacks a clear sectoral strategy for water supply and water and sanitation services. The Constitution of 2014 stipulates that the right to water shall be guaranteed in Tunisia.

The country's Water Code provides the legislative framework for water resource management. It recognizes the importance of alternative water sources, such as wastewater reuse, the use of brackish water when possible, desalination and water harvesting. The Ministry of Agriculture may authorize private sector development and use of alternative resources. In the latest draft version, the Code provides a list of activities in which the private sector can be involved through concessions. These include desalination, management of sanitation infrastructure and exploitation of boreholes.

### **POLICIES RELATED TO WATER USE IN AGRICULTURE**

The agriculture sector consumes the most water by far in Tunisia, accounting for more than 75 percent of water demand in 2020. It is therefore important to understand the enabling environment for water use in the agriculture sector, particularly in relation to private sector participation. Tunisia has no overall agricultural and rural development strategy, although several documents address environmental policies and strategies for the sector.

### **POLICIES RELATED TO WATER USE IN TOURISM**

Several laws and regulations govern the tourism sector, establishing processes for registering and classifying hotels and setting minimum requirements to register as such. Decree 2005-3055 provides information regarding those minimum requirements in terms of floor area, number of restaurants, number of rooms and equipment. However, there is no specific requirement regarding how hotels obtain water or reuse wastewater. The National Climate Change Adaptation Strategy for the Tourism Sector is the main policy related to the tourism sector and climate change. Its proposals including reducing the sector's dependence on water resources by improving access to alternative water sources, such as through wastewater reuse, rainwater harvesting and desalination. It also proposes considering a requirement to use alternative water sources for water-intensive facilities, such as golf courses.

### **PRIVATE SECTOR ENGAGEMENT AND INVESTMENT-RELATED POLICIES**

The private sector policy environment refers primarily to the public-private partnership law. The law provides the legal framework for PPPs and allows the government to better leverage private sector financing in several sectors. It defines the scope of a PPP contract in Tunisia and covers project design, financing, operation and maintenance. The law does not exclude any sectors.

## **OVERALL BUSINESS ENVIRONMENT**

As in most countries, Tunisia's macroeconomic situation worsened in 2020 with the start of the COVID-19 pandemic. After two years of steady growth, Tunisia's real GDP increase slowed to 1.5 percent in 2019. Growth in the agriculture and fishing sectors declined from 9.8 percent in 2018 to 1.7 percent in 2019. Due to the pandemic, Tunisia's real GDP is projected to contract by 5.4 percent in 2020, export volumes are expected to fall by 15.2 percent and tourism is expected to collapse. Government consumption is the only demand-side component that will increase to address the crisis. However, real GDP is expected to resume its growth in 2021, rising 2.6 percent and, in 2022-2024, reaching an annual average of 3.6 percent.

Overall, sovereign risk, currency risk and banking sector risk, among others, are all assessed as high. An export collapse, combined with weak institutional effectiveness, will widen the current account deficit affecting the government's creditworthiness, as well as its ability to deal with the crisis. Sharp capital outflows due to the pandemic have increased currency volatility. The pandemic is expected to weaken asset prices and place further pressure on the currency. Tunisia's high repayment obligations, coupled with increasing external financing requirements and weak institutional capacity, may prevent the country from fulfilling its payment obligations. Although the reforms adopted by the Tunisian government after the 2010-2011 revolution improved the health of the country's banks and strengthened their resilience in the face of the pandemic's economic shock, their significant exposure to loss-making state companies leaves them vulnerable to poor performance and the accumulation of bad debts.

The ease of doing business and the enabling environment for cross-border and foreign investments are also important factors in investment decisions. Tunisia performs particularly well in the procedures required to starting a business and to obtaining construction permits. However, challenges to getting credit, paying taxes and trading across borders, among others, remain. Overall, the regulatory environment for foreign investment in Tunisia supports investment in the water sector to some extent, providing favourable conditions for foreign direct investment and cross-border investment. While some limitations exist on sectors in which foreign businesses may freely incorporate, there is no discrimination against foreign-owned businesses. Recent laws promoting investment emphasize investors' rights and provide incentives to encourage foreign investment. There are no specific constraints on paying dividends to foreign investors, including in foreign currency, as per foreign exchange regulations and Tunisia's general investment framework.

The overall enabling environment for private investment in the water sector in Tunisia remains nascent. Historically, the public sector and public utilities have driven investment and project origination in Tunisia. The Water Code emphasizes that water is a public good, thus limiting the potential for private investment. However, Tunisia began to recognize the importance and potential of private investment and private participation in the economy, including in relation to infrastructure and service delivery, by developing its PPP framework in 2015. Water supply-related projects are already in the PPP project pipeline.

Tunisia's economic outlook remains fragile and the country has been significantly impacted by the COVID-19 pandemic.

## **CHALLENGES, RECOMMENDATIONS AND POTENTIAL FOR PRIVATE SECTOR INVESTMENTS IN THE WATER SECTOR**

Multiple barriers and challenges constrain Tunisia's water supply sector, preventing investment from scaling up in the country.

### **ALTERNATIVE WATER RESOURCES FOR AGRICULTURE**

The alternative water resource ecosystem for agriculture can be divided among input providers, plant developers, and operators and producers. The public sector leads this ecosystem; SONEDE and ONAS are usually involved in the major desalination and wastewater treatment plants developed in the country. These are usually carried out under PPP and BOT agreements. Large plants usually supply public irrigated perimeters (PPIs).

The percentage of land irrigated in Tunisia is among the highest on the African continent, with more than 9 percent of lands irrigated, compared to 5.2 percent on average in Africa. The agriculture sector alone consumes 80 percent of water resources in Tunisia, so it is crucial to introduce technologies that increase the efficiency of the sector's water use. Olive and vegetable production rely heavily on irrigation, as do other fruits and, to some extent, wheat.

The large-scale, non-conventional water resource supply value chain for agriculture in Tunisia is centred on SONEDE and ONAS, the water and sanitation utilities. Projects at this scale are usually initiated by the government and involve one of these entities. When the government expects the private sector to participate, it establishes a PPP. SONEDE and SONAS are also involved in setting water tariffs and SONEDE is the main distribution entity. The private sector is involved through developers, who can support the development of PPP projects and their financing. Private developers work closely with all other stakeholders, such as the government, technology providers, financing entities and EPC contractors. End users are typically those supplied by SONEDE.

The smaller-scale, non-conventional water resource supply value chain for agriculture in Tunisia focuses more on private developers than on large-scale water supply plant value chains. Private developers initiate projects based on water demand for irrigation in areas that ONAS and SONEDE do not supply, which are usually rural areas. In this value chain, developers and plant operators agree on a water supply fee with producers. Smaller-scale plants usually supply producers in private irrigated areas. The public sector could also consider developing small-scale desalination capacities for rural areas. Agricultural development groups (GDAs) supplement SONEDE in operating rural water systems. GDAs supply approximately half of rural areas and could also supervise the installation and operation of small-scale desalination in relevant areas.

However, several gaps and challenges constrain the development of alternative water resources in the water sector.

## FINANCIALLY FRAGILE UTILITIES AND THE CHALLENGES OF SETTING COST-REFLECTIVE TARIFFS

Tariffs are crucial to determine project viability and support public utilities' financial viability. After freezing tariffs in the early 2000s, the government has increased them several times since 2013. Tunisia aims at reviewing its tariff policy annually to restore SONEDE's financial balance by 2024. However, SONEDE is still unable to cover all its production costs and is unlikely to be able to make the capital investment needed in new infrastructure and desalination plants. ONAS is in a similar position.

Water supply projects are among the most capital-intensive infrastructure investments. The assets cannot be repurposed or removed. Investors thus depend entirely on future revenues to obtain their desired financial return. However, revenues are often delayed after the initial investment and both investors and regulators usually face resistance to tariff hikes. The financial rate of return on water supply investments is thus relatively low.

### RECOMMENDATION AND POINT OF ENTRY 1

#### **Adopting differentiated cost recovery approaches**

The government could consider a sustainable cost recovery approach for water supply projects, including non-conventional projects. Sustainable cost recovery could allow for wide variations in payment capacity. Projects that supply urban households and those that supply rural producers may have a different cost recovery capacity, particularly for initial investment costs. As water operators need predictable and stable revenues, Tunisia should adopt a model under which tariffs and fiscal transfers primarily target cost recovery for operating costs. This is linked to the project's structure when the private sector is involved and addressed in other recommendations as well.

The procurement method also plays an important role in project financing and risk allocation. Given the difficulty of raising tariffs and the significance of subsidies for such projects, it is important to consider this method.

### RECOMMENDATION AND POINT OF ENTRY 2

#### **Selecting an appropriate procurement method for large-scale plants**

Large infrastructure projects are subject to risks that may affect their performance, cause cost overruns and, thus, impact a project's financial viability. It is therefore important to carefully consider risk exposure when designing large-scale desalination and wastewater treatment projects. With PPP agreements, some or all the risk can be transferred to a private partner. However, this is determined by the procurement instrument adopted to develop the infrastructure.

Tunisia could leverage build-own-operate-transfer (BOOT) approaches to scale up desalination. Under this approach, risk and responsibilities are well defined between the plant operator and the off-taker, which would typically be SONEDE. A water purchase agreement would define the conditions under which water is purchased over the long term, including tariffs.

### **COST OF CONNECTING RURAL AREAS TO NON-CONVENTIONAL WATER PRODUCTION CENTRES**

The cost of connecting non-conventional water production centres to agricultural production areas remains significant, but may not always be reflected in tariffs. Overcoming such issues may require a dual approach. When agricultural areas are located near urban centres, it may be possible to connect them to large-scale desalination and wastewater treatment plants. An alternative approach using small-scale facilities may be required in rural areas. ONAS has limited activities there, while GDAs and municipalities supplement SONEDE in operating rural water systems, supplying approximately half of rural areas. Involving the private sector in developing small-scale desalination and wastewater treatment facilities in rural areas may thus be an option for Tunisia.

#### **RECOMMENDATION AND POINT OF ENTRY 3**

##### **Introducing small-scale desalination for agriculture**

The cost of connecting water supply to agricultural production areas is significant, but may not always be reflected in tariffs. Small-scale desalination plants for agriculture in coastal areas may be used. Using small-scale capacities would make it possible to tailor the amount of water produced to match the needs of the number of users. This would reduce the distance between facilities and users, thus reducing connection investment costs. In rural areas, small private operators could support GDAs and municipalities in developing desalination plants. This could be done through PPP contracts or direct subcontracts, which would be drafted by organizations with the required knowledge.

### **DESALINATION IS ENERGY-INTENSIVE**

Desalination technologies are energy intensive. In the Middle East, desalination provided 3 percent of the region's water supply but accounted for 5 percent of total energy consumption in 2016. If expanded and powered by fossil fuels, desalination could thus be a potential driver of climate change. In addition, Tunisia subsidizes electricity prices. Achieving desalination objectives should not widen this gap further by increasing the use of fossil fuel and increasing Tunisia's deficit.

#### **RECOMMENDATION AND POINT OF ENTRY 4**

##### **Combining desalination and renewable energy**

Renewable energy-powered desalination is currently more costly than conventional energy desalination. Utility-scale desalination plants usually operate continuously and intermittent renewable energy sources may not be adapted for direct energy supply. Fluctuating renewable energy could be combined with hybrid power generation solutions and batteries when applicable.

### **POTENTIAL FOR PRIVATE SECTOR INVESTMENT IN ALTERNATIVE WATER RESOURCES FOR AGRICULTURE**

The main water sector technologies that offer private sector investment potential in the context of agriculture and tourism in coastal areas include investments in desalination plants and wastewater treatment plants

Large scale desalination plants will cover the demand for additional needs in drinking water and in irrigation for agriculture in Tunisia. The current project pipeline would supply a potential 219 million m<sup>3</sup>/year. A remaining 207.28 million m<sup>3</sup>/year would still be required to meet desalination needs. This would represent an additional \$817.76 million of investment in large-scale desalination plants, in addition to the \$1,101 million planned. The total investment potential for large-scale desalination plants is thus \$1,918.76 million.

Large-scale wastewater plants will supply additional irrigation needed for specific agricultural crops. The current project pipeline would supply a potential 116.8 million m<sup>3</sup>/year. An additional 43.52 million m<sup>3</sup>/year would still be required. This would represent an additional \$145.23 million of investment in large-scale wastewater treatment plants, in addition to the \$389.76 million planned. The total investment potential for large scale wastewater treatment plants is thus \$534.99 million.

For both desalination plants and large-scale wastewater plants, investment potential is likely to vary based on the PPP agreements between the government and service providers.

Small-scale desalination plants would supply irrigation. These plants are expected to be developed through small PPP agreements or subcontracting agreements with service providers, as small producers are unlikely to provide a revenue stream that is stable enough to cover the investment and operational risks for private investors. The investment potential for small-scale desalination plants is estimated at between \$131.77 million and \$585.64 million (the latter figure corresponds to renewable energy-powered desalination plants).

## **ALTERNATIVE WATER RESOURCES FOR TOURISM**

The coastline is a major resource for Tunisia's tourism sector. However, increased water scarcity and shoreline retreat are significant threats to the sector and its development. The tourism sector uses less than 1 percent of Tunisia's water potential, but demand is concentrated in the summer months and coincides with low water availability. Demand is also concentrated in areas that lack natural drinking water resources.

Hotels lead the tourism ecosystem, as they initiate projects and implement them for captive use. Treated wastewater is reused in the tourism sector for gardens and golf courses on a very limited basis. The tourism sector could better adapt to the impacts of climate change by developing desalination plants.

Desalination technologies have already been adopted in a few locations in Tunisia and can be adapted to small-scale water production. However, they remain expensive. For hotels, the main consideration will be whether the technology can be competitive relative to SONEDE tariffs. Energy use is also a significant concern. Desalination technologies often require at least three to four times more energy than conventional water treatment. This is addressed through higher tariffs or alternative energy production at utility scale. Renewable energy can be leveraged for small-scale desalination and solar PV panels could be used to power RO installations. Small-scale PV-based desalination systems have already been tested.

### **RECOMMENDATION AND POINT OF ENTRY 5**

#### **Encourage the introduction of renewable energy-based desalination for hotels**

Small-scale desalination capacities could be installed in Tunisia based on renewable energy production. Tunisia's regulatory environment for energy production allows independent entities to consume the electricity that they produce. Hotels may thus produce their own energy for desalination. Off-site production capacities can also be developed and channelled through the national grid for captive use.

Tunisia also recently authorized corporate PPAs through Law 2019-47. Small-scale facilities could leverage this model by using renewable energy produced by an independent power producer and channelled to their desalination installations. Similar arrangements for desalination facilities could also be developed for small-scale facilities. A developer could provide the material and equipment and operate the facilities and the water produced could be sold to a specific hotel through a purchase agreement.

## **POTENTIAL FOR PRIVATE SECTOR INVESTMENT IN ALTERNATIVE WATER RESOURCES FOR TOURISM**

The tourism sector would primarily use small-scale desalination through RO. Based on the forecast demand in the sector, hotels are likely to require an additional 34 m<sup>3</sup>/day of water on average and per accommodation facility, or approximately 12,000 m<sup>3</sup>/year. The capacity of a small-scale RO desalination system should therefore match this demand. Hotels would be the main implementers of this approach. Most large hotel complexes have significant ability to provide the initial investment cost of installing a desalination facility with this production capacity. Smaller hotels may require alternative financing paths, such as leasing, corporate PPAs or similar arrangements to build such facilities. The investment potential for small-scale desalination in hotels is estimated at \$307.71 million.

The private sector investment potential in the water sector is estimated at between \$2,893.23 million and \$3,347.10 million. Most of that will be used to develop large-scale desalination plants, specifically for the agriculture sector.



## ACCESS TO FINANCE

Access to financing is critical for water supply. Large-scale water supply infrastructure requires significant investment and long-term financing. Smaller-scale infrastructure investments also require long-term financing.

Given the amount and type of financing required, large-scale infrastructure is provided mainly by development finance institutions (DFIs) and private sponsors. Small-scale infrastructure project owners may be smaller businesses that seek financing from commercial banks.

The sources of financing and financing structures for large-scale infrastructure may have a significant impact on project costs. Investors' return/risk profile expectations differ. The cost of financing can represent more than 25 percent of total capital cost, so it is crucial to identify relevant financing structures, especially in emerging markets where investors' risk perceptions may be higher than in more mature markets.

### RECOMMENDATION AND POINT OF ENTRY 6

#### **Designing financing packages that optimize financing costs**

Debt service and dividends may represent 20-30 percent of the total cost of desalinated water. Thus, desalination infrastructure projects must be able to obtain more favourable debt and equity financing terms. Deferring debt and equity payments until after a grace period could keep tariffs low in the first few years of operation. This would help project sponsors and the government raise tariffs gradually and achieve financial viability by the end of the project. By using guarantees and other subsidies, blended finance can also help lower investors' financial expectations by lowering the project's risk profile.

Because the financial sector perceives desalination and wastewater treatment as high risk, water supply infrastructure financing is limited. Typically, the sector cannot meet the tenor requirements of such projects. The lack of long-term financing, such as long-term debt and equity, is an important limiting factor. In addition, water sector revenues are usually in local currency, while financing for large-scale infrastructure is raised abroad and is serviced and repayable in foreign currencies. This exposes investors to foreign exchange risk and highlights the importance of leveraging local financing. In addition to designing financing packages with optimized financing costs, sourcing investment from local sources is crucial to support the sector's development.

### RECOMMENDATION AND POINT OF ENTRY 7

#### **Using blended finance to encourage investment from local sources**

Leveraging investment in local currency for infrastructure investment, especially for water supply projects, is essential to ensure project sustainability. However, insufficient savings and a high loan/deposit ratio mean that Tunisia's domestic banks cannot finance credit. This suggests that they may not be able to participate in financing projects with relatively low financial returns. It is also unlikely that local commercial banks would provide financing over the very long term.

Guarantees could enable commercial banks and financial institutions to lengthen the tenor of the credit they extend to infrastructure projects. Partial credit guarantees (PCGs) could help attract borrowers to the markets and extend debt maturity. PCGs are a credit enhancement mechanism for debt instruments, such as bonds and loans, under which a guarantor commits to pay the principal and/or interest up to a pre-determined amount.

## REPORTING FRAMEWORK TO ALIGN BUSINESS OPPORTUNITIES WITH NDC IMPACT TARGETS IN TUNISIA'S AGRICULTURE SECTOR

Governments and international organizations engage the private sector to leverage stakeholder investments in the NDC. The NDC can offer the private sector additional business opportunities, but it is often unaware of those opportunities. It is therefore important to highlight and translate them in clear reporting frameworks, which the private sector can then leverage to enhance its understanding of the added value that climate investments bring.

A clear understanding of this alignment, or the extent to which it can align with NDC actions, offers the private sector potential advantages. First, it enables the sector to clearly identify actionable actions, which can be translated into business opportunities. The NDC and SDGs have been chosen as the main reporting frameworks for this report. Business opportunities in the water sector identified in this report are linked to NDC objectives and SDG targets. A summary of the business opportunities, the corresponding climate and SDG frameworks is provided below (direct benefits in **green**, co-benefits in **orange**).

BUSINESS OPPORTUNITY	NDC TARGETS AND BUR/NATIONAL CLIMATE CHANGE MITIGATION PLAN AND PROGRAMMES OF ACTION ACTIONS	SDG FRAMEWORK
<b>LARGE-SCALE DESALINATION</b>		
Participation in large-scale infrastructure projects for desalination (PPPs)	Improve and secure water supplies	<b>6 – Clean water and sanitation</b> <b>13 – Climate action</b> <b>9 – Industry, innovation and infrastructure</b> <b>2 – Zero hunger</b> <b>7 – Sustainable energy</b> <b>3 – Good health</b>
<b>Illustrative metrics</b>	# of households connected # and value (US\$) of investments Total capacity installed (m <sup>3</sup> ) # of producers connected Total capacity provided (m <sup>3</sup> ) for irrigation	
<b>PARTICIPATION IN LARGE-SCALE INFRASTRUCTURE PROJECTS FOR WASTEWATER TREATMENT (PPPS)</b>		
Participation in large-scale infrastructure projects for wastewater treatment (PPPs)	Improve and secure water supplies Transfer and reuse treated wastewater	<b>6 – Clean water and sanitation</b> <b>13 – Climate action</b> <b>9 – Industry, innovation and infrastructure</b> <b>2 – Zero hunger</b> <b>3 – Good health</b>
<b>Illustrative metrics</b>	# and value (US\$) of investments Total capacity installed (m <sup>3</sup> ) # of producers connected Total capacity provided (m <sup>3</sup> ) for irrigation	
<b>SMALL-SCALE DESALINATION</b>		
Development of small-scale installations in hotels and the tourism sector (reverse osmosis) Development of small-scale desalination plants for agriculture	Improve and secure water supplies Optimize the tourist sector’s management of water resources and install mini-seawater desalination plants using renewable energies	<b>6 – Clean water and sanitation</b> <b>13 – Climate action</b> <b>8 – Decent work and economic growth</b> <b>2 – Zero hunger</b> <b>7 – Sustainable energy</b> <b>3 – Good health</b>
<b>Illustrative metrics</b>	# of hotels serviced by small-scale desalination # and value (US\$) of investments Total capacity installed (m <sup>3</sup> ) # and value (US\$) of investments for hotels and small-scale desalination installations Total capacity installed (by energy source) (MW) for hotels and small-scale desalination installations # and value (US\$) of corporate PPAs signed for hotels	

\*Additional SDG targets are developed for these opportunities in the main report.

## ASSESSMENT RESULTS AND CONCLUSION

Access to water is essential to the Tunisian economy. Some of the country's important economic sectors, such as agriculture and tourism, rely heavily on its availability. In coastal areas, these sectors provide significant employment but are also extremely vulnerable to the impacts of climate change. The country's policy environment emphasizes the importance of water.

Private sector investment in the sector remains limited. Water resources are considered a public good, thus limiting the potential for private investment. Most investments are public sector-initiated and the extent of private involvement in PPP projects proposed by the government remains unclear. Constraints on further investment also relate to the public sector's historic lead role and to the financial fragility of public utilities. Additionally, tariffs do not reflect the real cost of water, so incentives are insufficient to attract private sector investment in non-conventional water resources. Energy use remains a significant concern for desalination.

However, recent developments in Tunisia's PPP framework suggest that the country is open to greater private sector participation in securing non-conventional water resources. This is reflected in Tunisia's PPP project pipeline, which includes several desalination and wastewater treatment plants. The private sector investment potential in the water sector is estimated at between \$2,893.23 million and \$3,347.10 million. Most of that will be leveraged to develop large-scale desalination plants, specifically for the agriculture sector.

Public sector and international financing could be leveraged in blended finance approaches, such as guarantees and subsidies, to further encourage private sector participation. These will be essential in mobilizing long-term financing and local currency financing. Both are crucial to the success of any water supply infrastructure project.

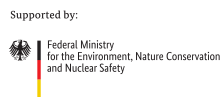
# UNDP NDC SUPPORT PROGRAMME

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