

4 Water, environment and the blue economy

The COVID-19 pandemic exacerbated water-stress and food insecurity in the MENA region, the world's most water scarce region. This chapter analyses trends in infrastructure investments in the water and waste sectors in MENA countries, as well as employment opportunities in these sectors, driven by urbanisation, tourism development, irrigated agriculture and industrialisation. It highlights that the economic recovery offers an opportunity to integrate environmental fiscal reforms into policy reform agendas to maximise integration of social and environmental benefits.

Key takeaways

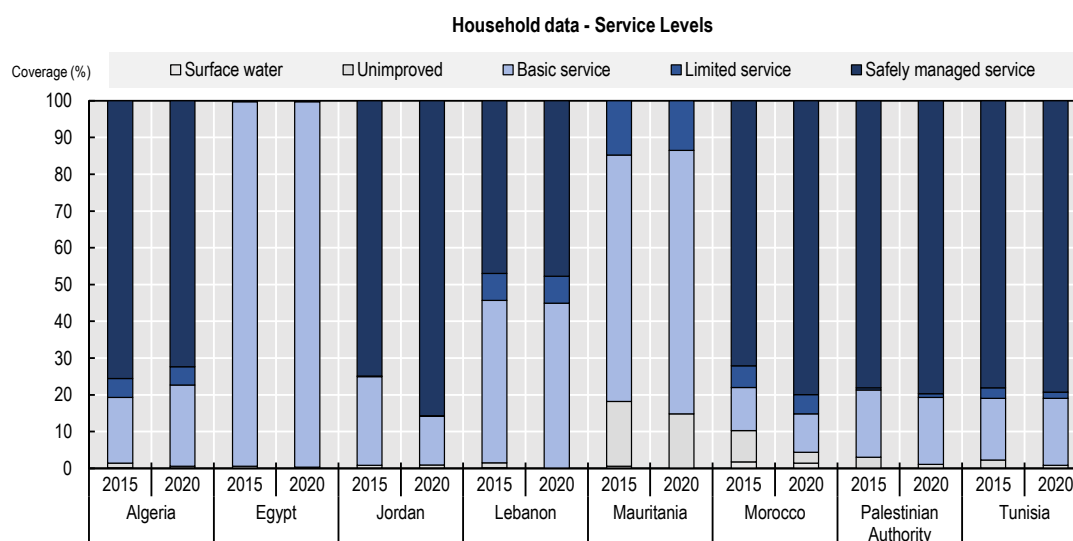
- During the pandemic, countries in the MENA region have not been able to take full advantage of containment and health preservation measures, as nearly 66 million people in the broad MENA region lack basic sanitation services, facilitating greater opportunities for the spread of disease. Similarly, about 82% of the region's wastewater is not treated nor reused, while less than half of wastewater is simply treated, cutting the region off from a sustainable and cost-effective source of water that can be recycled for purposes such as agricultural and landscape irrigation, industrial processes, and non-potable urban applications. Eventually, the difficulty in obtaining significant results from COVID-19 mitigation measures has revealed a lack of access to water that is safe to drink.
- The pandemic has exacerbated water-stress and food insecurity for the world's most water scarce region. To counteract the shortages of imported food that characterised the downturn in agricultural trade in the early months of the pandemic, MENA countries had to re-allocate extra water resources to agricultural production in order to boost their local food output. The resulting water stress, however, has further undermined the region's fragile overall water resource management.
- Estimates of water use during COVID-19 ranged from 9 to 12 additional litres of water per person per day due to changes in behaviour and consumption patterns, as well as increased expenditures and domestic water demand relative to industrial and agricultural water uses, representing an additional investment of USD 150-250 million per month to meet the additional water needs.
- The MENA region's growth, driven by urbanisation, tourism development, irrigated agriculture and industrialisation prior to the pandemic has opened up employment opportunities in the water sector. The strategic water sector in the broad MENA region, while still timidly aligned with new technologies, offers great potential for employment of specialists in ICT who will fully push the sector into the digital era.
- Investment in infrastructure projects in the MENA plummeted. Although infrastructural investments decreased in comparison to previous years, new investments in the water and waste sectors are still being signed, albeit at a slower pace and mostly through development banks.
- Initiatives to curb marine plastic pollution started to take form in the region, but further efforts are needed in order to improve the waste management systems and make them more effective as well as develop. Strategic initiatives to curb marine plastic pollution are being hampered by increased need for single-use plastic products coupled with ineffective waste collection systems. The MENA region is particularly stuck in the systematic failures of plastic value chain that do not hold producers accountable.
- COVID-19 protocols provided temporary relief for the Mediterranean's water and land environments and biodiversity, but incorporating green policies in recovery packages will be crucial for sustainability. The decrease in activity on the coasts from business closures and a decrease in visitors on beaches have protected, to a certain extent, the marine environment from forms of pollution such as plastics, hydrocarbon spillage, microbiological loads, and noise levels. However, COVID-19 related plastic waste such as masks and gloves have increased and become a new challenge.
- Economic recovery offers the opportunity to integrate Environmental Fiscal Reforms into policy reform agendas to maximise integration of social and environmental benefits.

Water action

COVID-19 has exacerbated water-stress and food insecurity for the world's most water scarce region

The broad MENA region¹ is considered the most water scarce region in the world, with a large portion of the region's population living under water scarcity or absolute scarcity. Of the 18 countries in the broad MENA region, five are classified as water scarce and 11 others are considered as absolutely scarce, indicating that up to 86% of the region's population lives under water shortages. While 70% of global water is used for agricultural purposes, the number reaches more than 80% in the MENA region, meaning water-scarcity has a particularly severe effect on the region's agricultural output and food-security.

Figure 4.1. Drinking water management in MENA countries, 2015-20



Source: World Health Organisation, <https://washdata.org/data/household#!/dashboard/new>.

The MENA region suffers from poor water management, deteriorating or out-dated water infrastructure and issues with governance, leading to large strains on the agricultural sector. Some of these problems are related to fiscal constraints and regulatory issues. For example, OECD (2014) *Water Governance in Jordan* highlighted fragmented and unclear responsibilities for oversight, a lack of efficient approach to tariff regulation and patchy performance monitoring, and recommended a high-quality regulatory framework to achieve good levels of service provision at an affordable cost for society.

In the context of the pandemic, water stress has increased due to a greater allocation of water resources to the agriculture sector in an effort to offset lower food exports in countries where agricultural products, especially wheat of which the Arab region imports 65% of its total stocks, are a large share of exports and to counterbalance shortages of imported food (UN ESCWA, 2020^[1]). Indeed, with 55 million of its 456.7 million population undernourished, about 12% of the population, the broad MENA region also has one of the highest rates of food insecurity in the world. The pandemic has aggravated these circumstances, increasing the number of acutely food insecure people in MENA from 6% of the region's population to approximately 20%. Marginalised populations such as refugees are especially vulnerable to food insecurity and the pandemic has severely impacted this group; for instance, in 2020 a quarter of the Syrian refugees in Jordan and half of Syrian refugee households in Lebanon were in immediate need of food and water (Belhaj and Soliman, 2021^[2]).

In addition to infrastructural deficiencies and aggravated social challenges, the region is also having to contend with environmental challenges, like climate change, that make feeding a growing population particularly difficult. An increase in the frequency of extreme weather and higher temperatures is affecting local agriculture. Half of the population of the broad MENA region already lives under conditions of water stress; with the population expected to grow to nearly 700 million in 2050, per capita water availability will be halved. The year 2020 also saw one of the worst desert locust outbreaks in over 23 countries, including Yemen and Djibouti, affecting livelihoods and food security for millions of people. (Soliman, 2021^[3])

Prior to the pandemic, in connection with climate change, the main challenges in combatting food insecurity in the region were a rapidly growing population with 66% of people expected to be living in urban areas by 2030 (see Chapter 5), and high dependence on imports for well-balanced diets. Sudden disruption in agro-food global value chains caused by the closure of restaurants, markets and hotels has also had a devastating effect on the fishing industry for countries bordering the Mediterranean. Limited supplies of protective material for producers and processing workers, scarcity in supplies, and logistical challenges are further complicating the harvest and export of fresh produce worldwide, especially in the fishing sector (FAO, 2020^[4]).

The broad MENA region is also a prime example of the logistical difficulties faced by both sides of the food production chain due to the pandemic. For example, while fishing exports in the region have significantly declined, the drop in fishery for North Sea Brown Shrimp in Germany has also affected the processing phase that takes place in Morocco (OECD, 2020^[5]). Meanwhile, employment subsidies and policy measures to ease the strain on personnel affected by the pandemic are unsuitable for small-scale fishers that are often self-employed without registered income or health insurance (UNCTAD, 2020^[6]).

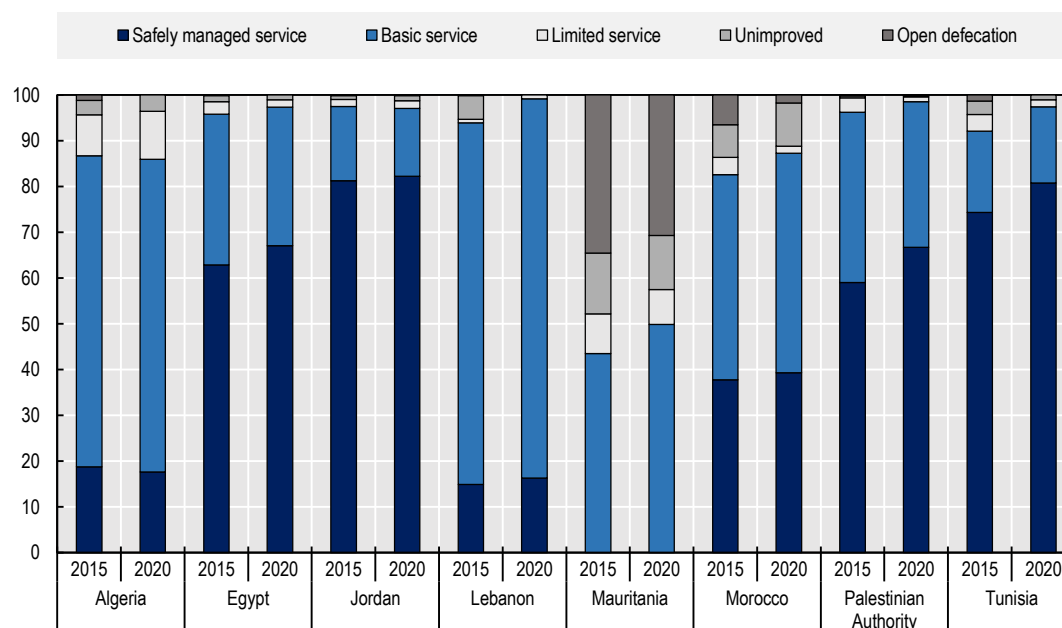
The scope to improve the quality of agricultural jobs and make the region's agri-food sector more attractive is wide. The need for a skilled workforce evidenced during the pandemic should be a sign for MENA economies to step up digital skills and vocational training for infrastructural positions, particularly in water sector maintenance and management. The sentiment for better-trained and better-equipped personnel for the water sector has also been echoed in MENA economies, for example Morocco, where training in entrepreneurship and climate-smart practices are taking place (Belhaj and Soliman, 2021^[2]).

Lack of sanitation and wastewater infrastructure has impeded the region's pandemic mitigation measures

- COVID-19 has revealed the importance of access to clean water supplies and services during pandemics, and how volatility or a lack thereof can have critical implications for both the effectiveness of crisis response efforts and for promoting growth and building resilience in a post-pandemic world. In many communities around the world, a lack of reliable and affordable water supply and sanitation services deprives people of their most basic protections against the spread of the virus. Prior to the pandemic, the WHO had reported that improving water, sanitation, and hygiene (WASH) conditions has the potential to prevent at least 9.1% of the global disease burden and 6.3% of all deaths (Prüss-Üstün et al., 2008^[7]).

After the pandemic began to take off, areas in the broad MENA region that already lacked safe sanitation services now also faced limited handwashing opportunities as a mechanism to mitigate the spread of infectious diseases, such as COVID-19 (Sadoff and Smith, 2020^[8]). Nearly 66 million people in the broad MENA region lack basic sanitation and hygiene services, facilitating greater chances of disease spreading (Figure 4.2).

Figure 4.2. Sanitation management levels in MENA countries, 2015-20

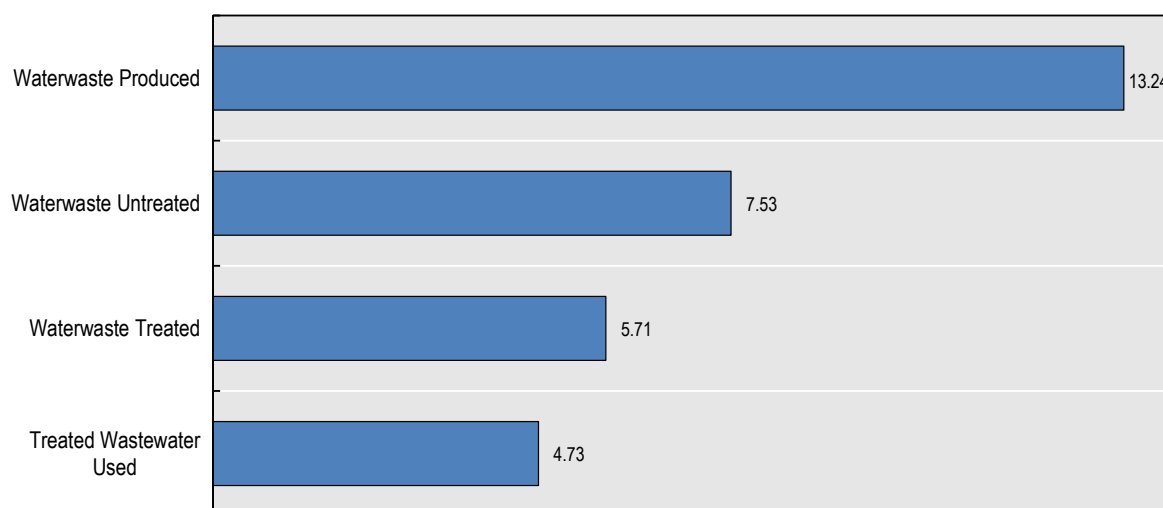


Source: World Health Organisation, <https://washdata.org/data/household#!/dashboard/new>.

About 64% (corresponding to 8.51 km³/year) of the region’s wastewater is not treated or reused, losing a potential source of water for instance for agriculture and landscape irrigation, industrial processes and non-potable urban applications (World Bank, 2018^[9]) (Figure 4.3).

Figure 4.3. Wastewater in the broad MENA region, prior to COVID-19

Wastewater volumes (km³/year)



Source: (UNICEF, 2021^[10]) <https://www.unescwa.org/sites/default/files/event/materials/afsd2018-special-session3-presentation-omar-alhattab-unicef-en.pdf>; World Health Organisation, <https://washdata.org/data/household#!/dashboard/new>.

Water scarcity and lack of access to clean water and sanitation as well as poor waste management (including on hazardous waste, e.g. bio-medical and health-care waste) in MENA countries accentuated the impact of the pandemic. While data on water use and resources in times of COVID-19 are lacking for the MENA region, as data sets are foreseen to be updated in 2022, estimates of impacts on water usage range from an additional 9 to 12 litres of water used per day per person, an average increase of 5 percent for households, further straining water resources. Increased demand for water in the domestic households of the Arab region, which includes all MENA countries, accounts for an additional USD 150–250 million per month in domestic expenditures to satisfy additional water needs owing to COVID-19 (UN ESCWA, 2020^[11]).

In coastal regions, the lack of or inefficient wastewater and sewerage infrastructure can impact the health and well-being of coastal communities. The development of new wastewater and sewerage infrastructure can create jobs while preventing future water-borne diseases, increasing water security and enhancing coastal water quality for tourism (World Resources Institute, 2020^[11]). Infrastructure development should be accompanied by better water governance. For instance, the OECD report *Water Governance in Tunisia* recommended to strengthen stakeholder engagement and improve access to information, and to develop a complete database on water and sanitation services, including service quality indicators to bring greater transparency to the water sector (OECD, 2014^[12]).

The COVID-19 pandemic emphasised the need for specialised employees in the water sector

Water demand in the region was growing at a rapid rate prior to the pandemic, driven by urbanisation, tourism development, irrigated agriculture and industrialisation. With increased water demand and a dwindling source thereof, securing and optimising the distribution of the water supply is becoming increasingly necessary. Increasing the efficiency of water supplies to ensure better water management in urban areas, productivity of agricultural water, improvement of the water-energy nexus, citizens' engagement and cooperation on cross-border waters will require new and reinforced human resources.

Despite these needs, the number of people employed in water supply and wastewater treatment facilities worldwide has consistently decreased, due to a lack of interest from new graduates in jobs in the water sector and a lack of resources to hire and retain skilled staff, especially in the public sector. It was estimated a few years ago that 3 out of 4 jobs globally are affected by access to water, where inadequate access can put extra pressure on workers' time and resources, potentially limiting economic growth and job creation, particularly in the coming decades (ILO, 2016^[13]).

COVID-19 has marked a new era of work modalities as increasing digitalisation of enterprises capitalises on remote working capacities. However, some sectors in the broad MENA region, such as water systems, have been slow to reach modern technological standards and thus lack specialists that can operate complex digital tools in the water sector.

Lebanon is in urgent need of personnel that can operate water management systems such as Water Balance, the GIS system, SWMS and SCADA systems (UNESCO, 2020^[14]). Specialists are also required to develop and manage call centres for water systems in Lebanon, as well as set-up and run e-payment modalities, but are few in numbers.

Meanwhile, skills associated with not only the digital aspect of the water sector (i.e. electronic technicians for control, automation, instrumentation and chemical technicians for water analysis, chemical dosing products), but also the mechanical side (i.e. plumbers, welders for steel and plastic pipes, fitters for special jointing like grooved for big pipes diameters, and electricians) are also currently missing from the workforce.

Policy considerations

- *Build up and support local value chains to lower agro-food import dependence and increase food security in the region.* The OECD's 3rd Roundtable on the Circular Economy in Cities and Regions discussed best practice showing that companies with a higher level of circularity and local production faced significantly fewer challenges during the crisis than their linear counterparts did. The latter faced financial and supply chain-related problems, while the formers' flexibility, innovation and close collaboration with supply chain partners made it easier to navigate the crisis. The OECD [Four Keys to resilient supply chains: Policy Tools for Preparedness and Responsiveness](#) include a series of recommendations on anticipating and minimising the risks against food supply chains (OECD, 2020^[15]).
- *Conduct WASH needs assessments at local and municipal levels to identify areas where COVID-19 mitigation measures are most disrupted by the lack of sanitation.* This is particularly important for rural areas that do not receive high national attention and are therefore already overlooked when it comes to infrastructure improvements and funding allocation for sanitation services. While the highest burden of poor sanitation remains in rural areas, rural sanitation requires less investment to meet national targets (Coombes, Hickling and Radin, 2015^[16]). In the context of COVID-19 mitigation and recovery measures, prioritising national investment in municipalities that are most affected by poor sanitation situations can be a strong method in deterring further spread of the pandemic, as well as avoiding further health issues and outbreaks.

As noted in the UfM Financial Strategy for Water, increasing revenues and allocations to the water sector to approach water financing strategically and optimise existing financial resources is key to addressing the region's need for funds (UfM, 2019^[17]). In fact, benefit-cost ratios for investments in water and sanitation services can be as high as 7 to 1 in developing countries (OECD, 2011^[18]). However, the broad MENA region has an investment gap in infrastructure that amounts to 7% of regional GDP to maintain and create new infrastructure over the next 5 years. While gaps exist in all sectors, cross-border infrastructure, road transport and energy sectors account for the largest ones with water and sanitation accounting for 5% of the funding gap (OECD, 2021^[19]).

Although international investors and development agencies have become increasingly active in water infrastructure investments in developing countries, the need for more investment outweighs the current financing flows. Gaps between current and future funding needs can come from high initial capital investments with long-term waiting periods for payouts, high transaction costs due to small or context-specific project nature, and a lack of data to assess complex water-related investments (OECD, 2018^[20]). Valuing water can also be challenging depending on the type of projects being undertaken, and clear plans on how revenues will be collected and used can be difficult to ensure for some countries facing changing conditions.

Investment in infrastructure projects in the MENA region plummeted due to COVID.

The UfM report on the role of PPPs in the financial sustainability of the water sector notes that the MENA countries are the priority members where implementation of the UfM Financial Strategy for Water is needed (UfM, 2019^[17]). In addition, this report finds that COVID-19 has severely impacted greenfield investments, which are the dominant mode of entry of FDI in most of the MENA economies. OECD 2014 *Water Governance in Jordan* highlighted that in order to make private sector participation work for large capital projects in the water sector, a number of framework conditions are required to meet the upfront costs of investment and to transfer technical knowledge. These include: a strong regulatory framework, administrative capacity, financial sustainability and strategic planning of projects (OECD, 2014^[21]).

The OECD estimates that capital expenditures on announced greenfield projects declined by 80% in the eight focus economies in the first half of 2020 compared to the first half of 2019, a significantly greater

decrease than in emerging and developing economies as a whole (42%) and OECD countries (17%) (OECD, 2021^[19]). However, although infrastructural investments decreased in comparison to previous years, new investments in the water and waste sectors are still being signed, albeit at a slower pace and mostly through development banks.

- In Egypt, a new project concerning the depollution of the Kitchener Drain in the Nile Delta Region via infrastructural improvements to domestic wastewater collection and treatment, solid waste management and rehabilitation of the drain infrastructure was signed in July of 2018.
- In Tunisia, the House of People's Representatives (ARP) has approved a loan of 295 million Tunisian dinars (over USD 107.3 million) from the Kuwait Fund for Arab Economic Development (KFAED). The National Water Supply Company (Sonede) will use the funding to provide drinking water in several cities across the country (<https://www.afrik21.africa/en/tunisia-parliament-approves-107m-from-kfaed-for-drinking-water-in-urban-areas/>).

Nature based solutions offer a cost-effective approach for water resource management and disaster risk to ensure a resilient post-COVID-19 recovery

COVID-19 emphasised the relationship between the well-being of ecosystems and communities. Nature based solutions can support green and resilient COVID-19 recoveries, as they allow for cost-effective infrastructural solutions, while simultaneously providing environmental, social and economic benefits and help build resilience (OECD, 2020^[22]). These solutions are most often used for management of water quantity and quality, flood risks and coastal hazards, and have many long-term co-benefits, notably, human health, food and energy security and decreased coastal erosion. There are recent examples of nature based investment projects implemented in the MENA region.

- In Morocco, in partnership with GIZ, a project to protect genetic resources and retain their fair use has been ongoing since 2017 in response to over-utilised and increasingly threatened ecosystem services. The programme improves regulatory frameworks and municipal development plans, increases awareness raising and impact monitoring capacities as well as provides assistance in making use of biological resources. The project is expected to be applied in Algeria, Tunisia, Palestine, Egypt, Jordan, and Türkiye by 2022.
- In Tunisia, in partnership with GIZ, a regional programme for developing capacity for forest ecosystem-based adaption to climate change is tackling overexploitation of forests and impact of climate-related disasters on forests through connecting international actors with national forest management services and capacity-building. The project also has ties with Morocco, Algeria, Tunisia, Lebanon, and Türkiye.

Policy considerations

In order to aid in the UfM's constant efforts to ensure water security, protect the Mediterranean Sea and promote green and blue economies, further investment to update and optimise the region's limited water-related infrastructure and the prioritisation of water and environmentally-conscious policies are needed. To combat the impact of the pandemic, improve social and economic well-being and capitalise on the region's coastal assets policymakers should:

- *Increase investment in water-related projects and infrastructural improvements* on a local, national and regional level. As water supplies were severely impacted over the last two years and water continues to grow scarce, governments will have to invest heavily to both upgrade existing systems and build new solutions. Infrastructure projects to optimise water resources are needed such as large-scale water storage and recycling systems, flood control systems with an emphasis on water retention, sewage system upgrades, and desalination plants. A more modern approach to infrastructural improvements that combines supply and demand management is needed,

especially in a region where 80% of water is consumed for agricultural purposes. In practice, this means increasing resource efficiency through a range of techniques such as including crop planning. The UfM has already identified Jordan, Lebanon and Tunisia as key areas for investment opportunities in the water and climate sectors in its report on *Identification of Water and Climate-Related Investment Opportunities* (UfM, 2021^[23]). While the report highlights investments in water infrastructure, including for food-based investments, agricultural support can be an effective way to ensure both water and food security. Nation-wide or regional level farming irrigation improvements should be considered a priority for regional infrastructure projects as a large majority of water use is distributed to agricultural processes and would promote better allocation of water resources while ensuring a higher degree of food security for the region.

- Continue integrating nature based solutions into national policy frameworks to create an enabling environment that facilitate take up by both public and private agencies. These solutions offer a cost-effective alternative to grey-infrastructure investments that integrate social and environmental priorities into infrastructural changes. There is a need to combine grey, e.g. dams, seawalls, roads, pipes or water treatment plants, and green infrastructure, especially in the case of flood control. NbS can provide multi-faceted benefits to different policy areas at the same time such as water, climate, health, amenity, biodiversity.
- Design water investments along strategic investment pathways to consider how projects can be designed and sequenced to deliver resilient water systems over the long-term and under changing conditions (OECD, forthcoming). Lack of data and analyses makes it more difficult to secure investments for and manage infrastructure projects, hampering the ability of governments to progress water and sanitation infrastructure. The UfM report *Toward a Sustainable Blue Economy in the Mediterranean region* notes the need to increase data collection and evaluations on marine challenges like litter and pollution (UfM, 2021^[24]).
- Strategically promote the role of intermediaries in sustainable water financing utilities for small scale water and sanitation service providers. In 2019, the first UfM Annual Conference on Water Investment and Financing (UfM, 2019^[17]) discussed how to engage private financiers for water investments. A recent paper on the role of intermediaries to facilitate water-related investment highlights the need to shift from an opportunities approach to a more strategic one, which includes focusing on strengthening the enabling environment for investment (Lardoux de Pazzis and Muret, 2021^[25]). Further, OECD work on blended finance for water and sanitation highlights how development finance can be used more strategically to crowd in commercial finance (OECD, 2019^[26]). Recent OECD analysis in this area can be a useful reference for MENA countries, to aid governments in designing strategic approaches for the involvement of private investors in water infrastructure that avoid gaps, redundancies and misalignments (OECD, 2021^[27]).

Sustainable blue economy

Initiatives to curb marine plastic pollution have begun to take form in the region, but the pandemic brought the progress of positive ecological impacts to a standstill

Blue economies are known to support the preservation and regeneration of the marine environment and provide a valuable tool for positive ecological change (Sharafuddin and Madhavan, 2020^[28]). However, blue economies require sustainable development approaches to coastal resource, a difficult objective given that the Mediterranean Sea collects 570 000 tons of plastic waste every year, accounting for approximately 7% of the plastic pollution from land to oceans and causing an estimated USD 770 million in economic losses to marine ecosystems and industries. The Maghreb and Mashreq regions in particular have high rates of plastic mismanagements, with more than half of plastic waste flowing into the sea (Acerbi et al., 2021^[29]).

- Egypt is by far the highest contributor to macroplastic pollution from mismanaged waste into the Mediterranean sea with 74 031 tonnes per year, more than double the second highest macroplastic polluter, Italy, with 34 309 tonnes per year. Five of the top ten localities responsible for total water leakage into the Mediterranean Sea are in Egypt, i.e. Muntazah, Waraq, Umraniyya, Kafr Al-Dawwar and Al-Husayniya. This is partially due to the Nile's connection into the sea. Algeria and Tunisia also account for a significant portion of such pollution, ranking 4th and 6th highest macroplastic polluters into the Mediterranean respectively (Boucher and Billard, 2020^[30]).

Moreover, due to its trends of circulation of currents, the Mediterranean sea's capacity to accumulate plastic pollution is high but its ability to release it is extremely low (Cozar Cabanas, 2020^[31]). Aside from large plastic litter polluting beaches and harming wildlife, toxic microplastics and nanoplastics present a greater threat to marine life. However, with the exception of Egypt due to the runoff of the Nile river into the Mediterranean Sea, MENA countries remain low contributors of microplastic pollution into the sea (Boucher and Billard, 2020^[30]).

MENA countries have begun to address marine plastic waste through national strategies:

- Morocco is developing a *Coastlines without Plastic* national strategy.
- Tunisia is identifying marine plastic pollution hotspots.
- The World Bank is supporting Egypt, Lebanon and the Palestinian Authority in developing programmes and activities to fight marine plastic pollution (Hasegawa, Acerbi and Anouar, 2021^[32]).

Initiatives in the form of pilot programmes to limit the use of plastic and reduce plastic-related waste had already taken form in some of the region's countries; for instance:

- After Morocco banned the distribution of plastic bags in 2016, the government's marine litter projects enabled associations to produce and test durable carrier bags using recycled materials. It also allowed for the testing of a refund based system for plastic bottle and aluminium can collection for recycling circuits in an effort to prevent and minimise the use of plastics that pollute the Mediterranean in a way that could be replicated in other MENA countries.

However, initiatives to curb marine plastic pollution were hampered by increased need for single-use plastic coupled with ineffective waste collection systems. The MENA region is particularly stuck in the systematic failures of plastic value chains that do not hold producers accountable, generate high plastic waste, have limited collection and treatment capacities, and offer low profitability in the recycling sectors (WWF Mediterranean Marine Initiative, 2019^[33]). Strengthening waste collection, recycling and disposal systems, such as through the introduction of extended producer responsibility, can increase recycling rates of plastics, halting the discharge of plastic debris into the ocean (OECD, 2020^[34]).

Although microplastic pollution into the Mediterranean has many sources, most origins in the MENA countries' stem from waste mismanagement. Poorly managed wastewater and landfill infrastructure that is unable to keep up with rapidly growing populations is the main source of microplastics entering the marine environment in most of the region. For example:

- Tunisia's waste collection and transport has accounted for 75-100% of municipalities' solid waste management budget in some years, while separate collections for solid waste and plastic remain especially low.
- Lebanon faces a particular challenge when it comes to proper disposal of waste and plastics. Landfills are a chief contributor of microplastics into the Mediterranean, as with other MENA economies. Beirut's harbour is surrounded by three coastal landfills alone, one of which closed and two that are active but that reached their maximum capacities in July 2019 (Kazour et al., 2019^[35]). Waste management infrastructure in the country was already lagging compared to other Mediterranean coastal countries prior to the pandemic, with the average composition of municipal

solid waste generated in Lebanon composed of 15% plastics, two to three times higher than France (El-Hoz, 2019^[36]). The country has been further impacted by the massive explosion on 4 August 2020 at Beirut's port that killed more than 200 people and destroyed the landfill's composting and sorting plants. The volume of incoming waste, already compounded by increased single-use plastics for sanitary equipment due to COVID-19, increased at other landfills as sanitation services were forced to reroute to new destinations with decreased efficiency in sorting capacities, leading to further proliferation of marine litter.

*COVID-19 protocols provided temporary relief for the Mediterranean's **water and land environments fuel and air contaminants but pollution levels** are rebounding to pre-pandemic levels.*

Studies have shown that air quality (in the form of four primary air pollutants: CO₂, CO, NO_x, and CH₄) in urban Mediterranean areas had improved in the periods where the strictest COVID-19 measures were introduced, with mean NO_x levels during the lockdown period down by 32% compared to the same period in 2019 (Sifakis et al., 2021^[37]). However, greenhouse gas emissions are rapidly reverting to pre-pandemic levels after the temporary decrease due to economic slowdown, leaving levels far from reduction targets (UNEP, 2021^[38]).

The decrease in activity on the coasts from business closures and a decrease in visitors on beaches have also protected the marine environment from other forms of pollution such as plastics from beachgoers, hydrocarbon spillage, microbiological loads, and noise levels (Ormaza-Gonzalez, Castro-Rodas and Statham, 2021^[39]). Coastal water quality has also seen improvement as water surface temperatures returned to normal at the height of the pandemic due to decreases in industrial discharge, as was the case in Tangier, Morocco (Cherif et al., 2020^[40]).

However, while marine litter from coastal tourism and leisure goes decreased during the pandemic, the introduction of COVID-19 related personal protective equipment debris such as masks and gloves into the Mediterranean has become a new challenge. Not only were the products used as precautionary instruments in the fight against COVID-19 made of plastic, but they were also cost-effective and easily-produced on a mass-scale, allowing fiscally constrained countries to urgently acquire necessary protective equipment. Additionally, the initial decrease in oil prices, especially in the region, outpriced recycling and eco-friendly solutions, leading to further consumption and discarding of plastic-made products.

Rethinking subsidies and taxing methods to promote environmentally friendly practices can lead to greater sustainability of resources.

Environmental fiscal reforms through taxation and pricing measures offer the opportunity for MENA countries to raise fiscal revenues while furthering the environmental goals included in the UfM priority areas; for instance, eco-system conscious policies like taxing and charging for waste, water abstraction, water pollution and chemicals. This form of government intervention increases market incentives for firms and households to consider environmental damage when it comes to production and consumption methods, improving environmental outcomes in the long-term (OECD, 2017^[41]).

Rebuilding MENA's coastal and maritime tourism in the wake of COVID-19 is an opportunity to integrate green and sustainable practices into tourism agendas

Making tourism businesses more sustainable benefits local communities and can create stronger linkages with the local economy, increasing local development potential. Coastal MENA economies should focus on policies and projects that support tourism *development* rather than tourism *growth*. Policies in the tourism sector historically prioritise growth, which relies on an increased number of arrivals or overnight stays that do not necessarily imply long-term economic prosperity, as is the case with tourism development (OECD, 2020^[42]). Local and national tourism policies should be refocused on increasing local income and employment while considering development planning that take environmental benefits

and capacity into account. Jordan has, for instance, taken important steps in this direction by developing sector-level action plans for each of the green economy sectors, including tourism, within its Green Growth National Action Plan 2021-2025 (GGGI, 2020^[43]).

Prior to COVID-19, some countries within the broad MENA region had already been active in moving towards greener models of tourism. Tunisia, for example, with the help of SwitchMed implemented several pilot programmes focusing on sustainable practices in ecotourism and the ecotourism business model. The projects aimed to provide advice on potential implementation measures related to energy, water and waste, as well as mentoring on the eco-labelling application process and fundraising opportunities for small and medium-sized tourist sites in the Southern Mediterranean region (UNIDO SwitchMed, 2018^[44]).

Policy considerations

Fragile marine ecosystems that have been slowly recovering due to a lack of traffic during COVID-19 will continue to be adversely damaged without deterring incentives to stave off biodiversity destruction. MENA countries may consider the following actions to ensure a sustainable blue economy:

- Work with local and municipal governments to promote economic growth, employment, innovation and social well-being in blue cities. As most of the regions capital cities and densest cities are located on coasts, local governments are key players for ensuring that resilient, inclusive, sustainable and circular practices are used for city management. Blue economic activities such as tourism and fishing take place, create value and provide employment at the local level in these countries (OECD, 2021^[45]). Cities have an important role to play, as they hold competences on sectors that are likely to have an impact on blue economies activities such as waste and land use, while water related investments in cities and responding to water risks are likely to affect how blue economy activities are carried out. Governments can look towards the OECD's principles on Water Governance on how to ensure effectiveness, efficiency, and trust and engagement (OECD, 2015^[46]).
- Expand economic policy instruments for ocean conservation and its sustainable use, among other positive areas of environmental well-being and conservation. A range of financial instruments are mentioned throughout the UfM Financial Strategy for Water as a way to fund the water sector through public means. The Strategy can be usefully complemented by drawing upon the OECD PINE database (OECD, 2020^[47]). The information collected in the database indicates that environmentally related taxes are the most effective policy tools to encourage environmental protection in OECD countries. Environmentally conscious taxes can cover a range of aggravated sectors for MENA countries, including energy products (e.g. vehicle fuels), motor vehicles and transport services, and measured or estimated emissions to air and water, ozone depleting substances, sources of water pollution, waste management and noise, as well as management of water, land, soil, forests, biodiversity, wildlife and fish stocks.
- Promote marine conservation by implementing environmental support that promotes biodiversity, for instance support for responsible small-scale fishers and sustainable management. MENA countries can also implement payments for ecosystem services (PES) to promote catch limits or quotas and use non-compliance penalties to disincentivise non-licensed activities.

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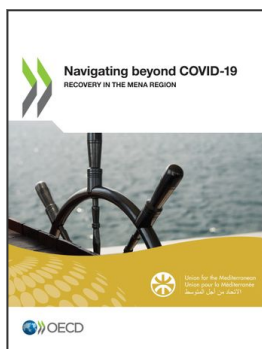
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Notes

¹ In this chapter, MENA region or MENA countries refer to the group of countries that are members of the Union for the Mediterranean. These countries are: Algeria, Egypt, Jordan, Lebanon, Mauritania, Morocco, Palestinian Authority and Tunisia. Where the term “broad MENA region” is used, it refers to the group of MENA countries that include UfM and non-UfM members.



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