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KUWAIT

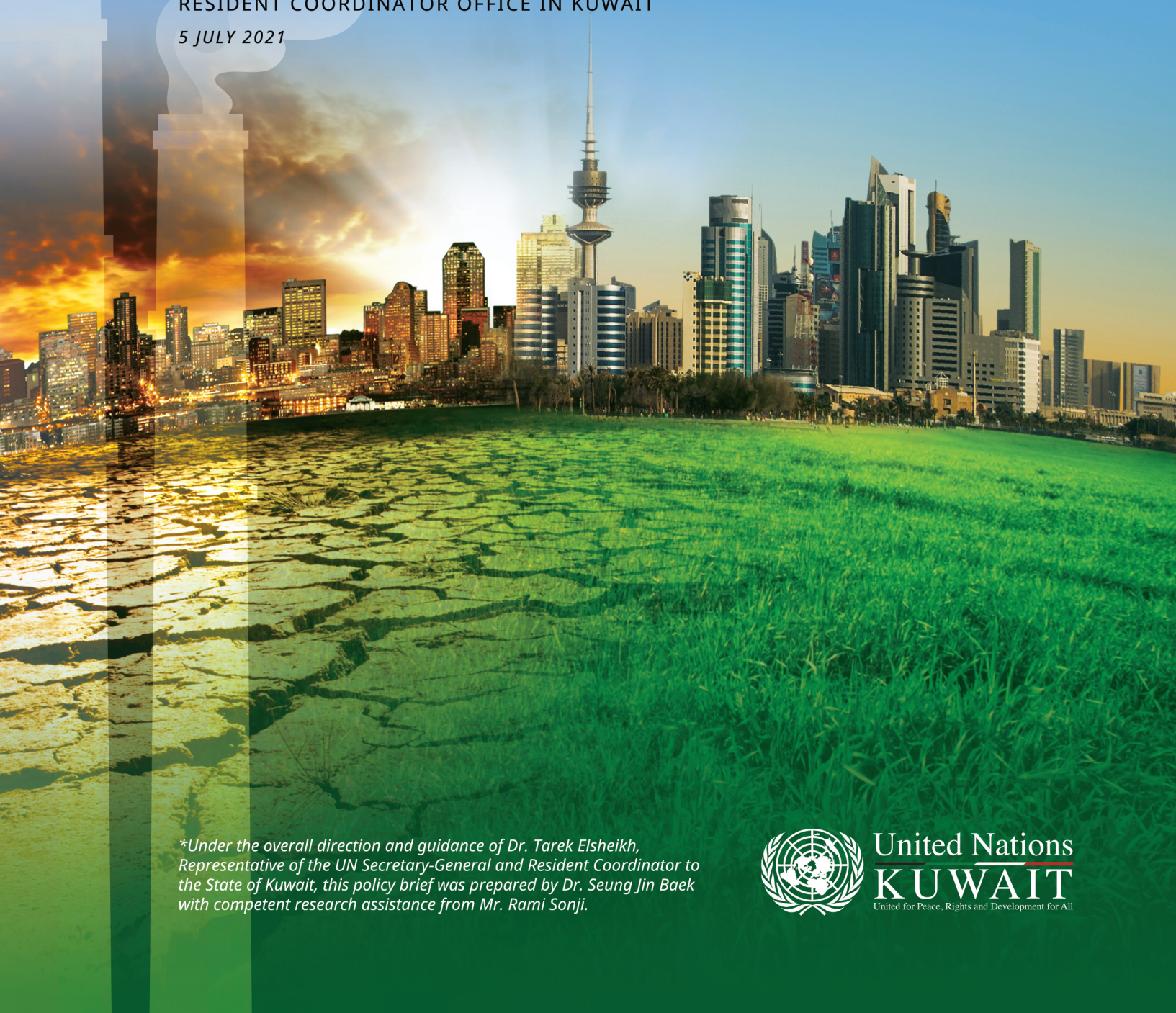


EXPLORING CLIMATE ACTION IN KUWAIT

A FOCUS ON ENVIRONMENTALLY SUSTAINABLE FINANCE

UNITED NATIONS
RESIDENT COORDINATOR OFFICE IN KUWAIT

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EXECUTIVE SUMMARY

Over the past few decades, it has been a widely accepted phenomenon that industrialization in Kuwait has been realized largely based on a fossil fuel-driven production method. It does, however, contradict the contemporary global normative force of low-carbon growth. In effect, fossil fuel accounts for over 90 per cent of the domestic energy consumed in the country. As such, the trend of per capita GDP in Kuwait has inevitably been associated with the dynamics of CO₂ emissions. Besides, such growth pattern has been characterized by the inefficient use of available energy resources, further causing a greater carbon footprint combined with growing energy needs from population growth and rising living standards. **This growth pattern without a proactive policy for the country's long-term climate resilience raises doubt about the sustainability of future growth trajectory in this regard.**

Kuwait is currently confronted with a series of climate challenges – the country is known for its harsh climate, hot weather and frequent sandstorms, all of which pose serious health threats to its citizens and are further associated with unfavorable dynamics in socio-economic activities. The marine ecosystem is particularly at risk largely due to climate change affecting increased temperatures of sea surface waters. Such a climate trend especially puts a burden on the fisheries sector, the second largest after oil-related industries. Furthermore, the country's soil is considered inadequate for farming, attributed to the relatively small amount of rainfall. Partly as a consequence, Kuwait is restrained by the amount of land available for farming and the number of crops which further put the country's food security at serious risk. In the meanwhile, fresh water is a scarce resource, owing to Kuwait's geographical features, including the absence of rivers and the small amount of precipitation. Coupled with such restrains, the increasing population and its associated water demand remain additional burdens. As a result, Kuwait has both one of the highest per capita energy consumptions in the world and one of the highest waste generation rates, collectively resulting in severe air pollution.

In response to those stylized climate challenges, the Government of Kuwait has made significant efforts by designing and implementing several environment quality-enhancing projects and programs. For the electricity sustainability initiative, the country invests in energy efficient desalination plants, while projects on solar and wind energy parks are also underway, thereby targeting to increase the share of renewable energy in the electricity mix. Furthermore, the country has scaled up its efforts in improving data infrastructure to be used for environmental research that could further better inform decisions on environment policies. Meanwhile, wastewater treatment plants are being built for industrial use, which could further be used for the irrigation of green spaces that are being built in the fight for climate conservation. In terms of promoting behavioral change, the government attempts to strengthen awareness raising initiatives, collaborating with various non-governmental organizations to increase the sustainable/efficient use of water resources; individual-level recycling and changing its waste management practices to environmentally responsible ones are also emphasized in the form of awareness campaigns.

Notwithstanding such tremendous nationwide efforts, there still exists several policy gaps. These can be categorized into: (i) the still-high level of energy consumption and air pollution; (ii) a relative lack of modern technologies employed in the sectors of seawater desalination, wastewater treatment and waste management facilities in an integrated manner; (iii) a weaker understanding (uncompetitive knowledge base) of the complexity between climate change and socio-economic dimensions; and (iv) a lack of proactive measures against climate change, engaged by the private sector in terms of finance and investment. Although the first gap can be associated somewhat with macro-level industrial strategies, the other three gaps could be addressed in a more effective manner by embracing a focus on sustainable finance practices. It is mainly because doing so could strengthen private sector engagement and any form of capital (both human and financial) would thus contribute to environmentally-friendlier processes, particularly on the technology front. While being engaged in sustainable finance practices, the continuous efforts on promoting a culture of recycling and responsibility especially at the individual and community level would be required to maximize the likely impact on society as a whole.

The experience of neighboring GCC countries, where various sustainable/green finance practices have been incorporated in their national climate actions, is instructive. The Government of Bahrain, for instance

collaborates with the National Banks Association to promote Environmental, Social, and Governance (ESG) reporting and guidelines while granting loans to innovative entrepreneurs with green ideas. The Bahrain Stock Exchange is also committed to such ESG practices. In the meanwhile, the United Arab Emirate could be considered at an advanced level in many aspects of environmentally sustainable finance. For instance, a special environment fund was created for the private sector to transition towards greener practices; meanwhile, a new legislation was passed aimed at recycling 75 per cent of all municipal solid waste, and ESG guidelines were adopted by the Dubai Stock Exchange and many financial institutions in the country. In Saudi Arabia, awareness is being raised to imbed recycling and other environmentally friendly practices into society; and regulations are being employed to promote green projects – i.e., the private sector participation law aims to promote private investment, strengthen public private partnerships and regulate the national Privatization Program by establishing a more transparent legislative framework.

In short, after a series of systematic discussions and analyses (i.e., an identification of the five stylized facts of climate challenges, a policy gap assessment and a thematic review of neighboring GCC countries), **it is recommended that the Government of Kuwait take into account the following five policy ideas:**

- **ESG Standard on Reporting and Disclosure:** Stimulate ESG reporting and disclosure practice by (a) designing an incentive mechanism to the reporting companies, (b) providing capacity building for materiality assessment and alignment with business strategies, (c) shaping a supportive regulatory framework in relation to ESG practices and (d) targeting sustainable finance policies and rules to become mandatory. The initiative can primarily focus on the firms operating in sectors, which concern waste, efficient desalination plants, wastewater treatment plants as well as making use of underdeveloped open spaces for more greenery;
- **Kuwait Green Innovation Fund:** Establish a blended financing window (with the principle of “vulnerability-responsive”) by partnering with leading banks for sustainable/green transition projects and initiatives, and potentially categorizing a (a) *Green Energy* pillar (renewable energy project), (b) *Clean Air* pillar (air pollution reducing project) and (c) *Blue Ocean* pillar (biodiversity and food security project), through the provision of loans (SDG-linked loans) or performance-based payments under the technical assistance facility, which mainly prioritizes MSMEs, entrepreneurs and women-led small businesses;
- **Integrated Waste Management Public Private Partnership:** Promote a public-private partnership for a waste management system that focuses on an integrated system of “prevention-sorting-recycling-recovery-reuse” towards a sustainable waste treatment factory and logistics. This should be accompanied with a well-structured regulatory framework in collaboration with the WRDM and WTRT programs in relations to MYAH and TADWEER initiatives under the KNDP. Various procurement options, depending on the nature of proposed waste management projects, need to be explored in terms of a feasibility assessment, including solicited or unsolicited procurement schemes, Minimum Revenue Guarantee and Redemption of Excess Revenue, New Risk-Sharing Structure as well as procurement schemes (e.g., BTO, BTL, BOT, BOO);
- **Kuwait Climate Action Lab:** Form an innovative action platform under co-management among national environmental authorities, international organizations, and partnering with the private sector, universities and NGOs, with a focus on a (a) *Climate Fund Partnership* cluster in the strengthening of a global and regional network for green funding and collaborating with green promoting platforms in place, (b) *Knowledge for Advisory* cluster in providing innovative and technical advice while exploring opportunities to establish a green material bank to cope with construction-related pollution and (c) *Tool of Change* cluster in integrating awareness raising efforts for behavioral change at the individual, community and corporate level; and
- **Climate-Related Statistical Capacity:** Integrate a set of climate change-related indicators with particular focus on the SEEA (System of Environmental Economic Accounts) framework into the existing national statistical system (i.e., eMISK, Baetona and CIS) that could help better inform decisions on climate action and environmental policies towards sustainable economic transformation. The set of proposed indicators consists of five areas including drivers, emissions, impacts, mitigation, and adaptation, thus associating emission with indicators in social, economic and environmental domains and sustainable development.

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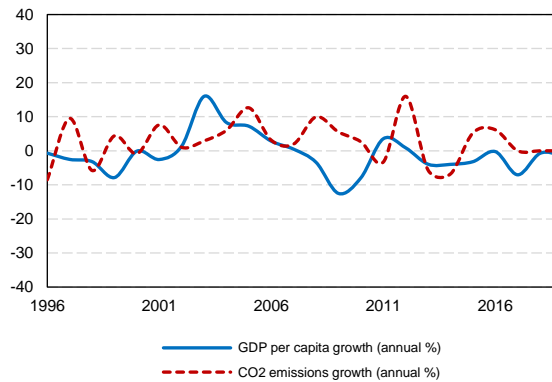
1. Stylized facts about climate challenges in Kuwait

Over the past few decades, it has been a widely accepted phenomenon that industrialization in Kuwait has been realized largely based on a fossil fuel-driven production method. It does, however, contradict the contemporary global normative force of low-carbon growth. In effect, fossil fuel accounts for more than 90 per cent of domestic energy consumption (with over 50 percent and nearly 40 per cent of the system being powered by oil and natural gas, respectively). As such, the trend of per capita GDP in Kuwait has inevitably been associated with the dynamics of CO₂ emissions (see Figure 1.1). Besides, such a growth pattern has been characterized by the inefficient use of available energy resources, further causing a greater carbon footprint combined with growing energy needs from population growth and rising living standards as well as the increase in temperature in recent years. This growth pattern without a proactive policy for the country's long-term energy resilience raises doubt about the sustainability of future growth.

The necessity for a sustainable energy structure is increasing as the country is highly vulnerable to climate change, owing to its geographical characteristics. For instance, the country is located in the most water-stressed region in the world. Therefore, a large portion of its population's livelihood is greatly exposed to climate risk especially concerning water and

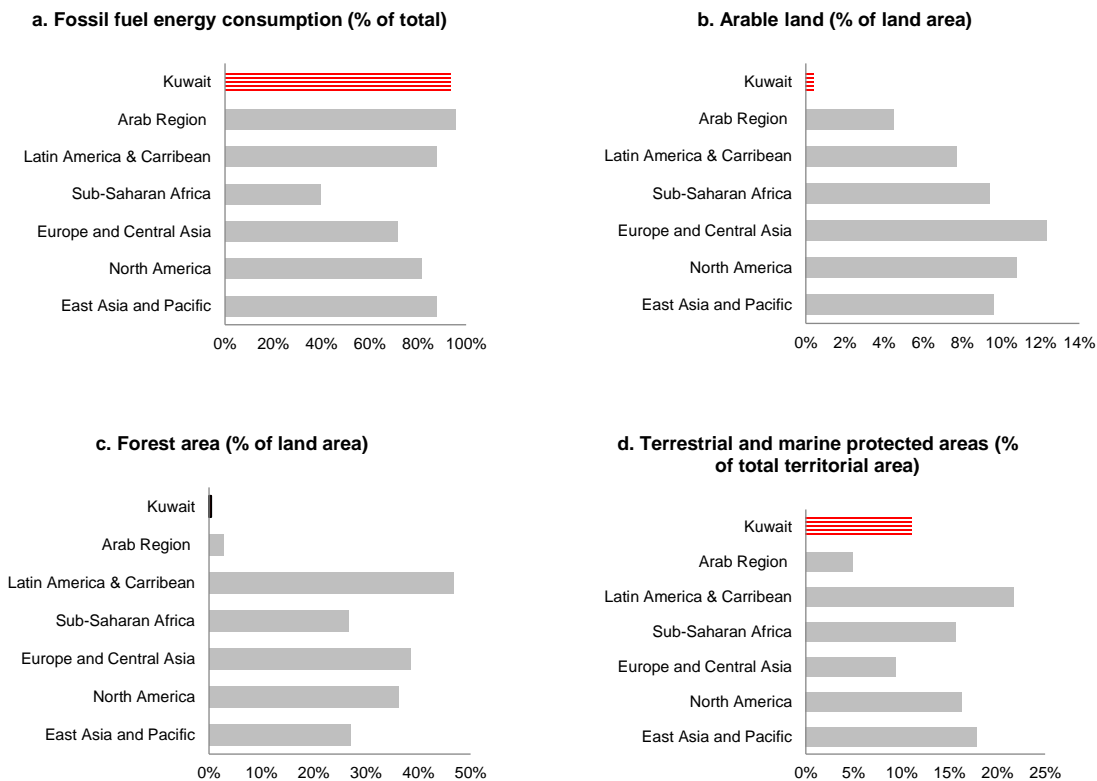
food security. Besides, an unpredictable weather pattern caused by climate change effects is likely to impact agriculture in the country. This is mainly due to high temperatures, droughts, floods, soil degradation and extreme weather events. The negative effect of climate change, thus, is likely to pose a severe threat to the human health and sustainable development for Kuwait and its citizen (see Figure 1.2).

Figure 1.1. Carbon dioxide emissions vs. per capita GDP growth in Kuwait



Source: Author's own elaboration on the basis of the WDI (2021)

Figure 1.2. Climate change vulnerability in selected countries/regions



Source: Author's own elaboration on the basis of the WDI (2021)

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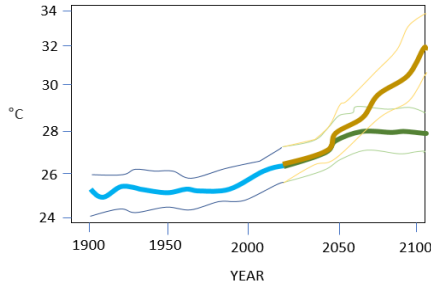
Unaccommodating weather

It is true that the country has adapted to its very harsh weather conditions over the past few decades. Kuwait is positioned on a dry tropical and sub-tropical desert with a hyper arid climate and its annual rainfall has a range of 75 – 150 mm, reaching as high as 600 mm per year. Meanwhile, summers and winters in Kuwait experience significantly different temperatures.

The temperature can reach up to 48 °C and has an average of 44 °C in the summer. During these periods, which are significantly longer than the winters, aggressive northwestern dust storms are very common events. From March through to April, the frequent dust storm¹ events rose from 8.3 days per year in 1987 to 97.4 days in 2016. In the later summer months, between May and September, the climate's humidity is felt. By the end of October, the winter-summer cycle starts again, with the temperature dropping to as low as -6 °C at night-time. Meanwhile, daytime sees a wider range of temperatures at 10 – 17 °C (Kuwait National Adaptation Plan 2019-2030, 2019).

Overall, temperatures are expected to increase from 2.4 to 4.8 °C by the end of this century according to the World Health Organization (WHO, 2015) (see Figure 1.3). Under the current emissions scenario, the mean annual temperature in Kuwait is projected to rise by about 6.2°C on average from 1990 to 2100. If emissions decrease rapidly, the temperature rise will be limited to about 1.7°C.

Figure 1.3. Projected scenario of temperature evolution in Kuwait



Source: WHO Kuwait Climate and Health Country Profile (2015)

A difficult soil for farming

The nature of Kuwait's soil restrains farmers in the number of crops they can plant and the methods they can use. Due to the country's arid climate, it is nearly impossible for the soil to form, as the evaporation rainfall ratio is very low, and most parent material is formed from marine-origin sedimentary rocks. The soil is coarse and has a high saline content. Vegetation in these soils is not very useful due to the ineffectiveness of the biological weathering to provide organic matter. Strong wind erosion, which displaces the topsoil layer, also limits the soil formation. Very small percentages of the land are being used

¹ These frequent dust events significantly contribute to an increase in air quality particulate matter PM2.5 and PM10. As a result, the annual PM2.5 levels have a median of 75 of µg/ m3, which is at least seven times the annual recommended limit set by the WHO.

² Approximately 85 per cent of the Protected Agriculture is carried out in uncooled (57 per cent) and cooled (28 per cent) plastic tunnels, with the remaining

for agriculture, about 5.7 km². The water used for plants is saline water from wells. This, along with other factors like wind erosion, low rain, high evaporation, temperature, and the hardness of the soil, all limit the productivity of the soil.

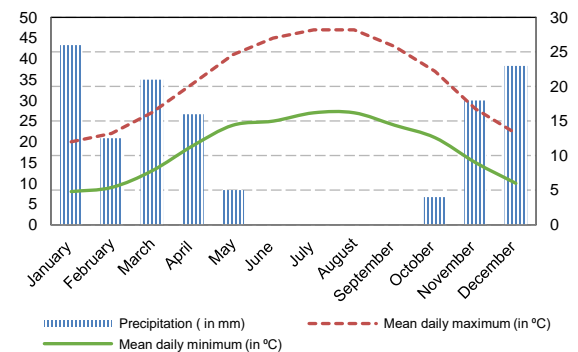
As a result, the total area that could be potentially used for agriculture is marginal, less than 1 per cent of the country's total land and the area that is actually used for cultivation is even less so (see Figure 1.2). There are several areas in the country equipped for agriculture: the Ahmadi occupies about 3,935.3 ha, the Jhara district is 6,206.9 ha. Meanwhile, the water used for irrigation is either groundwater or from nonconventional sources, amounting to 7,742.1 ha and 2,400.1 ha, respectively (FAO, 2013).

Due to the country's harsh climate and the huge negative impact the Gulf War had on the land and agriculture, farmers had to rely on Protected Agriculture,² which ranges from "simple uncooled and unheated plastic tunnels to very sophisticated computer-controlled, cooled and heated, metal-frame glasshouses. Cucumber and tomato are the two main crops grown in the Protected Agriculture, accounting for approximately 90 per cent of the total area".

Lack of freshwater resources

Concerning water scarcity, the country has few natural fresh water sources³ (see Figures 1.4 and 1.5), so it has adopted some costly energy techniques to overcome this challenge. With population growth increasing, water from wells was no longer enough, and so the government built a desalination plant in Kuwait in 1953, followed by two others in Doha with the capacity reaching 138 M gallons per day, to keep up with the increasing water demand caused by the population growth. A third plant was built for desalination by reverse osmosis nearby. Increased temperatures may have indirect effects on the water desalination, such as increasing seawater salinity and water irrigation demands. There are three main water sources for urban and agricultural uses in Kuwait, desalinated water groundwater and treated wastewater.

Figure 1.4. Average annual temperatures and precipitation



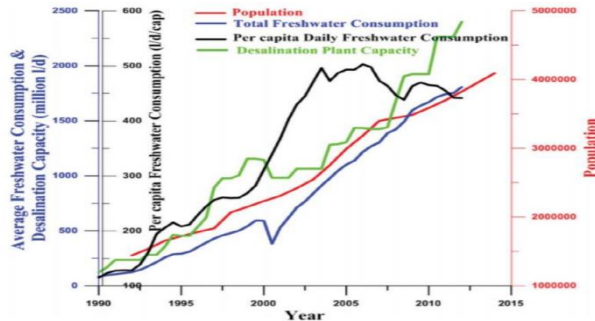
Source: Author's own elaboration on the basis of Kuwait National Adaptation Plan 2019-2030 (2019)

15 per cent in cooled greenhouses covered with fiberglass, glass, or acrylic material.

³ Endogenous precipitation is 121 mm/year (long-term average), which amounts to 2.156k 10⁹ m³/year in 2014, which is respectively low. It increases to 39.18 mm in December 2017 from 13.26 mm in November of 2015 as shown in the figure below.

In effect, there are no permanent rivers in the country and when considering how high the level of evaporation is, streams and runoff water only last a few hours after rain. Groundwater replenishing is even scarcer due to how dry the soil is and the infamous evaporation rate. The groundwater produced internally amounts to nothing, as too the surface water, meaning that there is no overlap between the ground and surface water.

Figure 1.5. Variation of freshwater consumption, population growth, and desalination plant capacity in Kuwait 1990-2015



Source: Mukhopadhyay and Akber (2018)

Marine ecosystem at risk

Over the years, the country has experienced the extinction of many species due to extensive and unregulated hunting,

habitat loss and fragmentation, genetic pooling, species isolation and the loss of proper habitat for specific species. And unless immediate and drastic changes and actions take place to protect and preserve these species, Kuwait will continue to suffer a drop in its biodiversity.

A ranking of climate change risks helps identify the most urgent risks and vulnerabilities that need to be addressed, and to do so each risk is given a grade on multiple criteria then a weighted average is computed (see Table 1.1). In particular, increased Sea Surface Temperature (SST), increased salinity and ocean acidification were given the highest scores among the climate change risks. Increased SST was given the highest score (5) in all criteria because it is the most threatening risk in coastal and marine environments as it has already reached intolerant levels (Al-Yamani et al., 2004; Glibert et al., 2002). Furthermore, increased salinity was given a score of four in damage, risks and impact since organisms living near estuarine systems such as those in coastal and marine environments of Kuwait exhibit a degree of tolerance to the salinity fluctuation. Ocean acidification was given a score of four in mitigation since it is caused by very complex factors including anthropogenic activities that can be controlled. The high SSTs⁴ in summer seasons and overall increasing SSTs due to climate change (Al-Rashidi et al.,2009) pose a serious threat to these valuable ecosystems. Coral reefs experience thermal stress during winter and summer seasons. Ocean acidification along with other stressful factors, such as increasing seawater salinity⁵, are expected to have serious negative effects on biotic and abiotic processes within Kuwait’s marine and coastal ecosystems.

Table 1.1. Ranking of climate change risks and vulnerabilities

Climate Change Risks/Vulnerabilities	Sector	Damage (30%)	Risks (20%)	Urgency (20%)	Mitigation (15%)	Impact (15%)	Weighted Sum		
Increased SST	Marine and Fisheries	5	5	5	5	5	5		
Increased salinity	Marine and Fisheries	4	4	5	5	4	4.35		
Ocean acidification	Marine and Fisheries	4		3		5	4	4	4
Increasing air temperature	Water resources	4	5	5	3	4	4.25		
Saltwater intrusion	Water resources	4		4		5	2	4	3.9
Inundation of low laying areas	Coastal zone	5		4		5	3	4	4.35
Increased dust events	Health	3		3		5	3	3	3.4
Heat waves	Health	3		3		5	3	3	3.4

Source: Author’s own elaboration on the basis of Kuwait National Adaptation Plan 2019-2030 (2019)

The living standards and air pollution nexus

Kuwait has been confronted with challenges related to greenhouse gas emissions and air pollution which cause much of the country’s environmental damage directly and adversely affect human health (see Figure 1.6). As the contributor to over

90 per cent of the oil consumption in Kuwait, vehicles that emit pollution are strictly regulated by the authorities responsible. Buildings (government, residential, and commercial) consume about 80 per cent of the electricity generated. In the business-as-usual case, residential electricity demand grows by 1.2 per cent per year. Partly as a consequence, the per capita energy

⁴ SST Kuwait waters increase from January (15.4 oC) and February (15.7 oC) to August (32.4 oC) and then in December decrease again (18.1 oC). This wide temporal range of SST significantly disturbs coral reef ecosystems that relatively extend in warmer waters most of the year.

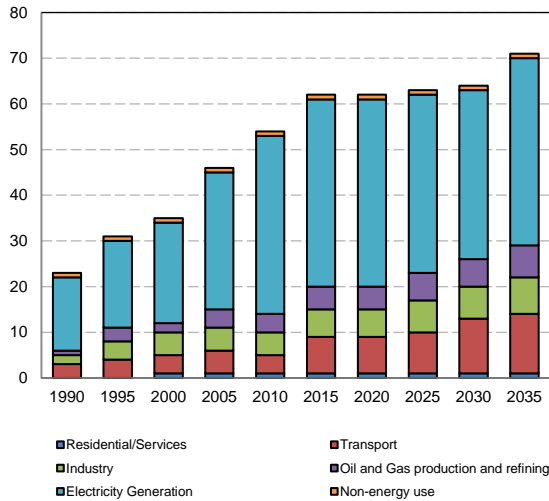
⁵ Kuwait seawater salinity ranges from 38.6 to 42.4 psu: This range is relatively high compared to the southern Arabian Gulf waters near the Strait of Hurmoz that has an average salinity of 36.5–37 psu.

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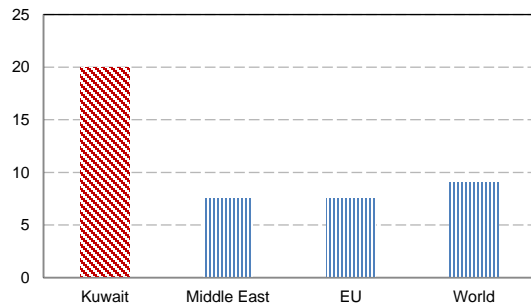
consumption in Kuwait is among the highest in the world (see Figure 1.7).

Figure 1.6. CO2 emissions by sector in Kuwait (in million tons of CO2)



Source: Author's own elaboration on the basis of the Kuwait Institute for Scientific Research (2019)

Figure 1.7. per capita emissions as of 2018 (in tons of CO2)



Source: Kuwait Institute for Scientific Research (2019)

Due to historically lax energy-efficiency regulations and codes along with its hot climate, demand for air conditioning services in Kuwait accounts for some 70 per cent of residential electricity demand, the highest in the GCC region. In terms of equipment and appliances, Kuwait lacks in national mandatory Minimum Energy Performance Standards (MEPS) and labels, which allows the country's market of inefficient appliances, particularly air conditioners, to grow. The same problem holds true for lights; an absence of energy-efficient lighting leads to intensive-energy-consuming lights.

In effect, Kuwait's populated areas are affected by suspended dust, partly due to natural resources as well as uncontrolled emissions from industrial and power plants. One challenge is the increase of uncontrolled emissions directly related to residential areas, thereby increasing exposure to pollution. In this respect, Kuwait is particularly vulnerable to air pollution (see Table 1.2) that may result from industrial activities and climate change. Any slight shift in the weather may result in significant air pollution.

Table 1.2. Ranking of the world's most polluted countries in 2020, selected countries out of 106 countries

Rank	Country	Score
1	Bangladesh	77.1
2	Pakistan	59.0
3	India	51.9
4	Mongolia	46.6
5	Afghanistan	46.5
6	Oman	44.4
7	Qatar	44.3
11	Bahrain	39.7
15	Kuwait	34.0
20	United Arab Emirates	29.2
29	Saudi Arabia	23.3

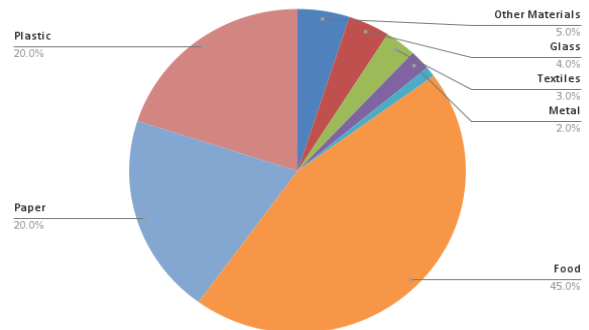
Source: Author's own elaboration on the basis of the World Air Quality Report (2020)

Note: Arranged by annual average PM2.5 concentration ($\mu\text{g}/\text{m}^3$), weighted by population based on the available data

The burden of waste management

Another by-product of high standards of living is having to deal with the huge amount of waste, which is a burden for the country's society as a whole, considering the health threat it causes. Solid waste has increased substantially in the last decade in the country due to several reasons like industrial growth, population increase, and slow development of solid waste management. Kuwait has one of the highest waste generations in the world, coming at 2 million tons per annum, largely owed to a high standard of living and lack of awareness about sustainable solid waste management. Currently, the rate at which the Municipal Solid Waste (MSW) is generated stands at 1.32 kilo-gram/capita/day (KPPC, 2019b). This far exceeds the global average of 0.74kg/capita/day, and the regional average of 0.81 kg/capita/day. Waste in Kuwait is made up mostly by food which makes up about 45 per cent which is around 1.5 times the world average, while 20 per cent is caused by paper and 20 per cent by plastic (see Figure 1.8). There are limited recycling and reuse activities in the country. Currently, less than 2 per cent of municipal waste is recycled, which is mainly done through scavenging activities by collectors, while the rest is collected by solid waste management companies and transported to landfills daily all year long.

Figure 1.8. Kuwait waste composition



Source: Author's own elaboration on the basis of KPPC (2019a)

2. Kuwait’s recent climate action and policy gap

To deal with those climate-related challenges prevalent in the country, the government has made significant effort in designing and implementing several environment quality-enhancing projects and programs. It is then important to review the Kuwait National Development Plan (KNDP) policies in the area of the environment in relation to the stylized facts facing

the country. Table 2.1 shows close convergence between the objectives of the policies and the special needs stylized in the country. However, their implementation remains no easy task in maximizing the impact on society, which requires an additional but systematic review at the program and initiative level.

Table 2.1. KNDP policies to build a livable and harmonious environment in relation to the stylized facts

KNDP Policies	Implementation	Areas of development (stylized facts)
Improve water resource management, including wastewater treatment and reclamation, water use efficiency, and desalination	<ul style="list-style-type: none"> Develop an institutional capacity to govern water resource management Grow capabilities to develop and implement integrated water resource management policies 	Water scarcity and high energy consumption
Build eco-cities using green building and green infrastructure principles, and smart technology	<ul style="list-style-type: none"> Roll out a smart meter system across all of Kuwait Train staff to operate the new systems 	Sustainable living environment, high energy consumption and renewable energy
Boost the role of renewables in the utilities sector	<ul style="list-style-type: none"> Complete construction of energy parks in partnership with the private sector Increase capabilities to operate and maintain the energy park 	Renewable energy, high energy consumption and air pollution
Integrate solid waste management, with a focus on improving waste disposal and resource recovery	<ul style="list-style-type: none"> Complete facility construction Increase manpower and capabilities to operate and maintain an integrated waste management system 	Waste management, recycling and renewable energy

Source: Author’s own elaboration on the basis of the KNDP (2020)

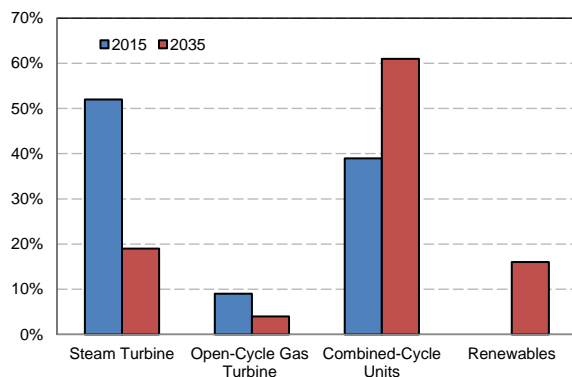
Energy consumption to be sustainable

Kuwait has been taking proactive measures to efficiently meet the future clean water and energy demands of its people. As such, Kuwait is investing USD 5.5 million jointly with MIT to conduct research on updating the current desalination plants and next-generation desalination plants. The government has been responsible for the implementation of this project since 2016 until today, with a budget of 320 million EUR. Furthermore, the country has a total of 40 operating multi-stage flash desalination units, with a total production capacity of 234 MGD (millions of gallons per day) while other units are under construction. Efforts are being put in place to cover the lack of modern technologies in the desalination of the seawater, noting that seawater desalination is the main source of freshwater in Kuwait. In particular, the SHABAKA initiative proposed by the KNDP aims to create a smart electricity grid across Kuwait. This will include installing smart meters in homes to track power consumption and equipping the electricity grid with smart management technology. The goal is to improve the management of energy resources and to facilitate the inclusion of distributed renewable energy into the energy mix.

Kuwait also aims to meet 15 per cent of its energy demand with renewable energy sources by 2030 (see Figure 2.1). For instance, the TAQA initiative is expected to increase the domestic production of renewable energy by exploring solar and wind energy sources. Key milestones include the completion of Shagaya energy park, with a planned capacity of 2,000 MW, and the engagement of private sector companies to partake in a public-private partnership procurement scheme on building additional renewable energy. Kuwait has already taken some significant measures to catalyze the introduction of

renewable energy. The 50 MW Shagaya CSP project is a vehicle to catalyze the scaling up of renewables to 15 per cent of generation by 2030 (22 TWh annually, or 8GW by 2030).

Figure 2.1. Generation technology as a percentage of total installed capacity



Source: Kuwait National Adaptation Plan 2019-2030 (2019)

In response to tightening environmental standards on oil products, Kuwait began to significantly invest in the production of environmentally friendly oil products through the largest project in Kuwait’s history, the Clean Fuel Project (USD 15.5 billion), which includes the modernization of Mina Al-Ahmadi and Mina Abdullah refineries. Kuwait also retired its Shuaiba refinery and decided to replace it with the Al-Zour refinery, which is specialized in producing fuel that is compatible with emerging environmental standards.

Preserving natural treasure

In preserving the precious marine ecosystem and the environment, Kuwait faces several challenges related to its policy and institutional settings. The country has failed to integrate its fisheries and marine sectors into adaptation and development plans while it also lacks a strategic adaptive framework capable of responding to emergency situations and hazardous crises. There is also an insufficient amount of information and studies on the impact of the change in seawater temperature on the country's biodiversity and marine ecosystem.

In this context, the Kuwait Environmental Public Authority (EPA) started by laying the groundwork and has established an electronic environmental Monitoring Information System of Kuwait (eMISK) and Beatona. The eMISK aims at building and maintaining a comprehensive geo-environmental database and a GIS system to facilitate updating and analyzing environmental data. While the Beatona initiative aims to increase public awareness through sharing real-time environmental news and information, eMISK aims at promoting and facilitating an information management system in support of policies and programs that enhance integrated coastal and ocean management.

Furthermore, the Coastal Information System (CIS) was established to help in the protection of coastal zones and marine environments, which can provide information about Kuwait's coastal area to planners and decisionmakers. The CIS system is an important initiative under the technology needs assessment of the coastal zones and shore protection sector as a climate change adaptation measure. Together with the CIS, the Coastal Management Program is designed to produce physical modelling, numerical modelling, and field survey measurements. The CMP was responsible for producing Kuwait's Integrated Coastal Zone Management (ICZM).

In addition, awareness campaigns and symposiums regarding rising sea levels are also being conducted at the national level. The "Our Seas: Theories, Data, and Policies" symposium highlighted the importance of human intervention regarding this particular threat, which was attended by international specialists, local researchers, and non-governmental organizations. These measures were put in place to solve the issue of inadequate control of grazing in the natural reserved areas and low public awareness about the importance of natural reservation areas and their role in adapting to climate change, as well as the lack of erosion and sedimentation control measures nearby the marine environments along the country's coast.

Fisheries are considered a vital source of food in Kuwait. The establishment of fisheries farms is an important step to adapt to climate change under the food security sector. Nile tilapia culture is implemented in agriculture farms where crops such as alfalfa, tomatoes, potatoes, onions are cultivated. These farms are located in the Al-Wafra, Abdali and Al-Sulybia areas. Brackish water with a salinity of 5–8 ppt pumped from underground wells is used in these farms. The, "Assessment of historic climate records and future projection" project was designed to assess the historic climate records for the past 70 years and make future projection climatic scenarios until the year 2100. The project was started in 2012 by the Kuwait University and UN Environment Programme.

In the meanwhile, Kuwait has undertaken various adaptation projects such as implementing green belt projects and increasing protected areas to adapt to dust storm. The green belt projects consist of planting areas with trees and shrubs of 50-180 km in length and 5-20 km in width. Besides, Kuwait has implemented a project called the "Kuwait Green Wall", which aims to increase the protected areas by planting 315,000 trees along a 420-km wall along the country's borderline to keep back the encroaching sand.

Finally, it should be noted that there are several underdeveloped open spaces in the country, presenting the opportunity of creating more green spaces and green infrastructure. More than 50 types of trees for greenery and landscape that can reduce the effects of climate change, were introduced under the Agriculture Master Plan by the KISR and the Public Authority for Agricultural Affairs and Fish Resources (PAAFR). An effort to develop new varieties of crops that can adapt to high temperatures and have high resistance to salinity and drought such as *Conocarpus*, *Ficus*, *Prosopis*, and date palm trees, were initiated.

Eco-friendlier water-landfill management

Challenges in water resources management and threats of water scarcity due to irresponsible consumer behavior are major gaps facing climate change adaptation. This is partly because of a lack of awareness, technical knowledge, policies, and strategies on climate change adaptation in the water resources sector. In this context, the government has undertaken education campaigns on household desalination. Kuwait jointly with the United Nations have been teaching the Kuwaiti people in rural areas "in-house water desalination techniques", where households can have freshwater at low cost and short time. The application of water conservation technologies was also one of the adaptation options to reduce water consumption by 20 per cent.

For instance, a water resources development and management program (WRDM) was initiated by the Kuwait Institute for Science and Research (KISR) that helps to identify ways to optimize the use of water resources and management through applied research. The WRDM program was designed to develop integrated water policies, management options, and action plans to solve water scarcity problems and increase Kuwait's water security and resilience. In particular, the Wastewater Treatment and Reclamation Technologies (WTRT) program tries to remediate some of these issues. This program has been initiated by the KISR and aims at conducting research on reclaiming and reusing Kuwait's wastewater for irrigation purposes. The MYAH initiative under the KNDP also aims to implement an integrated water management resources practice through identifying additional needs for wastewater treatment capacity and exploring new usage opportunities for treated water.

A lack of information and studies on groundwater resources, wells, and aquifers including their quality, quantity, extraction, and safe yield has also been a topic of discussion. Meanwhile, there is a lack of rehabilitation and remediation projects that focus on polluted wells and aquifers due to oil or seawater intrusion. In addition, there are inadequate infrastructure networks and facilities to treat and transmit treated sewage effluent (TSE) water all over the country to

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cover all water irrigation needs, which increases the reliance on freshwater resources.

In the meanwhile, Kuwait inefficiently utilizes and maintains landfill areas. Besides, there is an absence of sanitary and e-waste landfills in the country. There is also a lack of awareness, technical knowledge, policies, and strategies, considered major issues for waste management and climate change adaptation. In addition to weak public participation and poor public attitudes, Kuwait suffers from an insufficient knowledge of modern waste-management options in municipalities that include e-waste, solid waste, industrial waste, and wastewater disposal. However, the government is currently laying the groundwork with the KNDP for better waste management practices.

Furthermore, the TADWEER initiative under the KNDP aims to leverage waste for reuse and energy production, and to reduce ecological and health risks posed by untreated waste. The initiative will improve waste disposal and solid waste management processes. A key milestone for this initiative is the completion of the Kabd municipal solid waste treatment facility to treat 50 per cent of the country's solid waste. The Omniya plastic bottles recycling initiative aims to collect empty plastic bottles and recycle them instead of sending to landfills. This is one of the few practical initiatives to adapt to climate change in the waste sector, and a step in the right direction towards mainstream individual recycling.

Policy gap assessment

Based on a review of the ongoing actions taken by the Government of Kuwait and its plans, the four potential policy gaps can be contextualized as shown in Table 2.2. The first one is working towards efficient energy consumption and mainly focuses on filling the gaps in terms of a lack of modern technologies in the desalination of seawater and the issue of high per capita energy consumption. The second is the work being done in terms of protecting the country's ecosystem, and especially to advance in terms of data and studies about marine life and the protection of the coastal areas, all of which can be informed by more systematically defined environmental indicators. Another dimension is associated with acting responsibly towards the environment to overcome the challenges of water scarcity and the high levels of per capita water consumption and to advance in terms of waste management techniques in an integrated manner. With regard to the climate conservation dimension, the government aims to increase the number of green spaces, and introduce a culture of recycling at the individual and community level. Finally, the level of private sector engagement remains weak in general across these contextualized dimensions while a concerted effort to cope with air pollution has not yet been seriously undertaken.

Table 2.2. Analytical presentation on climate action gap

Dimensions	Program/initiative	Description	Potential gap
Efficient energy consumption	Research on updating the current desalination plants and next-generation desalination plants	Energy efficient plants, respectful of the environment and a higher capacity	Lack of modern technologies in the desalination of the seawater, coupled with higher energy consumption in practice
	SHABAKA initiative	Aims to create a smart electricity grid and improve the management of energy resources and to facilitate the inclusion of distributed renewable energy into the energy mix	Little to no use of renewable energy, challenged by a rise in energy demand, with little engagement from the private sector
	TAQA initiative	Increases the domestic production of renewable energy by exploring solar and wind energy sources	
Protecting the ecosystem	Electronic environmental Monitoring Information System of Kuwait (eMISK) and Beatona	eMISK aims at promoting and facilitating an information management system in support of policies and programs that enhance integrated coastal and ocean management, while the Beatona initiative aims to increase public awareness through sharing real-time environmental news and information	Insufficient amount of information and studies on the impact of the change in seawater temperature on the biodiversity and marine ecosystem, which has further been challenged by an absence of accurate data and comprehensive indicators responsive to environmental sustainability
	Technical capacity development on regional database	Establishment of a regional database and information center to support the fisheries management and aquaculture development, which aims at establishing a regional database and information center to support the fisheries management and aquaculture development	
	Coastal Information System (CIS)	The system supports the protection of coastal zones and marine environments through the provision of coastal area information to planners and decisionmakers	
	The "Our Seas: Theories, Data, and Policies" symposium	Highlighted the importance of human intervention regarding rising sea levels	
	Coastal Management Program	Responsible for producing Integrated Coastal Zone Management	Inadequate control of grazing in natural reserved areas, intensified by low public awareness about the importance of natural reservation areas
	Fisheries farms	Important step to adapt to climate change under the food security sector	
	Green belts projects and increasing protected areas	Aims to adapt to the increase in dust storms Plant areas with trees and shrubs of 50-180 km in length and 5-20 km in width	
	Building desalination plants	In the process of protecting freshwater sources and to maintain ecological stability	
Responsibility towards the environment	Education campaigns on household desalination	Teaches people in rural areas the "in-house water desalination techniques" at a low cost	High per capita water consumption, which would require technical expertise from the concerned stakeholders
	Water conservation technologies	Adaptation option designed to contribute to reducing water consumption by 20 per cent	

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	Water resources development and management program (WRDM)	Identifies ways to optimize the use of water resources and management through applied research, which was designed to develop integrated water policies, management options, and action plans	Challenges associated with water scarcity, security and resilience on the ground
	Wastewater Treatment and Reclamation Technologies program (WTRT)	Research on reclaiming and reusing Kuwait's wastewater to utilize it for irrigation purposes	Inadequate infrastructures networks and facilities to treat and transmit treated sewage effluent water
	MYAH initiative	Aims to implement integrated water management resources practices and improve the sustainability of water use by identifying additional needs for wastewater treatment capacity and exploring new usage opportunities for treated water	
	TADWEER initiative	Aims to leverage waste for reuse and energy production, and to reduce ecological and health risks posed by untreated waste and to improve the waste disposal and solid waste management processes	
	eMISK industry project	Aims at establishing a national program for collecting an environmental inventory of industrial facilities.	
	eMISK waste project	Aims at finding and implementing a solution to manage the fleet of industrial liquid waste vehicles and organizing the logistics process	
Climate conservation	Green spaces infrastructure	Development of new varieties of crops that can adapt to high temperatures and have high resistance to salinity and drought	Underdeveloped open spaces and need for more green spaces in the longer-term perspective
	Omniya plastic bottles recycle initiative	Aims to collect empty plastic bottles and recycle them instead of sending to landfills	Lack of awareness about the importance of recycling at the individual and community level.

3. Sustainable finance practice in GCC countries

The experience of neighboring GCC countries, where various sustainability initiatives with a focus on sustainable finance have been associated with their national climate action, is instructive. Figure 3.1 summarizes and compares the sustainable practices that were implemented in the selected GCC countries, including the United Arab Emirates, Bahrain and Saudi Arabia. The sustainable financing initiatives by these countries can be categorized into sustainable finance framework, ESG reporting and guidelines, financial market innovation, and regulatory framework in this regard.

Table 3.1. Sustainable finance practice in selected GCC countries

	Bahrain	United Arab Emirates	Saudi Arabia
Sustainable Finance Framework	✓	✓	
ESG Guidelines	✓	✓	
ESG Reporting	✓	✓	
Financial Market Innovation: Green Bonds		✓	
Financial Market Innovation: Islamic Bonds	✓	✓	
Sustainable Finance Education initiatives	✓	✓	✓
Supportive Regulatory Framework: PPP Laws		✓	✓

Source: Author's own elaboration on the basis of the UNEP (2021)

Bahrain: "A promising and sustainable future"

Launched in 2008, Vision 2030 under Bahrain's national policy framework provides a comprehensive strategy to support sustainable development through the achievement of both financial and economic sustainability to ensure a smooth transition to a greener economy.

It aims to capitalize on the country's natural resources by increasing investment in technologies that reduce carbon emissions and pollution; improving energy efficiency; promoting renewable energy use and production; supporting green infrastructure; and encouraging the optimal use of water resources.

Bahrain's Sustainable Energy Unit (SEU), established in 2014 as a joint initiative between the Office of the Minister of Electricity and Water Affairs and the United Nations Development Program (UNDP), aims to develop a cohesive and sustainable energy policy and to promote renewable energy and energy efficiency. The unit also works toward bridging legal, institutional, and capacity gaps to ensure that Bahrain's energy sector can meet the future challenges.

The SEU develops two key policy documents for Bahrain: the National Energy Efficiency Action Plan (NEEAP) and the National Renewable Energy Action Plan (NREAP). These plans were endorsed by the Cabinet and are currently in the implementation phase. Based on the plans, the USD 480 million Askar Waste to Energy facility expects to have a capacity of 1,068 tons per day when it launches, generating approximately 25MW of electricity. No date has been given for its launch, but the country aims to reach 700MW of renewable energy power generation by 2030 – met by a mix of solar, wind and the Waste-to-Energy (WtE) technologies.

○ *Engaging association of banks*

In 2018, the Bahrain Association of Banks (BAB) established a permanent sustainable development committee to enhance the role of the banking sector and its contribution to sustainable development and economic growth in line with the UN 2030 Sustainable Development Agenda. The committee promotes sustainable finance practices by increasing financial and investment flows to sectors such as education, healthcare, agricultural development, sustainable energy, infrastructure,

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transport, and green financing (Bahrain Urban Planning and Development Authority, 2018).

In so doing, the BAB collaborated with UNDP to promote sustainable finance practices in order to encourage financial investors to contribute to financing initiatives for sustainable development projects. Furthermore, the BAB's sustainable development committee works on developing a national sustainable financial system that focuses on two main areas: establishing a sustainable and green finance framework; and financing sustainable infrastructure (BAB, 2020). These efforts aim to internalize sustainability into banks' operations and strategies, informed by developing innovative green financing tools and disclosing and reporting on green activities.

○ TAMKEEN loan for renewables

TAMKEEN is a national program that promotes sustainable growth, entrepreneurship, and innovation, particularly in renewable energy and sustainable development. To promote banks' extension of green loans and increase the financing of environmentally friendly projects, TAMKEEN recently signed a partnership agreement with several leading banks for an Islamic Shariah-compliant Solar Financing Scheme. The scheme is expected to encourage small, medium, and large enterprises to use renewable and clean sources of energy by purchasing and installing solar panels for power generation, hence reducing their energy costs and carbon footprints.

○ Greening Stock Exchange

The Bahrain Stock Exchange, the Bahrain Bourse (BHB), joined the United Nations Sustainable Stock Exchange (SSE) initiative, to demonstrate its commitment to supporting sustainable and transparent capital markets by promoting Environment, Social and Governance (ESG) practices among the BHB's listed firms and investors (Bahrain Bourse, 2020). In this context, in January 2020, the BHB started to collaborate with an advisory services group to devise a comprehensive action plan of sustainability-related initiatives which include awareness workshops and producing a policy research on the status of sustainability in the national capital market. It is aimed to enhance transparency and the disclosure and reporting of ESG data and information.

The BHB recently launched its voluntary ESG reporting guidelines to support sustainable capital markets through enhanced disclosure.⁶ The guidelines provide stakeholders with a roadmap for integrating ESG considerations into firms' business decisions, reporting processes and strategies. This can help meet institutional investors' demand for ESG information to make better informed decisions with respect to identifying opportunities and hedging risks. Leading by example, BHB has also integrated ESG information on its own performance and impact in its 2019 annual report covering issues such as BHB capacity development, efforts towards gender equality in the marketplace, among others.

⁶ The BHB ESG reporting guide centers on the voluntary disclosure of a set of 32 key performance indicators (KPIs) based on the recommendations of the

United Arab Emirates: "A leading player in the environment"

The United Arab Emirates launched the Green Economy for Sustainable Development initiative, fully endorsing its implementation plan. Their vision aimed to embed green growth into national strategies, position the nation as a model for a low-carbon, green economy and become a global hub for environmentally sustainable development. The initiative is supported by 12 programs, including the Green Diversification Program, which itself consists of several sub-programs such as the Green Finance and Investment Support Scheme. This scheme aims to enhance the financial sector's role in increasing investment in green and clean energy projects and innovating new green financing instruments (UAE Federal Government, 2017).

To that end, the Dubai Green Fund was established as a strategic move to support the implementation of viable green economy projects and programs through the deployment of about USD 27 billion. The fund serves as seed capital to encourage the private sector to increase its investment flows allocated to financing environment friendly ventures, such as climate and energy related activities. The fund's green financing activities include energy efficiency and green energy power generation in Dubai International Airport and Mohamed Bin Rashid Al Maktoum Solar Park.

○ Clean energy and zero waste targets

Their national energy strategy aims to achieve an energy mix of 44 per cent clean energy, 38 per cent natural gas, 12 per cent coal and 6 per cent nuclear. The country has also set a 7 per cent renewables generation target from its total energy capacity by 2020. Abu Dhabi plans to reduce its oil dependency and achieve a 65 per cent contribution to GDP from non-oil sectors by 2030. Similarly, Dubai plans to increase the share of clean energy to 75 per cent of its total generation mix by 2050 (S&P Global, 2019).

Furthermore, the Federal National Council in the United Arab Emirates passed new legislation aimed at recycling 75 per cent of all municipal solid waste by 2021, while seeking to achieve a "zero waste to landfill" target by the end of 2020. In the meanwhile, Emirates Waste to Energy Company, a joint venture between Sharjah's Bee'ah and Abu Dhabi's Masdar, announced plans for a facility that would incinerate around 900 tons of waste per day, generating 30MW, with a view to expanding capacity to 90MW.

○ Sustainable finance declarations

In line with the national vision, the Ministry of Climate Change and Environment (MOCCA) partnered with a number of leading banks and financial institutions to launch the Dubai Declaration on Sustainable Finance in 2016 (Dubai Declaration for Sustainable Finance, 2016). This marked their financial sector's commitment to a transition towards a more inclusive, greener and climate resilient economy. Moreover, in collaboration with the Central Bank of the United Arab Emirates, the Securities and Commodities Authority (SCA) and

Sustainable Stock Exchange Initiative (SSE) and the World Federation of Exchanges (WFE) (Bahrain Bourse, 2020).

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the MOCCA, the Abu Dhabi Sustainable Finance Declaration was launched by the Abu Dhabi Global Market (ADGM) at the inaugural Abu Dhabi Sustainable Finance Forum in 2019. This further confirmed the financial sector's commitment to addressing climate change and mainstreaming sustainability by integrating ESG considerations into their business conduct, core strategies and operations at the local, national and regional levels.

In January 2020, the country published its first guiding principles on sustainable finance, a milestone in the nation's efforts to ensure a smooth transition to a sustainable economy by developing a strong sustainable financial sector that can play an instrumental role in supporting the Emirates' efforts to advance both social progress and environmental mitigation. This represented the Arab region's first sustainable finance guiding principles and they are compliant with Islamic Shariah law. In effect, the principles align with international best practices and focus on integrating ESG factors into financial entities' governance, strategy, and risk management frameworks.

○ *Greening capital market and banking*

In this regard, the SCA launched its Capital Markets' Sustainability Plan in 2019, which serves as a comprehensive roadmap driving SCA's sustainability agenda by promoting green and responsible investment, while ensuring the national financial markets' stability and development. The plan is meant to enable regulatory authorities to shift to sustainability-driven investment, to limit risks, to enhance market liquidity and to create a market system that stimulates sustainable investment and finance.

Furthermore, a number of banks have made progress in integrating ESG considerations into their business frameworks. Twenty-five public and private entities signed the Abu Dhabi Sustainable Finance Declaration in 2019 and 11 other entities followed the year later (Saudi Gazette, 2020). Their sustainable finance guiding principles are considered to help national banks to better manage ESG-related risks that would affect their credit profiles. In a survey on green finance practices, the response from financial institutions demonstrated their positive attitudes towards integrating ESG considerations into their business decision-making processes and an understanding that sustainability makes business sense. This is mainly because they believe that integrating ESG factors leads to cost savings and efficiency, additional revenues, an enhanced market reputation, and an improved competitive edge.

○ *Promoting green bond initiative*

The Dubai Financial Services Authority (DFSA) issued the first Green Bond Best Practice Guidelines (Dubai Financial Services Authority, 2019) to provide market practitioners with a reference framework for issuing and listing green bonds and sukuk. These voluntary guidelines ultimately led to the listing of high-profile green financial instruments on the Nasdaq Dubai in 2019. These include the listing of two sovereign green sukuk by the Government of Indonesia reaching a total of USD 2 billion, and the world's first corporate green sukuk by Majid Al Futtaim Holding, valued at USD 600 million. This is in addition to the EUR 1 billion listing by the Islamic Development Bank, IsDB's first green sukuk on the Nasdaq Dubai in late 2019. Both sovereign and corporate green issuances highlight the global shift in sentiment towards investments that consider ESG factors.

Box 3.1. Climate debt swaps possibility for the region

Many Arab countries are facing fiscal stress from high and increasing debt, which consequently drains a large share of revenues to cover debt servicing that could have been spent on financing the SDGs and climate-resilient projects. Moreover, limited fiscal space puts the region at risk of being unable to recover from the COVID-19 pandemic. In this respect, international action to support debt relief is imperative, especially to enable countries to build forward better after the pandemic. This can be achieved by improving the macroeconomic conditions of debtor countries in the short term to manage their outstanding debt liabilities. Debt swaps are a negotiated instrument that can provide debt relief and generate liquidity to fiscally stressed debtor countries to invest in climate-resilient projects, which can also benefit creditor countries. The gains of the proposed debt swap include the following: Climate/SDGs debt swaps can be an effective instrument providing win-win results for debtor and creditor countries (ESCWA, 2020).

For debtor countries, it generates a direct resource effect by providing relief from the payment of interest on external debt, while increasing sustainable public investment in climate-resilient projects that advance the SDGs and the Paris Agreement. In addition, it has positive net indirect effects when such investments lead to higher net aggregate flows from donors, and from private and public sources to climate-resilient projects. Other important socio-economic benefits include job creation, advancing local community development, and promoting women's empowerment that all contribute to bridging inequality gaps.

Debt swap is also beneficial for bilateral and multilateral creditors, since the amount of the debt swap allocated for climate-resilient projects increases ODA disbursement/climate finance pledges that accelerate the implementation of SDGs and the Paris Agreement, without adding extra burdens on their budgets. Furthermore, long-term climate-resilient projects will likely boost economic transformation and future economic growth of debtor countries.

Saudi Arabia: "Fully invested for a greener future"

Saudi Arabia has been working on promoting sustainable development by reducing its dependence on oil as well as its contribution to global carbon emissions. It has been dedicated through boosting the development of non-oil sectors such as tourism, manufacturing and renewable energy. Saudi Arabia

committed to reducing domestic greenhouse gas emissions and submitted its Intended Nationally Determined Contribution (INDCs) in 2015 during the UN Climate Change Conference (COP21) in Paris. It pledged to reduce up to the equivalent of 130 million tons of CO₂ per year by 2030. In 2019, for instance, a new Private Sector Participation Law was drafted to promote private investment, strengthen public private partnership and

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regulate the national Privatization Program by establishing a more transparent legislative framework. This law is expected to boost private investment in sectors such as water, infrastructure, real estate, power, and renewable energy. This is a part of the country's effort in shaping their future energy efficiency and industrial development.

○ *Redirecting national energy trajectory*

The National Renewable Energy Program was launched in 2016 and aims to establish renewable energy as a sector with great potential to generate employment opportunities and to move the country into more service and knowledge-based industries. Their energy mix strategy targets to produce 70 per cent of its power generating capacity from natural gas and 30 per cent from renewables by 2030. It plans to invest between USD 30–50 billion in renewable energy by 2023, attracting private investment to the sector (IRENA, 2019). In 2019, the Ministry of Environment, Water and Agriculture collaborated with the United Nations Environment Programme (UNEP) to ensure the sustainability of its natural resource use and environmental protections where the UNEP supports in implementing its National Environment Strategy and National Transformation Program through technical assistance to develop its human capacities, institutional structure, and regulatory framework. It is also remarkable to note that the Saudi Energy Efficiency Center (SEEC) has registered great improvement in Saudi fuel consumption in the transportation sector over the period of 2015-2017. Fuel efficiency in new vehicles has improved by 3.5 per cent and by 6.5 per cent for previously-owned vehicles. The program spotted an upward trend, estimated at 14.1 per cent, in the usage of fuel-efficient cars.

○ *MUTAJADED A and TADAWUL initiatives*

In contributing to the national energy strategy, Saudi Arabia recently launched the MUTAJADED A program to promote the development of environmentally friendly projects and attract investment into the renewable energy sector. The program provides financial support through the USD 28 billion government financed Saudi Industrial Development Fund (SIDF). Under this program, SIDF grants loans of up to USD 310 million and finances up to 75 per cent of the total project cost. The loan repayment periods extend up to 20 years, with a 36-month grace period for all sectors interested in using renewable energy to reduce oil dependence, while bolstering new sources of energy (Oxford Business Group, 2020). In addition to the MUTAJADED A, the Saudi Stock Exchange (TADAWUL) became a member of the United Nation SSE Initiative, promoting sustainable and transparent capital markets in this regard.

4. Policy consideration

Through a series of systematic discussions and analyses (i.e., an identification of the five stylized facts of climate challenges, a policy gap assessment and a thematic review of neighboring GCC countries), the following policy ideas are suggested for the Government of Kuwait to take into account.

ESG standard on reporting and disclosure

Sustainability Excellence, a leading provider of sustainability reporting, research, and advisory services in the Middle East partnered with Boursa Kuwait to support it and its issuers in their sustainability journey. Every listed company in the main market has independently received a comprehensive and free ESG assessment of the current ESG performance. However, Boursa Kuwait has not required ESG reporting as a listing rule despite their written guidance on ESG reporting and disclosure. While it is still voluntarily, there is an increasing global trend in the practice of corporate ESG reporting⁷ as strong ESG performance can lead to preferential treatment from investors compared to companies whose environmental or other practices pose a greater financial risk.

One particular barrier could be the non-mandatory nature of requirements to adhere to sustainable finance policies and rules. It is true that most Arab countries including Kuwait have yet to enact explicit climate-related financial regulations. Where the ESG guidelines for accessing finance and for reporting disclosures have been developed, they are voluntary and not mandatory. The absence of adequate enforcement mechanisms for green finance policies, rules and regulations is one of the chief barriers to scaling up green finance.

In this aspect, **it is thus recommended that the government stimulate its reporting and disclosure practice by (a) designing an incentive mechanism (e.g. tax incentives and/or exemptions) to the reporting companies, (b) providing capacity building for materiality assessment and alignment with business strategy, (c) shaping a supportive regulatory framework in relation to ESG practice and (d) targeting it eventually for mandatory requirement in adherence to sustainable finance policies and rules.** Strong initiatives and actions could focus primarily on the firms operating in sectors, which concern waste, efficient desalination plants, wastewater treatment plants as well as making use of underdeveloped open spaces for more greenery.

Kuwait Green Innovation Fund

Green Energy, Clean Air and Blue Ocean

The establishment of the Kuwait Green Innovation Fund (KGIF) may be a wise consideration in response to various climate challenges stylized in Kuwait. It can be realized in an effective manner by the government partnering with leading banks, learning from the experiences of Bahrain

⁷ In 2020, 90 per cent of companies in the S&P 500 have published their annual corporate sustainability/ESG reports.

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where the Government of Bahrain recently signed a partnership agreement with several influential banks for an Islamic Shariah-compliant Solar Financing Scheme and where the TAMKEEN loan program is underway.

The KGIF can primarily be a blended financing window for sustainable/green transition projects. The fund is expected to unlock greater potential of green initiatives, including a (a) *Green Energy* pillar (renewable energy project), (b) *Clean Air* pillar (air pollution reducing project) and (c) *Blue Ocean* pillar (biodiversity and food security project) through the provision of loans (SDG-linked loans) and performance-based payments under the technical assistance facility. Particularly, the technical assistance facility is created to validate sustainable transition technologies and innovative business models, while also providing risk management support, with the principle of “vulnerability-responsive” to prioritize the ones developed/proposed by MSMEs, entrepreneurs and women led small businesses.

Integrated waste management Public Private Partnership

Mobilizing the private sector, skilled as it is, does not in itself constitute a solution for better waste management. **To be effective and appropriate, a waste management system must be accompanied by better financing mechanisms, increased technical and institutional capabilities on the part of public authorities, and a well-structured regulatory framework.** Specifically, the project must take into account the town’s socio-spatial *structure*, the type of waste involved, the resources available, the institutional setting, and whether those involved are from the formal or informal sector. A clearly defined regulatory framework enabling companies to compete equitably is a prerequisite for effective private sector involvement.

Furthermore, **the waste management Public Private Partnership procurement scheme would need to prioritize those that focus on an integrated system based on “prevention-sorting-recycling-recovery-reuse” towards a sustainable waste treatment factory and logistics.** It should be noted that such an integrated approach would considerably reduce the waste present in landfills and decreases the health threats to citizens, which goes in line with the KNDP as it helps to boost the role of renewables and solid waste management.⁸

To a large extent, low private investment in climate change projects has been determined by the nature of their risk-return profile. Most such projects are capital intensive and the amount at risk is very high. In addition, a lack of capital, human resources, and technical know-how act as barriers to market formation and private investment. These barriers also underline the perceived lack of profitable investment opportunities, low commercial readiness associated with green projects’ riskiness, a long payback period and low profitability. In this respect,

various procurement options, depending on the nature of the proposed waste management projects, need feasibility assessment, including solicited or unsolicited procurement scheme, Minimum Revenue Guarantee and Redemption of Excess Revenue, New Risk-Sharing Structure as well as procurement methods, including Build–Transfer–Operate (BTO), Build–Transfer–Lease (BTL), Build–Operate–Transfer (BOT) and Build–Own–Operate (BOO). **Such design of this procurement scheme in a technical aspect thus requires a series of consultations with the KISR regarding their experience of the WRDM and WTRT programs in relations to MYAH and TADWEER initiatives under the KNDP.**

Kuwait Climate Action Lab

Climate Fund Partnership, Knowledge for Advisory and Tool of Change

The under-developed capacity of implementing agencies in Kuwait may be limiting their ability to access the private and public climate finance available nationally and internationally. This results from factors including a lack of experience and know-how, and institutional constraints such as the absence of a centralized platform (or think tank) to monitor activities and coordinate between stakeholders. In this context, **it is recommended that Kuwait take into account the establishment of the Kuwait Climate Action Lab (KCAL) under co-management among the national environmental authority, international organizations and other key concerned stakeholders. Partnering further with the private sector, universities, NGOs and other concerned communities would be required to promote nationally-accepted climate actions such as Actioning as One.**

The lab could focus on the three key means of implementations, including the (a) *Climate Fund Partnership* cluster – strengthening of a global and regional network for exploring green funding opportunities from the multilateral climate funds⁹ and collaborating with green promoting platforms (i.e. eco-city initiative) (b) *Knowledge for Advisory* cluster – providing innovative and/or technical advice to the KGIF’s activities mentioned above while exploring opportunities to establish a green material bank to cope with construction-related pollution, and (c) *Tool of Change* cluster – scaling up of awareness raising efforts for behavioral change at the individual, community and corporate level¹⁰. In particular, the awareness raising efforts could further be expanded to a legislation support campaign. As discussed previously, the Federal National Council in the United Arab Emirates has passed new legislation aimed at recycling 75 per cent of all municipal solid waste by 2021, while seeking to achieve a “zero waste to landfill” target. In this respect, the KCAL could explore the idea of using legislation to solve its slim waste reuse problem in order for Kuwait to leverage its legislative power to cover the identified gaps and achieve a greater rate of waste

⁸ As discussed in Chapter 3, Askar Waste to Energy integrated system in Bahrain is expected to have a capacity of 1,068 tons per day, generating approximately 25MW of electricity.

⁹ There are 12 climate funds active in the Arab region; the largest contributions are from the CTF, which has approved a total of USD 866 million for eleven projects in Morocco and Egypt and three regional projects. Most of this finance

has been made available as concessional loans with focus on large-scale wind and Concentrated Solar Power (CSP) projects (Watson, et al., 2017).

¹⁰ It requires continuous promotion of the past campaign in Kuwait, “Our Seas: Theories, Data, and Policies” but such should also be collaborated with private sector since lack of understanding or awareness of the merits of green sustainable finance could act as a barrier for notably private sector – both investors and finance providers (UAE, 2019).

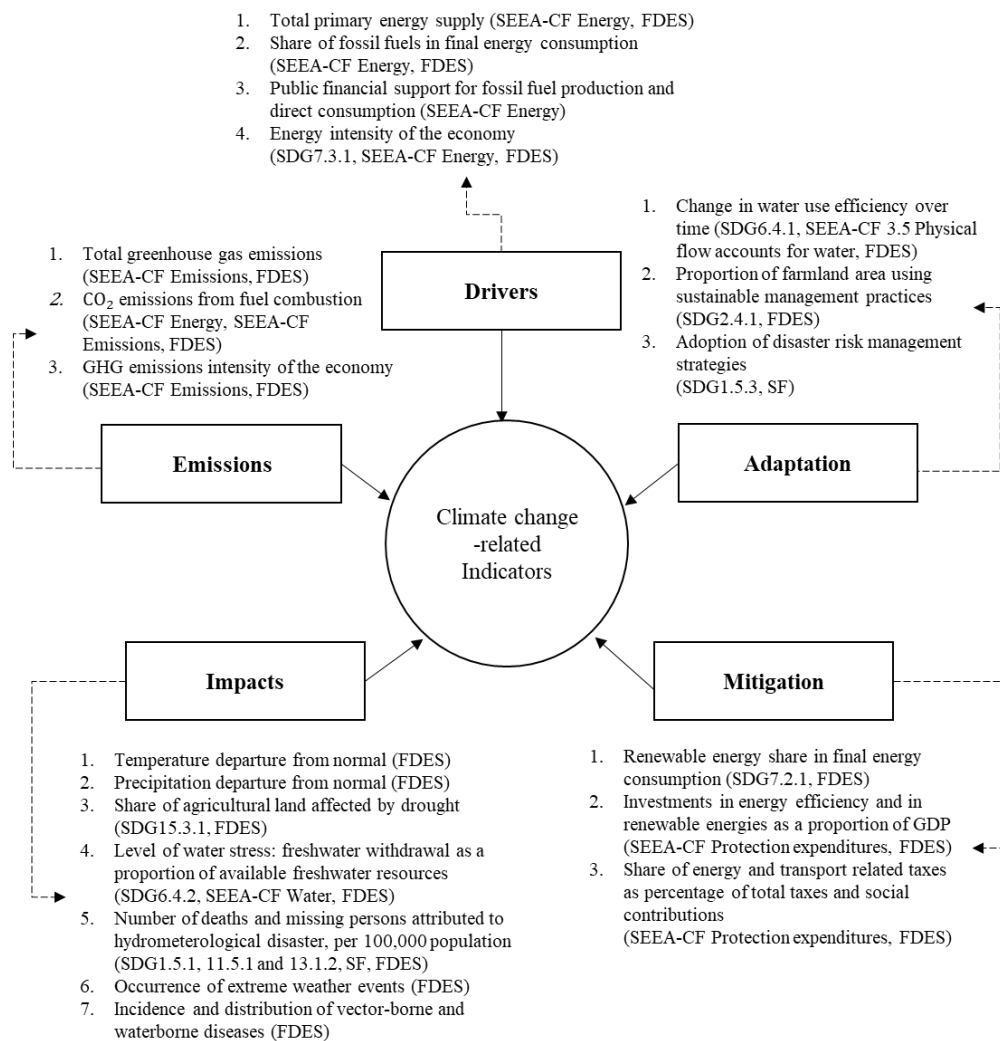
reuse and promoting separation at the source and recycling as proposed by the KNDP.

Climate-related statistical capacity

With rising consciousness and aspirations toward environmental sustainability, reliable statistics are crucial for measuring and monitoring the economic, social, and environmental effects of climate change. The climate-related statistics, however, are relatively of poor quality and not easily accessible in Kuwait. In this context, **a set of climate change-related indicators with consideration of the country**

contexts can be proposed as shown below with particular focus on the SEEA framework (System of Environmental Economic Accounts).¹¹ The set of proposed indicators consists of five areas including drivers, emissions, impacts, mitigation, and adaptation, thus associating emission with indicators in social, economic and environmental domains and sustainable development (see Figure 4.1), where **national authorities such as the National Statistical Office, National Observatory and Environment Public Authority are to target these environmental sustainability indicators during their process of statistical capacity strengthening and their statistics modernizing efforts, especially with regard the eMISK, Baetona and CIS.**

Figure 4.1. Proposed climate change-related indicators



Source: Author's own elaboration on the basis of ESCWA (2017a; 2017b)

Notes: SDG (Sustainable Development Goals), SEEA-CF (System of Environmental Economic Accounting-Central Framework), SF (Sendai Framework for Disaster Risk Reduction), FDES (Framework for the Development of Environment Statistics)

¹¹ In April 2021, the United Nations Statistical Commission adopted the SEEA EA (Ecosystem Accounts) framework to better account for biodiversity and ecosystems in national economic planning and policy decision-making.

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