Climate Centre

Country-level | Climate fact sheet

Lebanon

1. Country overview

Lebanon is a highly urbanized middle-income country in the Levant region, bordered by Israel to the south and Syria to the north and east (Ochsenwald 2020). Lebanon's economy is driven by the service sector (83 per cent of gross domestic product (GDP)), with strong banking and tourism economies bringing foreign investment (Central Intelligence Agency (CIA) World Factbook n.d.). The demographic of the country has been highly influenced by regional conflict as Palestinian and Syrian refugees constitute one-quarter of the estimated 5.9 million population (Walnycki & Husseiki 2017). Lebanon ranks 129 out of 141 in terms of income inequality, and 29 per cent of the population lives below the poverty line (CIA World Factbook 2020; United Nations Development Programme (UNDP) 2019).

The Syrian crisis (now in its ninth year) is causing significant economic and social impacts in Lebanon, putting pressure on service delivery and the government's ability to invest resources in building climate change resiliency (United States Agency for International Development (USAID) 2016)

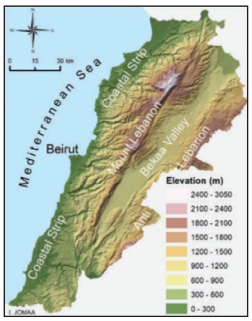

Figure 1: Map of Lebanon. Source: Verner *et al.*, 2018

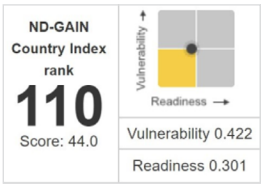

Figure 2: Lebanon's ND-GAIN Ranking (ND-GAIN 2021).

1.1 Climate

Located on the eastern shore of the Mediterranean Sea, Lebanon is a small country with a coastline of 200 kilometres (km) running north–south and an average width of 50km. It is separated into four agro-ecological regions (Verner *et al.* 2018). Two parallel mountain ranges run north-east to south-west and are separated by the Bekaa Valley. This complex mountainous topography creates a multitude of microclimates (Verner *et al.* 2018). The fourth region, a narrow coastal plain on the west side of the country, is home to 90 per cent of the population and the main cities (including the capital of Beirut) (Government of Netherlands 2018; Ministry of Environment (MoE) 2016). Although, overall, the country has a Mediterranean-type

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climate with hot dry summers (June to September) and cool and rainy winters (December to mid-March), there is a steep climatological gradient moving eastwards inland with a pre-steppe-Mediterranean and warm desert climate (Government of Netherlands 2018; USAID 2016; Verner *et al.* 2018).

Seasonal temperature ranges from highs of 35°C along the coast in August, to lows of 5–10° across most of the country during January (Government of Netherlands 2018). Annual precipitation is unevenly distributed, with 70 per cent of rainfall in November–March and occurring mostly in a few intense rain days (MoE 2016). The coastal region receives an annual mean rainfall of 700–1000 millimetres (mm) and the semi-arid Bekaa Valley receives 200–450mm, whereas the higher altitude inland areas receive 1600mm with significant heavy snowfall (MoE 2016; Verner *et al.* 2018).

Although the El Niño Southern Oscillation (ENSO) has a marginal impact over annual variability, the North Atlantic Oscillation (NAO) – consisting of air pressure anomalies between the North Atlantic and Western Europe – is the prominent climatic driver in the region, with dominant influence on surface temperature and precipitation (Verner *et al.* 2018). A positive phase of the NAO is associated with a decline of winter rainfall in Lebanon (Verner *et al.* 2018).

1.2 Climate change

Historical Climate	Projected climate
Temperature	
Annual mean temperature increase of 0.3°C per decade since 1970 (compared to an average of 0.15°C globally); higher increase in summer and spring (Verner *et al.* 2018; World Bank Group n.d.; USAID 2016). Seven per cent increase in the number of hot nights since 1960, occurring mostly during the summer (World Bank Group n.d.).	The Coupled Model Intercomparison Project (CMIP) 5 suggests a temperature increase of 1.9°C by 2100 (Representative Concentration Pathway (RCP) 4.5), or 3.8°C (RCP 8.5), with higher increases during summer. By 2050, temperature will increase by 2°C (RCP 8.5) (World Bank Group n.d.). An increasing number of very hot days (over 35°C) by 21 days (RCP 4.5) or 56 days (RCP 8.5) by 2100 (compared to the period of 1986–2005) (World Bank Group n.d.).
Precipitation	
Reduction of 11mm in monthly mean rainfall per decade since 1950 (World Bank Group n.d.). Increased frequency and intensity of drought, with "most extreme drought" now 45 per cent more likely to occur (Verner *et al.* 2018. Increased intensity of extreme one-day rainfall events (MoE 2016). Sea-level rise of the Mediterranean Sea by 20mm per year since 1960 (USAID n.d.) and surface water temperature increase of 1.3°C since 1982 (Government of Netherlands 2018).	Reduction of annual mean precipitation by 4 per cent (RCP 4.5) or up to 10–40 per cent (RCP 8.5) by 2100 (MoE 2016; Verner *et al.* 2018). Increased maximum length of dry spells (consecutive days with less than 1mm of rainfall) projected to be on average 1 day longer (RCP 4.5) or 6 days longer (RCP 8.5) by 2100 (MoE 2016). Loss of snow cover by up to 40 per cent (temperature increase of 2°C) or 70 per cent (temperature increase of 4°C), with snow cover time decreasing from 110 to 45 days (temperature increase of 4°C) affecting water availability (MoE 2016). Projected sea-level rise of the Mediterranean Sea of 30–60cm in 2020–2050 (RCP 4.5) (Government of Netherlands 2018).

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1.3 Climate vulnerability

According to the Notre Dame Global Adaptation Initiative (ND-GAIN) index, Lebanon is considered to have a relatively low vulnerability and low readiness to tackle climate change (ranking 110th in the world with a score of 44) (ND-GAIN n.d.). Projected vulnerabilities could be manageable if adequate adaptation measures are implemented to increase readiness and address the following key components of its vulnerability: dam capacity, human habitat and urban concentration, dependency on imported energy, and control of corruption (ND-GAIN n.d.). Other significant climate-driven vulnerabilities include:

1. Changes in precipitation patterns and decreases of annual mean precipitation will disrupt groundwater recharge and snow cover storage, reducing annual water availability by 29 per cent by 2080 (higher during the summer season and droughts), as well as increasing the risk of winter floods by 30 per cent (Government of Netherlands 2018; MoE 2016).
2. 90 per cent of Lebanon's population and significant portions of infrastructure are located along the Mediterranean coastline that is projected to be impacted by sea-level rise and floods (Government of Netherlands 2018).
3. Large populations of refugees (currently estimated at 1.5 million people) are adding significant pressure on natural resources and government readiness to adapt to climate change, creating additional water demand up to 89 per cent in some regions (Jaafar et al. 2019; Government of Netherlands 2018; USAID 2016).

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2.Humanitarian sectors and climate change

2.1 Water and habitat

Although Lebanon has access to more water resources than its neighbouring countries, inadequate management, inefficient usage, insufficient storage capacity, and increasing pollution impairs water accessibility; and these developments are likely to be exacerbated by projected hydrological changes due to climate change (Government of Netherlands 2018). Reduction of annual precipitation, increased likelihood of prolonged droughts as well as winter floods, sea-level rise, and increased evaporation due to higher temperatures will augment pressure on existing inadequate infrastructure supply; while population growth and an influx of refugees continues to increase water demand (Walnycki & Husseiki 2017).

With current water demand outstripping water supply (Brown & Crawford 2009), renewable water resources are below the scarcity threshold and any projected reduction of water availability will increase Lebanon's water vulnerability (MoE 2016). A multitude of climate-induced changes are projected to reduce the exploitable supplies of water by 8 per cent by 2020, and 29 per cent by 2080 (Government of Netherlands 2018). These include: significant loss of important snow coverage contributing to half the discharge of coastal rivers, increasing evapotranspiration rate already contributing on average to the loss of half the annual precipitation, a lengthening drought period, and increasing reliance on depleted groundwater resources (MoE & UNDP 2011).

Water withdrawal used by a low-efficiency irrigation system constitutes 60 per cent of national water withdrawal, with dry regions – such as Bekaa, Hermel, and the south of Lebanon – facing the sharpest effects of projected drought and decreasing water accessibility (MoE 2016). On the other end of the spectrum, the increasing intensity of extreme rainfall events during the winter months is likely to increase habitat damage related to winter floods and mudslides (Abdallah & Hdeib 2016). Structure and content loss caused by a single 10-year flood event are estimated at 59 million US dollars for residential, 83 million US dollars for non-residential, and 12 million US dollars for Syrian refugee settlements (Abdallah & Hdeib 2016). In addition, projected sea-level rise could lead to the displacement of more than two million people (out of 5.5 million) and 35 billion US dollars in loss of land, property and infrastructure (Razzouk 2014).

Water distribution systems are not prepared to face additional climate-induced pressures caused by decreasing water availability and infrastructure damage. This is due to existing water leakage rates in the distribution system of up to 50 per cent, and water establishments that have low tariff collection rates to cover their operation and maintenance (Gharios & Farajalla 2019; MoE & UNDP 2011). By 2030, demand is projected to increase by 41 per cent compared to 2005 baselines; and, by 2080, households will suffer a loss equivalent to 720 million US dollars due to climate-driven water scarcity (MOE & UNDP 2011). Water shortages during dry months already affect water accessibility for three-quarters of the population in Beirut (with water access limited to three hours per day in some households), and force the population to rely on unauthorized groundwater pumping or water storage in tanks (Walnycki & Husseiki 2017). With increasing temperature, changes in bacterial contamination of water storage is an

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increasing concern, and reliance on groundwater (80 per cent of potable water comes from groundwater) will be impacted by aquifer depletion, salt intrusion and existing contamination (only 8 per cent of wastewater is currently treated) (Walnycki & Husseiki 2017). Although 96 per cent of households have access to improved water access, 47 per cent is unsafe for drinking because of high faecal contamination levels (Walnycki & Husseiki, 2017). Decreases in water accessibility will exacerbate the existing water, hygiene and sanitation crisis, with disproportionate impacts on vulnerable populations living in informal settlements. Currently, 28 per cent of refugees lack access to clean water and 39 per cent lack access to sanitation facilities (World Vision 2020). 3.7 million of the population of almost 6 million are already in water need, and climate change will continue to drive an increase in numbers (Walnycki & Husseiki 2017). UN-Habitat estimates a 30 per cent augmentation of the demand for water services in Lebanon since the beginning of the Syrian crisis, in large part due to displacement (Walnycki & Husseiki 2017).

Reliance on imported energy creates a 800 million US dollars deficit every year, and Lebanon's ambition to expand hydropower capacity is threatened by projected changes in the hydrological cycle. Water resources in reservoirs were reduced by half during recent droughts, and production capacity is projected to decrease by 29 per cent by 2080 (Heinrich–Böll–Stiftung 2019; Verner *et al.* 2018). In addition, electricity use for cooling due to climate-related increases in temperature is anticipated to increase to 34.8 billion US dollars by 2080, putting significant pressure on municipal power infrastructure which already faces regular power outages during summer months (MoE 2016; Walnycki & Husseiki 2017).

Lebanon's coastal zones are already facing significant impacts of climate change as the Mediterranean Sea is warming twice as fast as global oceans. Further, projected sea-level rise of 30–60 centimetres (cm) by 2050 will increase the frequency and intensity of coastal hazards such as storm surges, flooding, and erosion (Government of Netherlands 2018; MoE/UNDP 2011b). Lebanon is particularly vulnerable to sea-level rise as 90 per cent of the population and most infrastructure is located in a corridor of 500m along the coastline. This includes Beirut, which alone contributes almost three-quarters of the GDP through concentrations of large industry, tourism and financial activity (MoE & UNDP 2011b).

In addition to economic vulnerability, many informal settlements surrounding large cities will be exposed to increased coastal hazards, which will threaten their poor sewage and drinking water infrastructure (MOE & UNDP 2011b). Seawater intrusion in groundwater is already a major concern as the majority of Beirut's population suffers water quality problems, with the high salinity of water reaching five times the accepted threshold for public use (MOE & UNDP 2011c). Water quality problems and seawater intrusion are expected to be exacerbated by declining river flow, increasing illegal pumping of groundwater and projected sea-level rise (MOE & UNDP 2011c).

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2.2. Health

Climate change is directly impacting the health of people in Lebanon, as well as indirectly amplifying and contributing to adverse impacts on health infrastructure vis-à-vis the many socioeconomic and geo-political stressors that already exist.

Climate change is exacerbating the burden of disease and driving an increase in morbidity and mortality in Lebanon (American University of Beirut (AUB)/Issam Fares Institute for Public Policy and International Affairs 2015). Higher temperatures will continue to increase thermal stress and mortality risk through hyperthermia and respiratory or cardiovascular issues, as well as compound air pollution health issues (MoE/UNDP/Global Environment Facility (GEF) 2015). Increases in variability and intensity of precipitation are causing growing flood and drought risks, associated with increased caseloads of water-and vector-borne illnesses such as diarrhoea and malaria (MoE/UNDP/GEF 2015). Other ongoing health impacts linked to climate change include increases in malnutrition from higher food insecurity and increases in rodent-borne disease (Government of Netherlands 2018). High emissions scenarios also point to other anticipated adverse health impacts, including: lost labour and crop productivity, decreased quality of life, eroded ecosystems and biodiversity creating shifts in disease patterns, and increased costs for healthcare (MoE 2011; MoE/UNDP/GEF 2015).

It is important to highlight that these climate-driven health impacts intersect with vulnerability and socioeconomic conditions; the impacts will be concentrated and borne by vulnerable populations including the elderly, women, children, outdoor workers, those living with low socioeconomic status, refugees and internally displaced people (IDPs), those living in semi-arid areas, and those living with diminished access to health services (MoE/UNDP/GEF 2015).

Climate change poses a direct threat to both the physical and economic health of the people of Lebanon. World Health Organization (WHO) models from 2007 estimate that climate change is (currently) directly contributing to an excess 35,000 deaths annually; which, by 2080, is projected to grow to 46,000 annually if current greenhouse gas (GHG) emissions trends continue unabated (and more if GHG emissions increase). Cumulatively, threats to human health rank among the highest of climate-driven risks as measured through potential cost to the Lebanese economy (MoE/UNDP/GEF 2015).

However, health impacts from climate change in Lebanon will go far beyond increasing exposure and prevalence of disease outbreaks (as outlined above) (UNDP 2020). Climate change is projected to continue to exacerbate rapidly expanding challenges to the healthcare infrastructure of Lebanon. Though Lebanon has an adequate doctor-to-patient ratio (2.03/1,000 population in 2017) (CIA World Factbook 2020), but the sophistication of the medical system is undermined by significant shocks, including decades of civil unrest, and (more recently): increasing socioeconomic inequality and poverty levels leading to reduced resiliency and ability to afford healthcare; widespread corruption in governance; energy insecurity creating daily outages; a pre-existing disease burden that is high and continues to grow; a changing demographic profile with increasing numbers of elderly and vulnerable people; a growing gap in quality of private versus public care; shortages in critical medical equipment; an economic crisis (with underfunded and unpaid medical staff); and hosting Syrian refugees representing a quarter of the Lebanese population straining an already overburdened system (AUB/Issam Fares Institute 2015; Meyers 2020; MoE 2011; MoE 2016; Sheridan & Allen 2015; World Bank 2019). The tipping point to collapse may have just emerged through the dual threats of COVID-19 and the August 2020 Beirut explosion, which decimated

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staple food stocks, increased COVID-19 caseload by 220 per cent, released toxic chemicals in the air that will compound air pollution health issues for years, exploded 17 containers full of personal protective equipment (PPE), and rendered half of the capital's already overwhelmed healthcare infrastructure 'non-functional' (International Rescue Committee 2020; Meyers 2020; The Lancet 2020; WHO 2020). All this, in a country which already spends 8.2 per cent of the public budget on healthcare – among the highest health expenditures in the world (CIA World Factbook 2020; MoE 2011).

Though these are not solely climate-driven impacts, it is important to 'socially-situate these health outcomes' (AUB/Issam Fares Institute 2015) to highlight the role of climate change in the health landscape of Lebanon. It is critical to understand that climate change will drive direct health impacts, while continuing to amplify the burden on a healthcare system that is already strained and seemingly does not have the capacity to absorb projected additional climate impacts.

2.3. Economic security

In addition to economic vulnerability linked to regional political instability, Lebanon is facing significant economic impacts of climate-induced agricultural production decreases and damage to infrastructure. These are projected to be exacerbated by more frequent and severe climatic events (MoE 2016). Sixty per cent of the country's economic activity is located along the Mediterranean Sea and will be vulnerable to flooding and sea level rise (Brown & Crawford 2009). It is estimated that in 2020 the economic cost of climate change represents one-third of annual household earnings, and that by 2080 climate change will cause a 32 per cent reduction of Lebanon's GDP – leaving the average household with economic losses greater than its annual earnings (UNDP n.d.).

Although agriculture only contributes to 4 per cent of the GDP, projected decreases in agricultural productivity and vulnerability of crop failure due to climate change constitute significant risks to economic security (MoE 2016). The agricultural sector employs 20–30 per cent of the active workforce and constitutes up to 80 per cent of local GDP in rural areas (MoE 2016). The biggest projected economic loss will be on seasonal crops, as higher temperatures and reduced precipitation will decrease soil moisture. The increasing intensity of winter storms is also likely to generate floods and frost causing crop failure (Government of Netherlands 2018). Currently, the largest economic costs of damage due to climate change are related to flooding and are estimated at 330 million US dollars annually (Climate Smart Agriculture n.d.).

The Bekaa Valley accounts for 43 per cent of national cultivated land and is the most important production area for seasonal crops and livestock, Here, yields are highly dependent on rainfall, as only 31 per cent of the land is irrigated (MoE 2016; Verner *et al.* 2018). Agricultural production in this area is particularly vulnerable as the Bekaa Valley is projected to face significant water scarcity due to increasing evapotranspiration (already reaching 70 per cent of annual mean precipitation), and 20 per cent decreases in annual rainfall (Verner *et al.* 2018; USAID 2016). Amongst important national cereal crops production, maize yield is projected to decline by 40 per cent by 2040 and 64 per cent by 2080, whereas wheat will decline by 16 per cent by 2040 and 30 per cent by 2030 (MoE 2015). Crop diversification prioritizing climate change resilience has prompted many farmers to grow cannabis. Following recent legalization of the industry (estimated to be worth 1–4 billion US dollars), production has

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increased by more than 30 per cent and has more cultivated hectares than major vegetable crops (Verner *et al.* 2018).

Livestock productivity, which contributes to 30 per cent of agricultural production, is already being impacted by climate-driven changes in grazing periods, and decreasing quality of pasture due to increasing temperatures and the prolongation of droughts (Government of Netherlands 2018; MoE 2016). Also, recent harsher winter storm conditions have been causing significant livestock loss (Haddad *et al.* 2014). Livestock are facing the dual threat of climate-driven change as well as increases in the numbers of goat and sheep herders due to the Syrian crisis, which is in turn adding additional stress to Lebanon's rangelands (MoE 2016).

With 49 per cent of Lebanese concerned about their ability to access food, and 31 per cent facing food insecurity and malnutrition, climate-driven decreases in agricultural production and increases in food prices will have a significant impact on vulnerable populations (MoE 2015). Serious drought (similar to the one of 2013–2014 which caused regional food insecurity) are projected to be more recurrent because of climate change. Climate-induced economic impacts are projected to be more severe for rural than urban households, representing a respective household income reduction of 24 per cent and 12 per cent respectively (MoE 2016).

2.4. Protection

Lebanon hosts the largest number of refugees per capita globally. The recent influx of Syrian refugees increased Lebanon's population by 30 per cent in two years, putting significant additional pressures on natural resources and service supply already facing climate-induced stressors (e.g. farmland, groundwater, energy demand, solid waste etc.) (Government of Netherlands 2018). This is in addition to the fact that vulnerable groups already face higher vulnerability to climate impacts due to precarious living conditions (both in urban settlements and informal rural settlements) (National Public Radio (NPR) 2019).

Lebanon's population has a recent history of experiencing conflict and displacement: 1.5 million Lebanese continue to be impacted by years of civil unrest, and an additional 470,000 refugees fleeing the Arab–Israeli war have arrived, as have 1.5 million Syrian refugees. This brings the number of people in need to more than half the country's population (NPR 2019). Half of the refugees from Palestine live in 12 main camps that experience overcrowding, poverty and poor housing conditions. No formal camps were established to respond to the Syrian crisis. Refugees have, therefore, settled in precarious urban and rural housing (73 per cent) or informal settlements and non-residential structures such as makeshift tents or farm buildings (27 per cent) (United Nations High Commissioner for Refugees (UNHCR) n.d.).

Heavy winter storms in 2019 destroyed makeshift shelters and caused floods in 151 informal camps, further highlighting the vulnerability of refugees to climate changes such as increases in extreme precipitation events and winter floods. More than half of the 2,000 informal settlements are vulnerable to future winter storms (Abdallah & Hdeib 2016; NPR 2019). In addition, an increase in the number of extremely hot days is likely to have disproportionate impacts on vulnerable people in urban settlements, who frequently lack reliable power supply to meet their cooling needs (Ghanem 2020).

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As introduced in Section 2.1 above, the arrival of 1.5 million refugees from Syria has increased domestic water use by 20 per cent. When coupled with the projected climate changes, it paints a grim picture of Lebanon's ability to address these dual threats (Jaafar *et al.* 2019). The most severe impacts thus far have been felt in key agricultural areas such as the Bekaa Valley, which faces both the most acute rise in water demand from refugees (plus 89 per cent) at the same time as the most severe reduction in water availability projections (minus 29 per cent by 2080) (Jaafar *et al.* 2019; Verner *et al.* 2018). In urban areas, decreasing water availability will disproportionately affect refugees relying on external providers as well as for those whose political or religious orientation does not permit them to access extensive social services and water distribution operated by Hezbollah (Walnycki & Husseiki 2017).

Climate-driven impacts will cause significant protection challenges. Competition over limited water resources is already increasing tensions, contributing to further displacement and relocation of vulnerable populations (Human Rights Watch 2019; Verner *et al.* 2018). Tensions are also likely to increase as the frequency and intensity of drought increases as a result of climate change (Verner *et al.* 2018).

In addition, around the world, prisoners frequently have heightened vulnerability to natural disasters due to spatial marginalization resulting from prison locations on hazard-prone land and/or isolation from emergency evacuation services; limited to no connections to social networks, which are crucial aspects to hazard resilience; and political marginalization, including lack of policies and services to prevent disaster impacts on imprisoned populations (Gaillard and Navizet 2012). While specific information is not available for Lebanon, these types of vulnerabilities, coupled with more frequent and intense disasters due to climate change, may leave prison populations in especially precarious positions to hazards such as extreme heat, extreme cold and floods.

2.5. Policy

Climate change in Lebanon is under the mandate of the Ministry of Environment (MoE) which, in turn, has established the Climate Change Coordinating Committee (CCCC) to liaise with other key ministries (USAID 2016).

Lebanon submitted its Intended Nationally Determined Contribution (INDC) in 2015. The Lebanese government cites "development challenges, lack of security [...], political instability as well as massive inequality and a high level of poverty" as key to its decision to prioritize adaptation (MoE 2020). Key target sectors include water (including increasing storage capacity and distribution efficiency) as well as forestry and agriculture (striving to increase sustainable forestry management and socioeconomic development whilst maintaining 'ecological integrity') (MoE 2020).

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Mitigation measures are also outlined and include the following:

1. Energy: conditionally reducing GHG emissions by 30 per cent and power demand by 10 per cent by 2030 (unconditional would be 15 per cent and 3 per cent respectively), as well as refurbishing power generation and switching to natural gas.
2. Waste: increasing recycling and waste management processes, increasing wastewater treatment.
3. Forestry: increasing the capacity of forests to function as a carbon sink.
4. Transport: increasing use of public transport and increasing the share of fuel-efficient vehicles (conditional) (Republic of Lebanon, 2015).

Lebanon signed and ratified the Paris Agreement (2016 and 2019 respectively) and has been a member of the Climate Vulnerable Forum (supporting South–South solidarity) since 2016 (MoE 2019). It is also signatory to the United Nations Convention to Combat Desertification (under which Lebanon has established a goal of land neutrality by 2030) (Government of Netherlands 2018).

Lebanon's proposed National Framework for Health and Climate Change was outlined in its second national communication to the United Nations Framework Convention on Climate Change (UNFCCC), including the following objectives: centring public health and climate-related health concerns; implementing adaptive strategies at multiple levels to reduce impacts of climate change on the health of the Lebanese population; supporting other sectors to mitigate climate change; and, strengthening the institutional capacity of public healthcare systems (MoE 2011). Further adaptive strategies to mitigate the health impacts of climate change were outlined in the 'Economic costs to Lebanon from climate change' report – an element of Lebanon's third national communication to the UNFCCC (MoE/UNDP/GEF 2015; MoE 2016). These policies are complemented with the WHO's Eastern Mediterranean Region Climate Change and Health: Framework for Action 2017–2021, which includes Lebanon (WHO 2017).

Non-state actors and the private sector play a large and growing role in climate action in Lebanon, as evidenced by the creation of the Lebanon Climate Act (LCA). The LCA is composed of Green Mind (a non-governmental organization), Central Bank of Lebanon, MoE and UNDP, and the approach has been to encourage companies to create and embrace value from climate change (LCA / Green Mind / UNDP 2017; MoE 2016). Since its creation in 2016, the LCA has grown to include over 150 non-state actors and has been lauded as a 'good practice of robust stakeholder engagement' (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) / UNDP 2019).

Despite gaps, Lebanon has been actively seeking to mainstream gender into climate action through onboarding the UNDP NDC Support Programme to better understand how to integrate gender into its NDCs (MoE / UNDP 2020). Together with the Green Climate Fund (GCF), Lebanon has also recently (as of March 2020) launched a two-year programme to increase the institutional capacity of the MoE and to develop country climate strategies (MoE / GCF, 2020).

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