



Sector: Energy



## SDG-NDC Synchronization: Assessment and Recommendations

How can the Nationally Determined Contributions on Climate Change and the 2030 Agenda for Sustainable Development complement and support each other towards a sustainable future?

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## Assessment and Recommendations for Integration of Sustainable Development Goals within Lebanon's Climate Related Plans

### Description and Objectives

The Paris Climate Agreement's Nationally Determined Contribution (NDC) and the Sustainable Development Goals (SDGs) share some mutual goals and a common target year (2030). Many synergies exist between the two agendas and addressing those linkages from an integrated institutional viewpoint will enhance the implementation, coordination and tracking of the different actions. The aim of this analysis is to assist policymakers in:

- Assessing the sectoral policies that make up the NDC in terms of SDG linkages using the SDG Climate Action Nexus tool (SCAN tool) in order to establish and clarify the linkages;
- Identifying progress indicators of NDC policies to inform SDG progress and vice versa, in order to synchronize reporting;
- Operationalizing the coordination between institutions responsible for the implementation and reporting of both the NDC and SDGs.

### Methodology

- The SCAN-tool provides high-level guidance on how climate actions can impact the achievement of the SDGs ([http://ambitiontoaction.net/scan\\_tool/](http://ambitiontoaction.net/scan_tool/));
- Coupled with local expertise, this analysis:
  - Identifies potential linkages between specific recommendations included in each of Lebanon's climate related plans and policies and the SDGs;
  - Includes the identification of a primary SDG linkage along with other relevant SDG linkages;
  - Identifies potential linkages to all of the SDG targets, and provides further recommendations.
- All climate-relevant and sustainable development plans inherently contribute to SDG 13 (climate action);
- SDG 17 addresses global partnerships and means of implementation, relevant SDG 17 linkages to local plans are also identified in this assessment.

**This is not an exhaustive analysis but it provides a sound basis to better understand where and how Lebanon's climate actions impact SDG achievement.**

## How to use this guide?

### **Step 1: Review**

This guidance recommends certain linkages per SDG which should be reviewed in the context of policy-making.

### **Step 2: Prioritize**

Not all the linkages made have the same relevance to the policy or activity, therefore, the linkages should be prioritized considering magnitude of impact, co-benefits and other criteria depending on the institution and its priorities.

### **Step 3: Consult**

Depending on the prioritized SDGs, stakeholder consultations for policy-drafting should include the lead institutions responsible for implementing the selected SDGs.

### **Step 4: Synchronize**

When implementing the policy, synchronization at the level of tracking between the different institutions, the NDC committee and the SDG committee should be considered.

<b>Sector:</b>	Energy
<b>Sub-sector:</b>	Renewable Energy
<b>Source document:</b>	The National Renewable Energy Action Plan (NREAP) for the Republic of Lebanon (2016-2020)
<b>Ministry:</b>	Ministry of Energy and Water - Lebanese Centre for Energy Conservation (LCEC)
<b>URL:</b>	<a href="http://lcec.org.lb/Content/uploads/LCECOther/161214021429307~NREAP_DEC14.pdf">http://lcec.org.lb/Content/uploads/LCECOther/161214021429307~NREAP_DEC14.pdf</a>

### Plan/ Policy Overview

The National Renewable Energy Action Plan (NREAP) is a technical document that addresses multiple renewable energy strategies. The NREAP is divided into chapters for each renewable energy technology that Lebanon is currently implementing or considering (bioenergy, solar, wind, hydro, etc.) with a technical analysis. The 2016-2020 NREAP is a follow-up report to The National Energy Efficiency Action Plan for Lebanon (NEEAP 2011-2015), and therefore it defines its goals and objectives quantitatively rather than qualitatively. Because it is a data driven plan, the NREAP does not directly address the majority of the SDGs such as, health, gender, equity, or education from a sustainable development framework. Likewise, it makes little reference to combating climate change through renewable energy goals. The NREAP does however, demonstrate the broader benefits of renewable energy projects through providing multiple case studies, examples of specific programs, and through expert quotes. The Sustainable Development goals and Nationally Determined Contribution (NDC) are briefly mentioned in the plan but not in a manner that connects the NREAP policy objectives or goals to these agendas in a substantive way.


### Links to Climate Change and Sustainable Development

At the 2009 Copenhagen Climate Summit, the Lebanese Government made a pledge to reach 12% renewable energy production till 2020, which was then anchored in the 2010 Policy Paper for the Electricity Sector. Lebanon’s Nationally Determined Contribution (NDC) then set the renewable energy target at 15% unconditionally or 20% conditionally by 2030. The 2019 Policy Paper for the Electricity Sector enhanced that number further to 30% by 2030, which will also be reflected in the updated NDC.


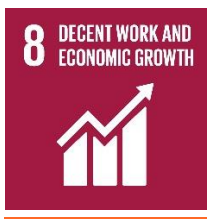



<i>Unconditional Target</i>	A GHG emission reduction of 15% compared to the Business-As-Usual (BAU) scenario in 2030.
	A 3% reduction in power and heat demand through energy-efficiency measures in 2030 compared to the demand under the BAU scenario
	15% of the power and heat demand in 2030 is generated by renewable energy sources.
<i>Conditional Target</i>	A GHG emission reduction of 30% compared to the BAU scenario in 2030.
	20% of the power and heat demand in 2030 is generated by renewable energy sources.
	A 10% reduction in power demand through energy-efficiency in 2030 compared to the demand under the BAU scenario

The following assessment identifies how the specific actions in the NREAP relate to the SDG targets (Tables 1 and 2). It identifies how bioenergy, for example, can positively or negatively impact SDG targets.

**Table 1: Primary SDG Target**

Relevant SDG	How does the NREAP contribute to this SDG? (examples)
 <p><b>7</b> AFFORDABLE AND CLEAN ENERGY</p>	<ul style="list-style-type: none"> <li>- Investments in renewables generate modern and sustainable energy services and can increase energy security in countries that rely on imports for energy supply</li> <li>- Increasing solar, wind installations, geothermal, and bioenergy contributes to increasing the share of renewables in the global energy mix</li> <li>- Solar heating and other renewables contribute to increasing access to basic affordable and modern energy services</li> </ul>

**Table 2: Highly Relevant SDG Targets**

Relevant SDG	How does the NREAP contribute to this SDG? (examples)
 <p><b>3</b> GOOD HEALTH AND WELL-BEING</p>	<ul style="list-style-type: none"> <li>- Renewable energy can reduce air, water and soil pollution and contamination and thus non-communicable diseases when displacing polluting energy sources, such as fossil fuels</li> </ul>
 <p><b>8</b> DECENT WORK AND ECONOMIC GROWTH</p>	<ul style="list-style-type: none"> <li>- Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation</li> <li>- Renewable energy supports increased resource efficiency and reduces environmental damage vs economic growth powered by conventional energy sources</li> </ul>
 <p><b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<ul style="list-style-type: none"> <li>- Deployment of renewables supports sustainable industrialization through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation</li> <li>- Deployment of renewable energy upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies</li> </ul>
 <p><b>11</b> SUSTAINABLE CITIES AND COMMUNITIES</p>	<ul style="list-style-type: none"> <li>- Deploying renewable energy can contribute to reducing the environmental impact of cities by reducing the amount of GHG and air pollutants from power generation</li> </ul>
 <p><b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<ul style="list-style-type: none"> <li>- Renewable energy contributes to the sustainable management and efficient use of natural resources</li> <li>- Renewables increase resource efficiency and reduces environmental damage from GHGs vs economic growth powered by conventional energy source</li> <li>- Deployment of renewables upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies</li> </ul>

## Summary of Recommendations

Renewable energy strategies, including the next NREAP update or amendment, should explicitly address linkages to specific SDG targets, and the NDC goals. In doing so, there should be narrative that focuses on the plan's broader societal goals and impact on addressing climate change. As highlighted above, renewable energy positively impacts at least twenty-seven SDG targets and advances the NDC goals in reducing GHG emissions, and it should therefore be demonstrated in the plan so that common entry points can be better understood within and among Lebanon's sustainable development related plans and policies. Case studies or examples of specific renewable energy projects could also be more explicitly tied to the NDC and SDGs.

- As the cost of renewables decline and their reliability improves, RE technologies are emerging as more affordable and practical means of providing essential energy services, especially to disadvantaged communities. Energy poverty in Lebanon affects 16% households (paying more than 10% of their income on electricity bills) (UNDP - CEDRO Team, 2018) and therefore in implementing the NREAP, poverty is being addressed by creating a more reliable, accessible and affordable energy supply especially through solar water heaters and photovoltaics.
- Likewise, renewable energy technologies such as hydro, solar and wind power, can greatly reduce greenhouse gas emissions and greatly reduce premature deaths from air pollutants. Dr. Alan Shihadeh, Dean of the Maroun Semaan Faculty of Engineering and Architecture at the American University of Beirut was quoted in the Daily Star saying that, "Diesel generators alone increase our exposure to cancer-causing chemicals by 40 to 50 percent" (Daily Star, 2018). Deploying cleaner energy sources that enable the phasing out of diesel generators can therefore, have a significant impact on SDGs 3.4 and 3.9 which relate to achieving more positive health outcomes by reducing harmful pollutants.
- The NREAP highlights how prior to the civil war Lebanon depended primarily on hydroelectric power. In 1976, approximately 70% of the total electricity production in Lebanon came from hydroelectricity. The NREAP recommends, "increasing the share of hydraulic power production through maintenance, rehabilitation, and/or replacement of existing hydro plants, and facilitating the implementation of additional capacity on a build-operate-transfer (BOT) basis" which can clearly be tied to SDG 12: Sustainable Consumption and Production, SD3: Good Health and Well-being, and SDG 9: Industry, Innovation, Infrastructure.

Future iterations of the NREAP should consider the potential impact on SDG targets and in addressing climate change when developing and prioritizing specific implementation strategies. For example, the plan should prioritize measures that are most economically feasible, have the largest impact on both the NDC and SDGs, and mitigate any foreseeable negative impacts. In other words, there are opportunities in portraying renewable energy through a more holistic approach: looking through the lens of the SDGs and NDC might result in a different prioritization of plan strategies.

- For example, looking at renewable energy from a poverty perspective might result in new strategies that specifically seek to reduce the cost of energy and provide a more reliable service in harder to reach areas such as solar water heaters or solar photovoltaics.

- Key indicators specifically for the NREAP should be developed and integrated with the SDGs and they should be synthesized with other plans and policies, to include a broader assessment of meeting the combined SDG targets and NDC goals.
- The SDG and NDC committees should work collaboratively, alongside the responsible ministries, in the development of joint indicators that can be utilized among all sustainable development related plans and policies to jointly assess both NDC and SDG progress.

### Potential Negative Linkages

The majority of renewable energy projects result in largely positive benefits, however, many measures can also have drawbacks or unintended consequences. Total impact and potential trade-offs need to be carefully weighed with renewables to determine if projects have a net positive benefit. For example, establishing renewable energy infrastructure can require the procurement of a significant amount of land or for water resources to be diverted. Policy makers need to assess the availability of land and determine whether or not wind energy, for example, is the best use for that land and what the potential negative impacts might be for example, degradation of natural habitat. Some negative consequences may even be avoided if carefully planned for. The SDGs can be helpful in illuminating potential negative impacts of renewables. Some negative linkages may not be detrimental specifically to the environment, but they can have negative consequences on other factors such as agriculture, poverty, health or jobs. Therefore, it is imperative to understand how certain renewable initiatives may negatively impact specific SDGs to better understand how they might be avoided or mitigated. Following is a list of the potential negative linkages that the deployment of various renewable energy could have on the SDGs. It is not an exhaustive list, yet it illustrates some of the primary negative consequences of renewables, particularly in Lebanon. Table 3 shows a more comprehensive picture of all SDG targets that could potentially be negatively impacted by renewable energy projects, primarily the environmental consequences on land and water.

**Table 3: Potential Negative Linkages to SDGs**

<b>Generally</b>	
SDG 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Deploying renewable energy may lead to job losses from displaced alternative power generation activity
SDG 2.3: By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Could reduce land and resource access for dependent communities as installations require large land areas
<b>Hydro</b>	
SDG 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	Some natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Furthermore, dams lead to sediment deposition and interfere with freshwater wildlife
SDG 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services	Climate change can cause large variations in water availability for power generation across regions and even within regions, reducing reliability of energy services
SDG 15.1: By 2020, ensure the conservation, restoration and	Large-hydropower may negatively impact water ecosystems



sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	as natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Dams lead to sediment deposition, can interfere with freshwater wildlife and can also affect the water cycle through increased evaporation
<b>Geothermal</b>	
SDG 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Emissions of hydrogen sulphide (H <sub>2</sub> S) and ammonia (NH <sub>3</sub> ) to air and potential discharge of thermal and polluted water. CO <sub>2</sub> and CH <sub>4</sub> are also emitted to air. Examples of dissolved chemicals that may be found in the thermal water are sodium chloride (NaCl), boron (B), arsenic (As) and mercury (Hg)
<b>Bioenergy</b>	
SDG 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	Extensive monocultures can limit biodiversity and intensive use of nutrients for biofuel crops and may affect soil quality and lead to soil degradation. Ecosystems conversion for bioenergy production may occur. These impacts do not apply to waste-to-energy and biomass
SDG 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Increased water use for irrigation of bioenergy crops, biofuel processing and for cooling in power plant operation

### Sustainable Development Anchors: what is there and what is missing?

A key word search and review of the NREAP identifies where the plan explicitly addresses components of sustainable development and climate change. While the SCAN tool identified where linkages exist between plans and the SDG targets, further examination of each plan reveals where these linkages are explicitly stated. For example, renewable energy measures have strong linkages to decent work and economic growth (SDG 8) but these linkages are not included as part of the NREAP narrative.

The following is an assessment of sustainable development and climate change language included the NREAP and recommendations for creating linkages in future iterations of the plan (Table 4). The below recommendations tackle the primary SDG, the other highly relevant SDG linkages as well as the rest.

**Table 4: Recommendation for Estimation of Impact of SDGs**

Key Words	Description in the Policy/Strategy/Action Plan (examples)	Recommendation for Estimation of Impact/Integration of Impact
<p><b>SDG One: No Poverty</b></p> <ul style="list-style-type: none"> <li>· Low-income</li> <li>· Poor</li> <li>· Poverty</li> <li>· Disadvantaged</li> <li>· Underprivileged</li> <li>· Vulnerable groups</li> </ul>	<p>The plan does not address poverty alleviation or any attempts to build resilience of the poor.</p>	<ul style="list-style-type: none"> <li>- Solar heating and other renewables contribute to increasing access to basic affordable and modern energy services;</li> <li>- Renewables can increase energy access to low-income individuals and reduce energy expenditure which contributes to reducing poverty levels;</li> <li>- Increased access and/or more affordable energy services allows for more productive and income generating time.</li> </ul>
<p><b>SDG Two: Zero Hunger</b></p> <ul style="list-style-type: none"> <li>· Hunger</li> <li>· Food access</li> <li>· Food security</li> <li>· Food affordability</li> <li>· Agricultural Productivity</li> <li>· Rural communities</li> </ul>	<p>Food and agriculture are only mentioned in terms of bioenergy and in selecting areas for photovoltaic solar and not in terms of the benefits of renewables in alleviating hunger and/or achieving food security:</p> <ul style="list-style-type: none"> <li>- Currently, the amount of land devoted to growing energy crops for biomass fuels is only 0.19% of the world’s total land area and only 0.5–1.7% of global agricultural land;</li> <li>- First generation bioethanol-alternative to fossil gasoline, made from agricultural crops;</li> <li>- Improvement of transportation networks between available and suitable agricultural areas where energy crops would be cultivated.</li> </ul> <p>Rural communities are mentioned in terms of site locations for renewable energy projects:</p> <ul style="list-style-type: none"> <li>- Traditional use of biomass in rural areas is intensive; however, the development of sustainable bioenergy is lagging behind;</li> <li>- A variety of technology options exist for the conversion of biomass streams of interest into power, heat, and liquid fuels. Many of these options rely on several feedstock alternatives. These options can be implemented from large-scale industrial applications to small-scale and rural end uses;</li> </ul>	<ul style="list-style-type: none"> <li>- Can create new market opportunities for farmers (production and sale of bioenergy crops in addition to food crops);</li> <li>- Could contribute to improving agriculture productivity and income through agricultural knowledge and practices that can be transferred to crops for other purposes (e.g. food).</li> </ul>

	<ul style="list-style-type: none"> <li>- Awareness raising within the farming communities of rural areas, namely in Nabatiyeh.</li> </ul>	
<p><b>Highly Relevant SDG</b></p> <p><b>SDG Three: Good Health and Well-being</b></p> <ul style="list-style-type: none"> <li>· Environment</li> <li>· Health</li> <li>· Pollution</li> </ul>	<p>The environmental benefits of renewables are mentioned within the NREAP, typically within case studies, but the clear environmental and health benefits of renewables is not a central part of the narrative or plan objectives:</p> <ul style="list-style-type: none"> <li>- The introduction of renewable energy in Lebanon will not only profit the Lebanese population in terms of environmental benefits, but will also have an impact from a social perspective;</li> <li>- Approximately 125 MW of new hydropower supply is viable on exceptionally favorable locations with low environmental impact and relatively low levelized costs;</li> <li>- Dissemination of the environmental advantages of using combustion/boiler technologies instead of burning the biomass directly;</li> <li>- NEEREA finances new environmentally friendly projects as well as those that enhance the conditions of existing projects to become environmentally sound;</li> <li>- In 2005, and following the setup of the LCEC project at MEW, the RE and energy efficiency (EE) themes started to reemerge as serious alternatives to curb the energy demand, to supply clean energy, and to help reduce the negative effects on the environment;</li> <li>- EDL administrative and technical teams will spare no efforts to change gradually the national energy system into a sustainable and environmentally friendly one;</li> <li>- However, to narrow down the selected areas and in order to calculate the potential power capacity and power output for PV farms in Lebanon, constraints that ensure technical viability, environmental sustainability, social security (e.g., food security), and economic considerations need to be taken into account.</li> </ul>	<p><b>In addition to SDG 3 in Table 2:</b></p> <p>Bioenergy: Reduced SO<sub>x</sub> and NO<sub>x</sub> emissions to air and related non-communicable diseases. However, PM emissions may be comparable to fossil fuels, depending on the quality of fuels.</p>

<p><b>SDG Four: Quality Education</b></p> <ul style="list-style-type: none"> <li>· Education</li> <li>· Awareness raising</li> <li>· Youth</li> </ul>	<p>There is no mention made on education or youth, however, there are some references to awareness raising and capacity building mostly in reference to the prior NREAP or within case studies presented:</p> <ul style="list-style-type: none"> <li>- Initiative 12: Awareness and capacity building;</li> <li>- In addition, increased awareness among public sector officials and decision makers has positive contribution;</li> <li>- Implementation of a Mini Hydro plant at Tannourine Hospital, Awareness Campaign and Capacity Building of the Ministry of Energy and Water (MoEW);</li> <li>- Awareness rising within the farming communities of rural areas, namely in Nabatiyeh.</li> </ul>	<p>Awareness campaigns to support mitigation actions, especially in schools, would spread skills and knowledge about sustainable development.</p>
<p><b>SDG Five: Gender Equality</b></p> <ul style="list-style-type: none"> <li>· Women</li> <li>· Gender</li> </ul>	<p>Gender is not addressed in the NREAP.</p>	<ul style="list-style-type: none"> <li>- Because rural women and girls are primarily responsible for the bulk of household work, access to energy will make a significant difference to their quality of life, including their health (UNDP 2011);</li> <li>- Women and girls benefit the most from clean, efficient energy solutions. In rural areas, where access to modern energy sources is lacking, everyday household activities such as cooking, and cleaning can be labor and time intensive;</li> <li>- The availability of affordable lighting, increases the time available for education; employment, income-generating activities, and social and political interactions (EEP, 2017).</li> </ul>
<p><b>SDG Six: Clean Water Sanitation</b></p> <ul style="list-style-type: none"> <li>· Clean water</li> <li>· Drinking water</li> <li>· Wastewater</li> <li>· Water quality</li> </ul>	<p>Clean water and sanitation are not addressed in the NREAP.</p>	<ul style="list-style-type: none"> <li>- Wind power can reduce thermal and non-thermal water pollution when fossil fuel generation plant is displaced;</li> <li>- Wind power uses almost no water in its operation;</li> <li>- Small hydro (e.g. run of river) uses very little water compared to thermal alternatives;</li> <li>- Solar heating contributes to water-use efficiency when replacing electric water heating (reduced generation from water intensive thermal power plants).</li> </ul>

<p><b>Primary SDG</b></p> <p><b>SDG Seven: Affordable &amp; Clean Energy</b></p> <ul style="list-style-type: none"> <li>· Energy efficiency</li> <li>· Electricity transmission</li> <li>· Electricity distribution</li> <li>· Reliable energy</li> <li>· Affordable energy</li> <li>· GHG reduction</li> <li>· Mitigation</li> <li>· Energy security</li> </ul>	<p>The entire NREAP is focused on supplying cleaner and more reliable energy through renewable technologies:</p> <ul style="list-style-type: none"> <li>- The integration of various renewable resources to the national power grid in Lebanon provides opportunities to improve the power sector in the country. However, it is well known that in order to ensure a reliable power system that incorporates variable renewable power resources, conventional generation will need to become more flexible, and there will be a need for additional automation and voltage and frequency regulation at the distribution level;</li> <li>- The DREG project objective is to reduce greenhouse gas (GHG) emissions by the removal of barriers to the widespread application of decentralized renewable energy power generation.</li> </ul>	<p><b>In addition to SDG 7 in Table 1:</b></p> <ul style="list-style-type: none"> <li>- Access to financing can support the expansion of renewable energy thus providing more affordable, reliable and modern energy;</li> <li>- A comprehensive legal and legislative framework can support more affordable, reliable, and modern energy services.</li> </ul>
<p><b>Highly Relevant SDG</b></p> <p><b>SDG Eight: Decent Work and Economic Growth</b></p> <ul style="list-style-type: none"> <li>· Jobs</li> <li>· Income</li> <li>· Employment</li> </ul>	<p>The NREAP does make some mention in needing to attract expertise and build capacity. It also mentions the income earning potential of net-metering:</p> <ul style="list-style-type: none"> <li>- Moreover, it is critical to attract new expertise to EDL through a regular employment process, while updating the existing governance and management bylaws. This current NREAP provides a long-term strategy for renewable energy integration into the national grid;</li> <li>- Such a regulatory framework will enable a quicker development and utilization of renewable energy resources, more investments in renewable energy sources, and an indigenous capacity in technology and employment for renewable energy sources;</li> <li>- Net metering: There are numerous advantages in net-metering schemes. In particular, the solar PV is usually produced during the daytime; therefore, there is availability of energy during the demand peak time. The combination of the scheme with flexible tariffs, according to the time-of-day during which the energy is consumed by the consumers, can generate a significant income for consumers.</li> </ul>	<p><b>In addition to SDG 8 in Table 2:</b></p> <ul style="list-style-type: none"> <li>- Deploying renewables can support full employment through creation of decent jobs;</li> <li>- Deploying renewables upgrades the technological capabilities of the power sector and other relevant sectors;</li> <li>- Financial support (e.g. grants, credit) to encourage development and uptake of low carbon technologies and services supports entrepreneurship and Micro, Small and Medium Enterprises (MSMEs) through better financial services.</li> </ul>

<p><b>Highly Relevant SDG</b></p> <p><b>SDG 9: Industry, Innovation, Infrastructure</b></p> <ul style="list-style-type: none"> <li>· Industry</li> <li>· Innovation</li> <li>· Infrastructure</li> <li>· Research and development</li> </ul>	<p>The purpose of the plan is to detail the development and expansion of a renewable energy infrastructure. It does not address infrastructure, however, in terms of broader sustainable development objectives:</p> <ul style="list-style-type: none"> <li>- The study identified 32 new sites that have a potential hydroelectric capacity of 263 MW (1,271 GWh/y) in run-of-river schemes and 368 MW (1,363 GWh/y) in peak schemes (i.e., with dam infrastructure);</li> <li>- The development of the new emerging technologies relies heavily on universities, research and development centers, and pioneering initiatives in the country.</li> </ul>	<p><b>In addition to SDG 9 in Table 2:</b></p> <ul style="list-style-type: none"> <li>- Deployment of renewables supports sustainable industrialization through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation;</li> <li>- Deploying wind power upgrades the technological capabilities of the power sector and other relevant sectors.</li> </ul>
<p><b>SDG 10: Reduced Inequalities</b></p> <ul style="list-style-type: none"> <li>· Equity</li> <li>· Inclusion</li> </ul>	<p>Equity and inclusion are not addressed in the NREAP.</p>	<ul style="list-style-type: none"> <li>- Renewables can increase access to energy which plays a key role in meeting households basic needs and creating pathways out of poverty;</li> <li>- The availability of affordable lighting increases the time available for education; employment, income-generating activities, and social and political interactions. (EEP, 2017).</li> </ul>
<p><b>Highly Relevant SDG</b></p> <p><b>SDG 11: Sustainable Cities and Communities</b></p> <ul style="list-style-type: none"> <li>· Cities</li> <li>· Communities</li> <li>· Urban</li> <li>· Urbanization</li> <li>· Fuel efficient vehicles</li> <li>· Modal share shift</li> <li>· Public transportation</li> <li>· Accessibility</li> <li>· Mobility</li> </ul>	<p>Cities are not mentioned in relation to sustainable development in the NREAP with the exception of awareness of the Beirut River Solar Snake project:</p> <ul style="list-style-type: none"> <li>- The central urban location of the BRSS project contributed to a remarkable increase in awareness on renewable energy as well as in market interest and market activity in the solar PV technology.</li> </ul>	<p>No additional recommendations beyond SDG 11 in Table 2.</p>

<p><a href="#">Highly Relevant SDG</a></p> <p><b>SDG 12: Sustainable Consumption and Production</b></p> <ul style="list-style-type: none"> <li>· Consumption</li> <li>· Production</li> <li>· Output</li> <li>· Productivity</li> <li>· Efficiency</li> </ul>	<p>The plan is primarily about increasing renewable energy production and reducing consumption of natural resources in the process. References to the key words can be found throughout the plan:</p> <ul style="list-style-type: none"> <li>- Increasing the share of hydraulic power production through maintenance, rehabilitation, and/or replacement of existing hydro plants, and facilitating the implementation of additional capacity on a build-operate-transfer (BOT) basis;</li> <li>- The treatment processes of forestry residues will be optimized to reduce the consumption of water to the minimum possible;</li> <li>- The treatment processes of residues from olive and fruit trees will be optimized to reduce the consumption of water to the minimum possible;</li> <li>- Choosing a feedstock with little water requirements and highest sustainability criteria;</li> <li>- The treatment processes of this biomass stream will be optimized to reduce the consumption of water to the minimum possible;</li> <li>- The treatment processes of lignocellulosic energy crops will be optimized to reduce the consumption of water to the minimum possible.</li> <li>- That being said, Lebanon has a favorable climate for PV power plants given the solar irradiance levels, the relative lack of dust or sand (when compared to countries in the Gulf region for instance), and a relatively mild climate that ensures a more optimal operation in terms of efficiency.</li> </ul>	<p><b>In addition to SDG 12 in Table 2:</b></p> <ul style="list-style-type: none"> <li>- Deployment of renewables supports sustainable industrialization through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation;</li> <li>- Provision of dedicated financial products or grant schemes would support companies in adopting sustainable practices and technologies.</li> </ul>
<p><b>SDG 13: Climate Change</b></p> <ul style="list-style-type: none"> <li>· Climate Change</li> <li>· GHG emissions</li> <li>· Resilience</li> </ul>	<p>The NREAP references the NDC only in regard to the variation in renewable energy targets between the NREAP and NDC:</p> <ul style="list-style-type: none"> <li>- Whereas, as per Lebanon’s INDC the vision of the Lebanese Republic for 2030 is to reach approximately</li> </ul>	<ul style="list-style-type: none"> <li>- Reference how renewable energy contributes to climate change mitigation and adaptation;</li> <li>- Reference role of renewable energy in the NDC;</li> </ul>

<ul style="list-style-type: none"> <li>· Mitigation</li> <li>· Adaptation</li> <li>· Nationally Determined Contribution (NDC)</li> </ul>	<p>15%. The 2030 calculations, as per this document, prove that additional efforts are needed to achieve this vision;</p> <ul style="list-style-type: none"> <li>- Practically, all the Lebanese territories are suitable for solar PV power production. However, to narrow down the selected areas and in order to calculate the potential power capacity and power output for PV farms in Lebanon, constraints that ensure technical viability, environmental sustainability, social security (e.g., food security), and economic considerations need to be taken into account.</li> </ul>	<ul style="list-style-type: none"> <li>- Align policy targets with the NDC.</li> </ul>
<p><b>SDG 14: Life Below Water</b></p> <ul style="list-style-type: none"> <li>· Water</li> <li>· Sea</li> <li>· Lakes</li> <li>· Streams</li> <li>· Rivers</li> <li>· Mediterranean</li> <li>· Marine life</li> <li>· Run-off</li> <li>· Water pollution</li> <li>· Coastal</li> </ul>	<p>Water is central to many renewable actions and mentioned in many places in the NREAP but not in the context of how renewables might positively benefit water ecosystems or marine life.</p>	<p>When displacing fossil fuel power plants, geothermal can reduce thermal and non-thermal water pollution potentially entering the marine environment.</p>
<p><b>SDG 15: Life on Land</b></p> <ul style="list-style-type: none"> <li>· Ecosystems</li> <li>· Biodiversity</li> <li>· Forests</li> <li>· Reforestation/afforestation</li> <li>· Seed bank</li> <li>· Genetic</li> </ul>	<p>The plan does not address the impact or benefits of renewable energy on the natural environment or climate change, but it is demonstrated in some the NREAP case studies and project examples.</p>	<ul style="list-style-type: none"> <li>- Solar heating can contribute to sustainable use of freshwater ecosystems when replacing traditional electric water heating;</li> <li>- Solar heating could help displace wood fuel use, contributing to reducing deforestation;</li> <li>- Renewables can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives;</li> <li>- Large-hydropower can contribute to sustainable use of freshwater ecosystems as it uses considerably less water than thermal alternatives (including thermal renewables);</li> <li>- Wind power can contribute to sustainable use of freshwater ecosystems as this technology uses almost no water in its operation.</li> </ul>



<p><b>SDG 16: Peace, Justice &amp; Strong institutions</b></p> <ul style="list-style-type: none"> <li>· Capacity</li> <li>· Legislation</li> <li>· Regulation</li> <li>· Legal framework</li> <li>· Policy</li> <li>· Participatory</li> <li>· Inclusive (decision-making)</li> </ul>	<p>Many of the NREAP strategies involve tightening the legislative and regulatory framework which links to SDG 16.6: developing effective, accountable and transparent institutions at all levels:</p> <ul style="list-style-type: none"> <li>- Undoubtedly, the rapid development of renewable energy anywhere in the world needs a suitable legal and legislative framework. Lebanon is no exception. This chapter of NREAP 2016-2020 covers the steps needed to ensure a smooth and focused development of renewable energy technologies in the country as per the targets set in the previous chapters.</li> </ul>	<p>A sound policy and legislative framework is a means to create more effective, accountable and transparent institutions.</p>
<p><b>SDG 17: Partnerships for the Goals</b></p> <ul style="list-style-type: none"> <li>· Resource</li> <li>· Financing mechanism</li> <li>· Public-Private Partnerships</li> </ul>	<ul style="list-style-type: none"> <li>- Utilizing financing mechanisms (NEEREA), developing effective public-private partnerships, and mobilizing international support and resources;</li> <li>- On the other hand, international support and donor support initiated by many players (mainly the European Union and UNDP) have an extremely positive effect on the development on the market;</li> <li>- Undoubtedly, the rapid development of renewable energy anywhere in the world needs a suitable legal and legislative framework;</li> <li>- It is important to keep in mind that NREAP 2016-2020 aims to develop renewable energy projects according to two main paths: the development of renewable energy projects by the public sector and then the development of renewable energy by the private sector;</li> <li>- The proposed plan of action relies on the application of the laws 288 (2014) and 54 (2015) to allow the private sector to generate electricity in the renewable energy sector solely and exclusively. This would mean allowing the private sector to produce electricity and export electricity to the national grid following the approval of the COM and based on the proposal of MEW and MOF.</li> </ul>	<ul style="list-style-type: none"> <li>- Strengthen the capacity to finance renewable energy through policy and financing tools;</li> <li>- A sound policy framework can support the expansion of renewable energy;</li> <li>- Strong public-private partnerships can result in expedited and scaled-up renewable projects.</li> </ul>

## Annex I: Lead Institution per SDG in Lebanon

<b>Theme: People</b>	Leading Institution: Ministry of Education and Higher Education					
<b>1</b> NO POVERTY 	<b>2</b> ZERO HUNGER 	<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>4</b> QUALITY EDUCATION 	<b>5</b> GENDER EQUALITY 	<b>10</b> REDUCED INEQUALITIES 	
<b>Theme: Planet</b>	Leading Institution: Ministry of Environment					
<b>6</b> CLEAN WATER AND SANITATION 	<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<b>13</b> CLIMATE ACTION 	<b>14</b> LIFE BELOW WATER 	<b>15</b> LIFE ON LAND 	
<b>Theme: Prosperity</b>	Leading Institution: Ministry of Economy and Trade					
<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 				
<b>Theme: Peace</b>	Leading Institution: Office of the Minister of State for Administrative Reform					
<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 						
<b>Theme: Data and Statistics</b>	Leading Institution: Central Administration of Statistics					
<b>Cross-cutting theme:</b>						
<b>17</b> PARTNERSHIPS FOR THE GOALS 						

## Annex II: Indicators

A cohesive and integrated indicator framework that synchronizes SDG and NDC progress is essential for coordinated implementation and joint progress assessment. Lebanon has yet to nationalize the SDG indicators which provides an opportunity to include climate focused indicators into the nationalized approach so that both agendas can be assessed through a mutual set of indicators.

The absence of nationalized SDG indicators withstanding, a robust database of national level data can be found through the SDG API database. The database provides data from global sources at the national level that correspond to the Global SDG Indicator Framework, making comparisons of SDG progress across countries easily accessible and consistent. In addition to utilization of the SDG global indicator framework, additional indicators are needed to effectively and cohesively monitor both agendas. As part of this research, identification of the targets, goals, data points and/or indicators within the NDC, Third National Communication and within specific plans and policies that comprise Lebanon’s NDC were identified to further provide a basis for developing an integrated indicator framework. The final product should be a combined list of indicators that incorporates the SDG global framework complemented by additional indicators that are climate focused, and germane to the goals of the specific plan/policy.

The NREAP does not provide performance indicators but does include data trends in Chapter 2 - Current energy trends and definition of the baseline year which may be valuable in developing national indicators for SDGs in Lebanon. The NREAP 2016–2020 considers the year 2010 as the baseline year and the year 2020 as the target year (Annex II Table 1 and 2). Integrating the NREAP targets into the existing SDG indicator framework could provide complimentary additional indicators for a joint NDC/SDG indicator set (Annex II, Table 3).

### Electricity Generation:



Description	Baseline Demand (ktoe)	Notes
Electricity generation from non-RE resources	3,090	
Electricity generation from RE resources	181	
Heating from all resources	167.52	Liquid gas: 27.2 SHW: 12.72 Diesel: 127.6 Other resources: n/a
Cooling from all resources	-	-
<b>TOTAL GENERATION</b>	<b>3,438.52</b>	-

Total national heating and electricity demand (in ktoe)	3,438 (actual)
Total national renewable energy production (in ktoe)	193.72 (actual)
Share of renewable energy production of the total energy production (%)	5.63% (actual)

**Annex II, Table 3: SDG Framework Alignment & Potential Additional Indicators**

SDG	Indicator
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	7.2.1 Renewable energy share in the total final energy consumption Other potential indicators: <ul style="list-style-type: none"><li>· Total kilotonnes of oil equivalent (ktoe) from RE projects (NREAP)</li><li>· Share of Wind energy for electricity production as a percentage of the total energy demand</li><li>· Solar energy-including solar photovoltaics (PV), concentrated solar power (CSP), as a percentage of total energy demand</li><li>· Hydro power as a share of total electricity production</li><li>· Biomass as share of total energy demand</li></ul>

## Annex III: SDG List

<b>PEOPLE</b>	 <p><b>Goal 1.</b> <b>End poverty in all its forms everywhere</b></p>	1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day
		1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
		1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable
		1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance
		1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
		1.a Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions
		1.b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions
<b>PEOPLE</b>	 <p><b>Goal 2.</b> <b>End hunger, achieve food security and improved nutrition and promote sustainable agriculture</b></p>	2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round
		2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons
		2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment
		2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
		2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed
		2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries
		2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round
2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility		

### 3 GOOD HEALTH AND WELL-BEING



**Goal 3.**  
Ensure healthy lives and promote well-being for all at all ages

- 3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births
- 3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births
- 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases
- 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being
- 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
- 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents
- 3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes
- 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all
- 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
- 3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate
- 3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all
- 3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States
- 3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

### 4 QUALITY EDUCATION



**Goal 4.**  
Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes
- 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education
- 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
- 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
- 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
- 4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy
- 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development
- 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all
- 4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
- 4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

PEOPLE

5 GENDER EQUALITY



**Goal 5.  
Achieve gender equality and empower all women and girls**

- 5.1 End all forms of discrimination against all women and girls everywhere
- 5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
- 5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation
- 5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate
- 5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life
- 5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences
- 5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws
- 5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women
- 5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

PEOPLE

10 REDUCED INEQUALITIES



**Goal 10.  
Reduce inequality within and among countries**

- 10.1 By 2030, progressively 10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average of the population at a rate higher than the national average
- 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status
- 10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard
- 10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality
- 10.5 Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations
- 10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions
- 10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies
- 10.a Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements
- 10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes
- 10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent

PLANET

6 CLEAN WATER AND SANITATION



**Goal 6.**  
**Ensure availability and sustainable management of water and sanitation for all**

- 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all
- 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
- 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
- 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
- 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
- 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
- 6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
- 6.b Support and strengthen the participation of local communities in improving water and sanitation management

PLANET

7 AFFORDABLE AND CLEAN ENERGY



**Goal 7.**  
**Ensure access to affordable, reliable, sustainable and modern energy for all**

- 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services
- 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
- 7.3 By 2030, double the global rate of improvement in energy efficiency
- 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
- 7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support



**12** RESPONSIBLE CONSUMPTION AND PRODUCTION



**Goal 12.**  
Ensure sustainable consumption and production patterns

- 12.1 Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries
- 12.2 By 2030, achieve the sustainable management and efficient use of natural resources
- 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses
- 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
- 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
- 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle
- 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities
- 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature
- 12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production
- 12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products
- 12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities

**13** CLIMATE ACTION



**Goal 13.**  
Take urgent action to combat climate change and its impacts

- 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
- 13.2 Integrate climate change measures into national policies, strategies and planning
- 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
- 13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible
- 13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities



**Goal 14.**  
**Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

- 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
- 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
- 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels
- 14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics
- 14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information
- 14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation
- 14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism
- 14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries
- 14.b Provide access for small-scale artisanal fishers to marine resources and markets
- 14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want



**Goal 15.**  
**Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

- 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
- 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
- 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world
- 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development
- 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species
- 15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed
- 15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products
- 15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species
- 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts
- 15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems
- 15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation
- 15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

## 8 DECENT WORK AND ECONOMIC GROWTH



**Goal 8.**  
**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

- 8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries
- 8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors
- 8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services
- 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead
- 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
- 8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training
- 8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms
- 8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment
- 8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products
- 8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all
- 8.a Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries
- 8.b By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization

## 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



**Goal 9.**  
**Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**

- 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
- 9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries
- 9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets
- 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
- 9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending
- 9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States
- 9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities
- 9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

## 11 SUSTAINABLE CITIES AND COMMUNITIES



**Goal 11.**  
**Make cities and human settlements inclusive, safe, resilient and sustainable**

11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums
11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage
11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities
11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning
11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials

## 16 PEACE, JUSTICE AND STRONG INSTITUTIONS



**Goal 16.**  
**Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels**

16.1 Significantly reduce all forms of violence and related death rates everywhere
16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children
16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all
16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime
16.5 Substantially reduce corruption and bribery in all their forms
16.6 Develop effective, accountable and transparent institutions at all levels
16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels
16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance
16.9 By 2030, provide legal identity for all, including birth registration
16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements
16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence & combat terrorism & crime
16.b Promote and enforce non-discriminatory laws and policies for sustainable development

## 17 PARTNERSHIPS FOR THE GOALS



**Goal 17.**  
**Strengthen the means of implementation and revitalize the global partnership for sustainable development**

17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection
17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of ODA/GNI to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries
17.3 Mobilize additional financial resources for developing countries from multiple sources
17.4 Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress
17.5 Adopt and implement investment promotion regimes for least developed countries
17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism
17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed
17.8 Fully operationalize the technology bank and science, technology and innovation capacity building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology
17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation
17.10 Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda
17.11 Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020
17.12 Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access
17.13 Enhance global macroeconomic stability, including through policy coordination and policy coherence
17.14 Enhance policy coherence for sustainable development
17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development
17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries
17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships
17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts
17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries

## Annex IV: National Renewable Energy Action Plan

Recommendation/ Intervention	Primary SDG Targets	SCAN Tab	SDG	SDG Target (blue = primary target alignment)	SCAN Category	Action	Link +/-	SCAN LINK DESCRIPTION	Primary Source
<p>Wind energy</p> <p>The targeted objective for wind energy installations in Lebanon is 200 MW by 2020.</p> <p>The optimistic scenario considers installing wind farms in sites with the highest average annual speed (8-10 m/s) and capacity factors whereas the pessimistic scenario assumes wind farms installation in sites with the lowest average wind speed (7-8 m/s)</p> <p>The COM is considering the three offers submitted by the private sector to build three different wind farms with a total capacity of 200 MW. I.</p> <p>The three wind farms could be built in a period of approximately two years. The three wind farms would hopefully be commissioned in 2019. The achievement of these projects will be an important milestone in reaching the 2020 target.</p>	<p><b>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</b></p> <p><b>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</b></p> <p><b>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</b></p> <p>7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p>8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services</p> <p><b>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</b></p> <p><b>9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all</b></p> <p><b>11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</b></p> <p><b>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</b></p> <p><b>17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships</b></p>	Electricity & Heat	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Reduce emissions intensity	Renewable energy: Wind		Could reduce land and resource access for dependent communities as installations require large land areas.	SCAN
		Electricity & Heat	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Reduce emissions intensity	Renewable energy: Wind		<b>Indirect link:</b> Could compete for land ownership and resource access with dependent communities.	SCAN
		Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Wind		Wind power can reduce air, water and soil pollution and thus non-communicable diseases when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
		Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Wind		Noise and intermittent shadows can impact mental health. This impact only occurs if turbines are placed in the vicinity of inhabited buildings.	SCAN
		Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Wind		Wind power can reduce air, water and soil pollution and contamination when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN

Electricity & Heat	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Reduce emissions intensity	Renewable energy: Wind		Wind power can reduce thermal and non-thermal water pollution when fossil fuel generation plant is displaced	SCAN
Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Wind		Wind power uses almost no water in its operation	SCAN
Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Wind		Investments in renewables generate modern and sustainable energy services and can increase energy security in countries that rely on imports for energy supply	SCAN
Electricity & Heat	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix	Reduce emissions intensity	Renewable energy: Wind		Increasing wind installations contributes to increasing the share of renewables in the global energy mix	SCAN
	7.b	7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	Reduce emissions intensity	Renewable energy: Wind		Renewables provide modern and sustainable energy services	LOCAL EXPERT



Electricity & Heat	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Reduce emissions intensity	Renewable energy: Wind		<b>Indirect link:</b> An increase in renewables could contribute to sustained economic growth, through job creation, avoided dependence on limited or imported resources and through creation of new industrial activity	SCAN
Electricity & Heat	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Reduce emissions intensity	Renewable energy: Wind		<b>Indirect link:</b> Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation	SCAN
Electricity & Heat	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Reduce emissions intensity	Renewable energy: Wind		<b>Indirect link:</b> Investment in renewables supports productive activities, job creation, supply chain development, innovation, and enterprise development	SCAN
Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Wind		Wind energy supports increased resource efficiency and reduces environmental damage vs economic growth powered by conventional energy sources	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Wind		Deploying wind energy can support full employment through creation of decent jobs	SCAN



Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Wind		Deploying renewable energy may lead to job losses from displaced alternative power generation activity	SCAN
Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Wind		Deployment of wind power supports development of sustainable, reliable and resilient infrastructure	SCAN
Electricity & Heat	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	Reduce emissions intensity	Renewable energy: Wind		Deployment of renewables supports sustainable industrialisation through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Wind		Deployment of wind power upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies	SCAN
Electricity & Heat	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Reduce emissions intensity	Renewable energy: Wind		<b>Indirect link:</b> Deploying wind power upgrades the technological capabilities of the power sector and other relevant sectors	SCAN
Electricity & Heat	11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Reduce emissions intensity	Renewable energy: Wind		<b>Indirect link:</b> Increasing wind power will lead to an increase in share of renewables, which contributes to having sustainable transport systems (for share of electric vehicles).	SCAN
Electricity & Heat	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	Reduce emissions intensity	Renewable energy: Wind		<b>Indirect link:</b> Deployment of wind power supports sustainable urbanisation.	SCAN
Electricity & Heat	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Reduce emissions intensity	Renewable energy: Wind		Deploying wind energy can contribute to reducing the environmental impact of cities by reducing the amount of GHG and air pollutants from power generation.	SCAN

		Electricity & Heat	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	Reduce emissions intensity	Renewable energy: Wind		Using wind for power generation contributes to sustainable management and efficient use of natural resources.	SCAN
		Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Wind		When displacing fossil fuel power plants, wind can reduce thermal and non thermal water pollution potentially entering the marine environment.	SCAN
		Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Wind		Marine life may be affected by ocean power equipment, as sediments may be redistributed due to the installed infrastructure. Also construction and operation may lead to pollution from vehicle use etc.	SCAN
		Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Wind		Wind power can contribute to sustainable use of freshwater ecosystems as this technology uses almost no water in its operation.	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Wind		Wind power can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Wind		Wind turbines and related infrastructure such as service roads and power lines may degrade the natural habitat. Wind turbines may affect birds.	SCAN
		Electricity & Heat	17.7	Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships	Reduce emissions intensity	Renewable energy: Wind		Strong public-private partnerships can result in expedited and scaled-up renewable projects	LOCAL EXPERT
Solar photovoltaic farms Given the existing high potential of development of solar PV farms in Lebanon, this current NREAP assumes that a target of 150 MW of solar PV installations by 2020 is very realistic. The achievement of the objective of the 150 MW solar PV farms needs to be done according to four main axes of development: - Solar PV farms to be owned by EDL - Solar PV farms to be owned by other public administrations - Solar PV farms to be owned by the private sector (to be connected to the national grid) - Solar PV farms to be owned by municipalities	<p><b>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</b></p> <p><b>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</b></p> <p><b>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</b></p> <p>7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p><b>8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services</b></p> <p><b>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</b></p> <p><b>9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and</b></p>	Electricity & Heat	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Reduce emissions intensity	Renewable energy: Solar PV		Could reduce land and resource access for dependent communities as installations require large land areas.	SCAN

human well-being, with a focus on affordable and equitable access for all

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

12.2 By 2030, achieve the sustainable management and efficient use of natural resources

17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships

Electricity & Heat	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Reduce emissions intensity	Renewable energy: Solar PV		<b>Indirect link:</b> Could compete for land and resource access with dependent communities.	SCAN
Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV can reduce air, water and soil pollution and thus non-communicable diseases when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV can reduce air, water and soil pollution and contamination when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
Electricity & Heat	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV can reduce thermal and non-thermal water pollution when fossil fuel generation plant is displaced	SCAN
Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV uses considerably less water than thermal alternatives (including thermal renewables)	SCAN
Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Solar PV		Investments in renewables generate modern and sustainable energy services and can increase energy security in countries that rely on imports for energy supply	SCAN
Electricity & Heat	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix	Reduce emissions intensity	Renewable energy: Solar PV		Increasing solar installations contributes to increasing the share of renewables in the global energy mix	SCAN
	7.b	7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	Reduce emissions intensity	Renewable energy: Solar PV		Renewables provide modern and sustainable energy services	LOCAL EXPERT
Electricity & Heat	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Reduce emissions intensity	Renewable energy: Solar PV		<b>Indirect link:</b> An increase in renewables could contribute to sustained economic growth, through job creation, avoided dependence on limited or imported resources and through creation of new industrial activity	SCAN
Electricity & Heat	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Reduce emissions intensity	Renewable energy: Solar PV		<b>Indirect link:</b> Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation	SCAN
Electricity & Heat	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Reduce emissions intensity	Renewable energy: Solar PV		<b>Indirect link:</b> Investment in renewables supports productive activities, job creation, supply chain development, innovation, and enterprise development	SCAN

Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV supports increased resource efficiency and reduces environmental damage vs economic growth powered by conventional energy sources	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Solar PV		Deploying solar PV can support full employment through creation of decent jobs	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Solar PV		Deploying solar PV may lead to job losses from displaced alternative power generation activity	SCAN
Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Solar PV		Deployment of solar PV supports development of sustainable, reliable and resilient infrastructure	SCAN
Electricity & Heat	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	Reduce emissions intensity	Renewable energy: Solar PV		Deployment of renewables supports sustainable industrialisation through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Solar PV		Deployment of solar PV upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies	SCAN
Electricity & Heat	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Reduce emissions intensity	Renewable energy: Solar PV		<b>Indirect link:</b> Deploying solar PV technology upgrades the technological capabilities of the power sector and other relevant sectors	SCAN
Electricity & Heat	11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Reduce emissions intensity	Renewable energy: Solar PV		<b>Indirect link:</b> Increasing solar PV will lead to an increase in share of renewables, which contributes to having sustainable transport systems (for share of electric vehicles).	SCAN
Electricity & Heat	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	Reduce emissions intensity	Renewable energy: Solar PV		<b>Indirect link:</b> Deployment of solar PV supports sustainable urbanisation.	SCAN

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Electricity & Heat	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Reduce emissions intensity	Renewable energy: Solar PV		Deploying solar PV can contribute to reducing the environmental impact of cities by reducing the amount of GHG and air pollutants from power generation.	SCAN
Electricity & Heat	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	Reduce emissions intensity	Renewable energy: Solar PV		Using solar PV for power generation contributes to sustainable management and efficient use of natural resources.	SCAN
Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Solar PV		When displacing fossil fuel power plants, solar PV can reduce thermal and non thermal water pollution potentially entering the marine environment.	SCAN
Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV can contribute to sustainable use of freshwater ecosystems as it uses considerably less water than thermal alternatives (including thermal renewables)	SCAN
Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV can take up large areas of land, and may impact terrestrial ecosystems during construction or operation	SCAN
Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives	SCAN
Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Solar PV		Solar PV may lead to degradation of natural habitats through development and operation of infrastructure and land usage.	SCAN
Electricity & Heat	17.17	Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships	Reduce emissions intensity	Renewable energy: Solar PV		Strong public-private partnerships can result in expedited and scaled-up renewable projects	LOCAL EXPERT

Solar photovoltaic distributed generation (CSP)

In the case of CSP, this action plan stays conservative due to several immaturities in the development of the technology. However, because of its storage capability, this technology remains attractive when comparing it with other forms of RE. For this reason, the pessimistic scenario does not include any CSP project in Lebanon during the next five years. On the other hand, the realistic scenario considers the most efficient option identified in the previous paragraph, 50 MW parabolic trough in the Hermel area (being a semi-arid region) (see Table 19 and Table 20). As for the optimistic scenario, it is estimated that two similar power plants are to be included in the same region or in two different regions.

The only feasible way to build the 50 MW CSP plant as per the realistic scenario is through the private sector. For the purpose of this NREAP, it is considered that the Lebanese Government will be ready to sign a PPA with private investors to build the CSP plant and connect it to the grid.

**3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination**

**7.1 By 2030, ensure universal access to affordable, reliable and modern energy services**

**7.2 By 2030, increase substantially the share of renewable energy in the global energy mix**

7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

**8.4 Improve progressively through 2030 global resource efficiency in**

Electricity & Heat	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Reduce emissions intensity	Renewable energy: Solar CSP		Could reduce land and resource access for dependent communities as installations require large land areas	SCAN
Electricity & Heat	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Reduce emissions intensity	Renewable energy: Solar CSP		<b>Indirect link:</b> Could compete for land and resource access with dependent communities.	SCAN



<p>6.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</p> <p>9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all</p> <p>11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</p> <p>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</p> <p>17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships</p>	Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Solar CSP		Solar CSP can reduce air, water and soil pollution and thus non-communicable diseases when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN	
	Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Solar CSP		Solar CSP can reduce air, water and soil pollution and contamination when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN	
	Electricity & Heat	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Reduce emissions intensity	Renewable energy: Solar CSP		Water thermal and non-thermal pollution may occur if water used for electricity generation is discharged in water bodies. However, whether this leads to an increase or decrease in this type of pollution depends on how water is handled and what energy sources are replaced.	SCAN	
	Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Solar CSP		CSP uses water for cooling and cleaning and is usually deployed in water scarce (e.g. desert) locations	SCAN	
	Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Solar CSP		Investments in renewables generate modern and sustainable energy services and can increase energy security in countries that rely on imports for energy supply	SCAN	
	Electricity & Heat	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix	Reduce emissions intensity	Renewable energy: Solar CSP		Increasing solar installations contributes to increasing the share of renewables in the global energy mix	SCAN	
			7.b	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	Reduce emissions intensity	Renewable energy: Solar CSP		Renewables provide modern and sustainable energy services	LOCAL EXPERT
	Electricity & Heat	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Reduce emissions intensity	Renewable energy: Solar CSP		<b>Indirect link:</b> An increase in renewables could contribute to sustained economic growth, through job creation, avoided dependence on limited or imported resources and through creation of new industrial activity	SCAN	
	Electricity & Heat	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Reduce emissions intensity	Renewable energy: Solar CSP		<b>Indirect link:</b> Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation	SCAN	
	Electricity & Heat	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Reduce emissions intensity	Renewable energy: Solar CSP		<b>Indirect link:</b> Investment in renewables supports productive activities, job creation, supply chain development, innovation, and enterprise development	SCAN	

Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Solar CSP		Solar CSP supports increased resource efficiency and reduces environmental damage vs economic growth powered by conventional energy sources	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Solar CSP		Deploying solar CSP can support full employment through creation of decent jobs	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Solar CSP		Deploying solar CSP may lead to job losses from displaced alternative power generation activity	SCAN
Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Solar CSP		Deployment of solar CSP supports development of sustainable, reliable and resilient infrastructure	SCAN
Electricity & Heat	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	Reduce emissions intensity	Renewable energy: Solar CSP		Deployment of renewables supports sustainable industrialisation through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Solar CSP		Deployment of solar CSP upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies	SCAN
Electricity & Heat	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Reduce emissions intensity	Renewable energy: Solar CSP		<b>Indirect link:</b> Deploying solar CSP technology upgrades the technological capabilities of the power sector and other relevant sectors	SCAN
Electricity & Heat	11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Reduce emissions intensity	Renewable energy: Solar CSP		<b>Indirect link:</b> Increasing solar CSP will lead to an increase in share of renewables, which contributes to having sustainable transport systems (for share of electric vehicles).	SCAN
Electricity & Heat	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	Reduce emissions intensity	Renewable energy: Solar CSP		<b>Indirect link:</b> Deployment of solar CSP supports sustainable urbanisation.	SCAN

		Electricity & Heat	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Reduce emissions intensity	Renewable energy: Solar CSP		Deploying solar CSP can contribute to reducing the environmental impact of cities by reducing the amount of GHG and air pollutants from power generation.	SCAN
		Electricity & Heat	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	Reduce emissions intensity	Renewable energy: Solar CSP		Using solar CSP for power generation contributes to sustainable management and efficient use of natural resources.	SCAN
		Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Solar CSP		When displacing fossil fuel power plants, solar CSP can reduce thermal and non thermal water pollution potentially entering the marine environment.	SCAN
		Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Solar CSP		Solar CSP can lead to thermal water pollution entering the marine environment (depends on plant design).	SCAN
		Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Solar CSP		Solar CSP may lead to negative impact on water ecosystems through thermal water pollution. Installations can also take up large areas of land.	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Solar CSP		Solar CSP technologies can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Solar CSP		Solar CSP may lead to degradation of natural habitats through development and operation of infrastructure (e.g. thermal water pollution and danger to birds flying through the concentrated solar energy, and land usage).	SCAN
		Electricity & Heat	17.7	17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships	Reduce emissions intensity	Renewable energy: Solar CSP		Development of CSP plant will rely upon effective public-private partnerships	LOCAL EXPERT
Solar water heaters	<p><b>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</b></p> <p><b>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</b></p> <p><b>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</b></p> <p>7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</p> <p>11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries</p>	Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating can reduce air, water and soil pollution and thus non-communicable diseases when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
SWH technology is by far the most developed RE technology in Lebanon.		Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating can reduce air, water and soil pollution and contamination when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
Solar water heating is already a mature technology in Lebanon. In NEEAP 2011–2015, the fourth initiative aimed at promoting SWHs mainly in the residential sector with an installation target of 190,000 m2 of solar collectors by 2014 (MEW, 2012). The 2014 objective was achieved and even exceeded. The initial target for 2020 is to reach 1 million m2 of installed collectors. LCEC believes this target is achievable.		Electricity & Heat	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating can reduce thermal and non-thermal water pollution when fossil fuel generation plant is displaced	SCAN
In 2009, Lebanon set two objectives for SWH installations: - To achieve 190,000 square meters of installations between 2009 and 2014 - To reach 1,000,000 square meters of installations by 2020 The first objective was achieved and even exceeded in 2014. The 2020 objective is also reachable. For the realistic case, the 2020 objective is 1,000,000 m2 of SWH installations.		Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Solar heating		Contributes to water-use efficiency when replacing electric water heating (reduced generation from water intensive thermal power plants)	SCAN



For the optimistic scenario, LCEC considers that the Lebanese Government will enforce the use of solar water heaters as mandatory in all new buildings, leading to an increase of approximately 10% per year for the period 2016-2020. As for the pessimistic case, a small decrease in demand is foreseen, leading to the installation of a total of approximately 600,000 m2 by 2020.

The culture of SWH installations is well established in Lebanon. To keep boosting the market, the NEEREA financing mechanism will need to continue. On the other hand, LCEC will be launching special initiatives regularly to give the market additional boosts, especially through the USD 200 subsidy program initiated earlier by MEW. On the other hand, LCEC will be working with all concerned stakeholders towards enforcing the installation of SWH in the country. Namely, the Department of Urban Planning, LIBNOR, IRI, and municipalities are the main players.

**11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management**

**12.2 By 2030, achieve the sustainable management and efficient use of natural resources**

12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating contributes to increasing access to basic affordable and modern energy services. Further, investments in renewables can increase energy security in countries that rely on imports for energy supply.	SCAN
Electricity & Heat	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix	Reduce emissions intensity	Renewable energy: Solar heating		Increasing solar heating installations contributes to increasing the share of renewables in the global energy mix	SCAN
	7.b	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	Reduce emissions intensity	Renewable energy: Solar heating		Renewables provide modern and sustainable energy services	LOCAL EXPERT
Electricity & Heat	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Reduce emissions intensity	Renewable energy: Solar heating		<b>Indirect link:</b> An increase in renewables could contribute to sustained economic growth, through job creation, avoided dependence on limited or imported resources and through creation of new industrial activity	SCAN
Electricity & Heat	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Reduce emissions intensity	Renewable energy: Solar heating		<b>Indirect link:</b> Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation	SCAN
Electricity & Heat	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Reduce emissions intensity	Renewable energy: Solar heating		<b>Indirect link:</b> Investment in renewables supports productive activities, job creation, supply chain development, innovation, and enterprise development	SCAN
Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating supports increased resource efficiency and reduces environmental damage vs conventional water heating	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Solar heating		Deploying solar heating can support full employment through creation of decent jobs	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Solar heating		Deploying solar heating may lead to job losses from displaced alternative power generation activity	SCAN
Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Solar heating		Deployment of solar heating supports development of sustainable, reliable and resilient infrastructure	SCAN

Electricity & Heat	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	Reduce emissions intensity	Renewable energy: Solar heating		Deployment of renewables supports sustainable industrialisation through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Solar heating		Deployment of solar heating upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies	SCAN
Electricity & Heat	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Reduce emissions intensity	Renewable energy: Solar heating		<b>Indirect link:</b> Deploying solar heating technology upgrades technological capabilities	SCAN
Electricity & Heat	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	Reduce emissions intensity	Renewable energy: Solar heating		<b>Indirect link:</b> Deployment of solar heating supports sustainable urbanisation.	SCAN
Electricity & Heat	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating can contribute to reducing the environmental impact of cities by reducing the amount of GHG emissions and air pollutants compared to other traditional technologies.	SCAN
Electricity & Heat	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	Reduce emissions intensity	Renewable energy: Solar heating		Using solar for water heating contributes to sustainable management and efficient use of natural resources.	SCAN
	12.6	Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	Reduce emissions intensity	Renewable energy: Solar heating		Finance mechanisms and regulation will encourage companies to utilize solar technology	LOCAL EXPERT
Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Solar heating		When displacing electric water heating, solar heating can reduce thermal and non thermal water pollution potentially entering the marine environment.	SCAN
Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating can contribute to sustainable use of freshwater ecosystems when replacing traditional electric water heating	SCAN
Electricity & Heat	15.2	By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating could help displace wood fuel use, contributing to reducing deforestation	SCAN

		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Solar heating		Solar heating can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives. Solar water heaters may also reduce local deforestation	SCAN
"Hydroelectricity Rehabilitation and upgrade of existing hydropower plants Construction of new hydropower plants "	<p><b>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</b></p> <p><b>6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes</b></p> <p><b>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</b></p> <p><b>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</b></p> <p>7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p>8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services</p> <p><b>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</b></p> <p><b>9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries</b></p> <p><b>11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</b></p> <p><b>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</b></p> <p><b>15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements</b></p> <p><b>15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development</b></p>	Electricity & Heat	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Reduce emissions intensity	Renewable energy: Large-hydro		Communities could be displaced to build hydropower plants and flood large land areas. Such flooding can also limit agricultural areas.	SCAN
		Electricity & Heat	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Reduce emissions intensity	Renewable energy: Large-hydro		<b>Indirect link:</b> Communities could be displaced to build hydropower plants and flood large land areas. Such flooding can also limit agricultural areas.	SCAN
		Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Large-hydro		Hydropower can reduce air, water and soil pollution and thus non-communicable diseases when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
		Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Large-hydro		Hydropower can reduce air, water and soil pollution and contamination when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
		Electricity & Heat	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all	Reduce emissions intensity	Renewable energy: Large-hydro		Hydropower plants and related infrastructure may reduce access to drinking water for local communities	SCAN
		Electricity & Heat	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Reduce emissions intensity	Renewable energy: Large-hydro		Large-hydro can reduced thermal and non-thermal water pollution when fossil fuel generation plant is displaced	SCAN
		Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Large-hydro		Potential negative impact on water scarcity of local communities due to restricted water access. Large reservoirs created by large hydro projects can substantially increase evaporation of fresh water	SCAN
		Electricity & Heat	6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	Reduce emissions intensity	Renewable energy: Large-hydro		Some natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Furthermore, dams lead to sediment deposition and interfere with freshwater wildlife.	SCAN
		Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Large-hydro		Renewables can help reduce energy imports in countries that rely on trade for energy supply.	SCAN
		Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Large-hydro		Climate change can cause large variations in water availability for power generation across regions and even within regions, reducing reliability of energy services	SCAN

Electricity & Heat	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix	Reduce emissions intensity	Renewable energy: Large-hydro		Increasing large-hydro energy contributes to increasing the share of renewables in the global energy mix	SCAN
	7.b	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	Reduce emissions intensity	Renewable energy: Large-hydro		Renewables provide modern and sustainable energy services	LOCAL EXPERT
Electricity & Heat	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Reduce emissions intensity	Renewable energy: Large-hydro		<b>Indirect link:</b> An increase in renewables could contribute to sustained economic growth, through job creation, avoided dependence on limited or imported resources and through creation of new industrial activity	SCAN
Electricity & Heat	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Reduce emissions intensity	Renewable energy: Large-hydro		<b>Indirect link:</b> Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation	SCAN
Electricity & Heat	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Reduce emissions intensity	Renewable energy: Large-hydro		<b>Indirect link:</b> Investment in renewables supports productive activities, job creation, supply chain development, innovation, and enterprise development	SCAN
Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Large-hydro		Large-hydro power supports increased resource efficiency and reduces environmental damage vs economic growth powered by conventional energy sources	SCAN
Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Large-hydro		Large hydro schemes can have substantial environmental impacts. Natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Furthermore, dams lead to sediment deposition and interfere with freshwater wildlife.	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Large-hydro		Deploying large-hydro can support full employment through creation of decent jobs	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Large-hydro		Deploying renewable energy may lead to job losses from displaced alternative power generation activity	SCAN

Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Large-hydro		Deployment of hydro power supports development of sustainable, reliable and resilient infrastructure	SCAN
Electricity & Heat	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	Reduce emissions intensity	Renewable energy: Large-hydro		Deployment of renewables supports sustainable industrialisation through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Large-hydro		Deployment of hydro power upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies	SCAN
Electricity & Heat	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Reduce emissions intensity	Renewable energy: Large-hydro		<b>Indirect link:</b> Deploying hydropower upgrades the technological capabilities of the power sector and other relevant sectors	SCAN
Electricity & Heat	11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Reduce emissions intensity	Renewable energy: Large-hydro		<b>Indirect link:</b> Increasing large-hydro will lead to an increase in share of renewables, which contributes to having sustainable transport systems (for share of electric vehicles).	SCAN
Electricity & Heat	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	Reduce emissions intensity	Renewable energy: Large-hydro		<b>Indirect link:</b> Deployment of large-hydro supports sustainable urbanisation.	SCAN
Electricity & Heat	11.4	Strengthen efforts to protect and safeguard the world's cultural and natural heritage	Reduce emissions intensity	Renewable energy: Large-hydro		Large hydro projects can require enormous areas to be flooded. In some cases this will damage or destroy cultural and historic sites or require their relocation	SCAN
Electricity & Heat	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Reduce emissions intensity	Renewable energy: Large-hydro		Deploying large-hydro can contribute to reducing the environmental impact of cities by reducing the amount of GHG and air pollutants from power generation.	SCAN
Electricity & Heat	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	Reduce emissions intensity	Renewable energy: Large-hydro		Using large-hydro PV for power generation contributes to sustainable management and efficient use of natural resources.	SCAN
Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Large-hydro		When displacing fossil fuel power plants, large-hydro can reduce thermal and non thermal water pollution potentially entering the marine environment.	SCAN



		Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Large-hydro		Large-hydropower can contribute to sustainable use of freshwater ecosystems as it uses considerably less water than thermal alternatives (including thermal renewables).	SCAN
		Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Large-hydro		Large-hydropower may negatively impact water ecosystems as natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Dams lead to sediment deposition, can interfere with freshwater wildlife and can also affect the water cycle through increased evaporation.	SCAN
		Electricity & Heat	15.4	By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development	Reduce emissions intensity	Renewable energy: Large-hydro		If built in mountain areas, large-hydropower could negatively impact the ecosystem as natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Furthermore, dams can lead to sediment deposition and interfere with freshwater wildlife.	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Large-hydro		Large-hydropower can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Large-hydro		Large-hydropower can lead to degradation of natural habitats. Natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Furthermore, dams can lead to sediment deposition and interfere with freshwater wildlife.	SCAN
Hydroelectricity Micro-hydro and hydro from non-river sources	<p><b>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</b></p> <p><b>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</b></p> <p><b>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</b></p> <p>7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p>8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services</p> <p><b>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</b></p> <p><b>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</b></p> <p>12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting</p>	Electricity & Heat	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Reduce emissions intensity	Renewable energy: Small-hydro		Small-hydro can also conflict with land access of communities in the placement area.	SCAN
		Electricity & Heat	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Reduce emissions intensity	Renewable energy: Small-hydro		<b>Indirect link:</b> Small-hydro can also conflict with land access of communities in the placement area.	SCAN
		Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Small-hydro		Hydropower can reduce air, water and soil pollution and thus non-communicable diseases when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
		Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Small-hydro		Hydropower can reduce air, water and soil pollution and contamination when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN

cycle

Electricity & Heat	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all	Reduce emissions intensity	Renewable energy: Small-hydro		Hydropower plants and related infrastructure may reduce access to drinking water for local communities	SCAN
Electricity & Heat	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Reduce emissions intensity	Renewable energy: Small-hydro		Small-hydro can reduce thermal and non-thermal water pollution when fossil fuel generation plant is displaced	SCAN
Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Small-hydro		Potential negative impact on water scarcity of local communities due to restricted water access	SCAN
Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Small-hydro		Small hydro (e.g., run of river) uses very little water compared to thermal alternatives	SCAN
Electricity & Heat	6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	Reduce emissions intensity	Renewable energy: Small-hydro		Some natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Furthermore, in case of having dams, these lead to sediment deposition and interfere with freshwater wildlife.	SCAN
Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Small-hydro		Renewables can help reduce energy imports in countries that rely on trade for energy supply.	SCAN
Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Small-hydro		Climate change can cause large variations in water availability for power generation across regions and even within regions, reducing reliability of energy services	SCAN
Electricity & Heat	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix	Reduce emissions intensity	Renewable energy: Small-hydro		Increasing small-hydro energy contributes to increasing the share of renewables in the global energy mix	SCAN
Electricity & Heat	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Reduce emissions intensity	Renewable energy: Small-hydro		<b>Indirect link:</b> An increase in renewables could contribute to sustained economic growth, through job creation, avoided dependence on limited or imported resources and through creation of new industrial activity	SCAN
Electricity & Heat	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Reduce emissions intensity	Renewable energy: Small-hydro		<b>Indirect link:</b> Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation	SCAN
Electricity & Heat	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Reduce emissions intensity	Renewable energy: Small-hydro		<b>Indirect link:</b> Investment in renewables supports productive activities, job creation, supply chain development, innovation, and enterprise development	SCAN

Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Small-hydro		Small-hydro power supports increased resource efficiency and reduces environmental damage vs economic growth powered by conventional energy sources	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Small-hydro		Deploying small-hydro can support full employment through creation of decent jobs	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Small-hydro		Deploying renewable energy may lead to job losses from displaced alternative power generation activity	SCAN
Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Small-hydro		Deployment of hydro power supports development of sustainable, reliable and resilient infrastructure	SCAN
Electricity & Heat	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	Reduce emissions intensity	Renewable energy: Small-hydro		Deployment of renewables supports sustainable industrialisation through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Small-hydro		Deployment of hydro power upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies	SCAN
Electricity & Heat	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Reduce emissions intensity	Renewable energy: Small-hydro		<b>Indirect link:</b> Deploying hydropower upgrades the technological capabilities of the power sector and other relevant sectors	SCAN
Electricity & Heat	11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Reduce emissions intensity	Renewable energy: Small-hydro		<b>Indirect link:</b> Increasing small-hydro will lead to an increase in share of renewables, which contributes to having sustainable transport systems (for share of electric vehicles).	SCAN
Electricity & Heat	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	Reduce emissions intensity	Renewable energy: Small-hydro		<b>Indirect link:</b> Deployment of small-hydro supports sustainable urbanisation.	SCAN



		Electricity & Heat	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Reduce emissions intensity	Renewable energy: Small-hydro		Deploying small-hydro can contribute to reducing the environmental impact of cities by reducing the amount of GHG and air pollutants from power generation.	SCAN
		Electricity & Heat	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	Reduce emissions intensity	Renewable energy: Small-hydro		Using small-hydro for power generation contributes to sustainable management and efficient use of natural resources.	SCAN
			12.6	12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cy	Reduce emissions intensity	Renewable energy: Small-hydro		Installation of small-hydro will depend on effective private sector engagement	LOCAL EXPERT
		Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Small-hydro		When displacing fossil fuel power plants, small-hydro can reduce thermal and non thermal water pollution potentially entering the marine environment.	SCAN
		Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Small-hydro		Small-hydropower can contribute to sustainable use of freshwater ecosystems as it uses considerably less water than thermal alternatives (including thermal renewables).	SCAN
		Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Small-hydro		Small-hydropower may negatively impact water ecosystems. Some natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Dams lead to sediment deposition and interfere with freshwater wildlife.	SCAN
		Electricity & Heat	15.4	By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development	Reduce emissions intensity	Renewable energy: Small-hydro		If built in mountain areas, small-hydropower could negatively impact the ecosystem as natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Furthermore, dams can lead to sediment deposition and interfere with freshwater wildlife.	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Small-hydro		Small-hydropower can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Small-hydro		Small-hydropower can lead to degradation of natural habitats. Natural areas are inundated to make space for the water reservoirs and the original route of the river may be changed. Furthermore, dams can lead to sediment deposition and interfere with freshwater wildlife.	SCAN
Geothermal energy	<p><b>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</b></p> <p><b>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</b></p> <p><b>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</b></p>	Electricity & Heat	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Reduce emissions intensity	Renewable energy: Geothermal		Could reduce land and resource access for dependent communities as installations require large land areas.	SCAN

<p>7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p><b>8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors</b></p> <p><b>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</b></p> <p><b>9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all</b></p> <p><b>9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities</b></p> <p><b>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</b></p> <p><b>11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</b></p> <p>12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle</p>	Electricity & Heat	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Reduce emissions intensity	Renewable energy: Geothermal		<b>Indirect link:</b> Could compete for land and resource access with dependent communities.	SCAN
	Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Geothermal		Geothermal can reduce air, water and soil pollution and thus non-communicable diseases when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
	Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Geothermal		Emissions of hydrogen sulphide (H2S) and ammonia (NH3) to air and potential discharge of thermal and polluted water. CO2 and CH4 are also emitted to air. Examples of dissolved chemicals that may be found in the thermal water are sodium chloride (NaCl), boron (B), arsenic (As) and mercury (Hg).	SCAN
	Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Geothermal		Geothermal can reduce air, water and soil pollution and contamination when displacing polluting energy sources, such as fossil fuels and bioenergy.	SCAN
	Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Geothermal		Emissions of hydrogen sulphide (H2S) and ammonia (NH3) to air and potential discharge of thermal and polluted water. CO2 and CH4 are also emitted to air. Examples of dissolved chemicals that may be found in the thermal water are sodium chloride (NaCl), boron (B), arsenic (As) and mercury (Hg).	SCAN
	Electricity & Heat	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Reduce emissions intensity	Renewable energy: Geothermal		Water thermal and non-thermal pollution may occur if water used for electricity generation is discharged in water bodies. However, whether this leads to an increase or decrease in this type of pollution depends on how water is handled and what energy sources are replaced.	SCAN
	Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Geothermal		Increased water use and non-thermal pollution from geothermal power plant operation	SCAN
	Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Geothermal		Investments in renewables generate modern and sustainable energy services and can increase energy security in countries that rely on imports for energy supply	SCAN
	Electricity & Heat	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix	Reduce emissions intensity	Renewable energy: Geothermal		Increasing geothermal energy contributes to increasing the share of renewables in the global energy mix	SCAN
			7.b	7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	Reduce emissions intensity	Renewable energy: Geothermal		Renewables provide modern and sustainable energy services

Electricity & Heat	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Reduce emissions intensity	Renewable energy: Geothermal		<b>Indirect link:</b> An increase in renewables could contribute to sustained economic growth, through job creation, avoided dependence on limited or imported resources and through creation of new industrial activity	SCAN
Electricity & Heat	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Reduce emissions intensity	Renewable energy: Geothermal		Indirect link: Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation	SCAN
Electricity & Heat	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Reduce emissions intensity	Renewable energy: Geothermal		<b>Indirect link:</b> Investment in renewables supports productive activities, job creation, supply chain development, innovation, and enterprise development	SCAN
Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Geothermal		Geothermal supports increased resource efficiency and reduces environmental damage vs economic growth powered by conventional energy sources	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Geothermal		Deploying geothermal can support full employment through creation of decent jobs	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Geothermal		Deploying renewable energy may lead to job losses from displaced alternative power generation activity	SCAN
Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Geothermal		Deployment of geothermal supports development of sustainable, reliable and resilient infrastructure	SCAN
Electricity & Heat	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	Reduce emissions intensity	Renewable energy: Geothermal		Deployment of renewables supports sustainable industrialisation through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Geothermal		Deployment of geothermal upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies	SCAN
Electricity & Heat	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Reduce emissions intensity	Renewable energy: Geothermal		<b>Indirect link:</b> Deploying geothermal technology upgrades the technological capabilities of the power sector and other relevant sectors	SCAN

		Electricity & Heat	11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Reduce emissions intensity	Renewable energy: Geothermal		Indirect link: Increasing geothermal will lead to an increase in share of renewables, which contributes to having sustainable transport systems (for share of electric vehicles).	SCAN
		Electricity & Heat	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	Reduce emissions intensity	Renewable energy: Geothermal		Indirect link: Deployment of geothermal supports sustainable urbanisation.	SCAN
		Electricity & Heat	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Reduce emissions intensity	Renewable energy: Geothermal		Deploying geothermal can contribute to reducing the environmental impact of cities by reducing the amount of GHG and air pollutants from power generation.	SCAN
		Electricity & Heat	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	Reduce emissions intensity	Renewable energy: Geothermal		Using geothermal for power generation contributes to sustainable management and efficient use of natural resources.	SCAN
			12.6	Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	Reduce emissions intensity	Renewable energy: Geothermal		Advancing geothermal technology will depend on effective private sector engagement	LOCAL EXPERT
		Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Geothermal		When displacing fossil fuel power plants, geothermal can reduce thermal and non thermal water pollution potentially entering the marine environment.	SCAN
		Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Geothermal		Water thermal and non-thermal pollution potentially entering the marine environment if water used for electricity generation is discharged into water bodies.	SCAN
		Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Geothermal		Geothermal may impact local water ecosystems if thermal and non-thermal water pollution from generation is discharged in water bodies. Chemicals may be found in the thermal water such as sodium chloride (NaCl), boron (B), arsenic (As) and mercury (Hg).	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Geothermal		Geothermal can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Geothermal		Geothermal can cause degradation of natural habitats. Water thermal and non-thermal pollution may occur if water used for electricity generation is discharged in water bodies. Emissions of hydrogen sulphide (H2S) and ammonia (NH3) to air and potential discharge of thermal and polluted water. CO2 and CH4 are also emitted to air. Examples of dissolved chemicals that may be found in the thermal water are sodium chloride (NaCl), boron (B), arsenic (As) and mercury (Hg).	SCAN
Biomass (including waste-to-energy)	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Electricity & Heat	1.2	By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	Reduce emissions intensity	Renewable energy: Bioenergy		Biofuels production can lead to land price increase, with impact on food prices which could reduce food access.	SCAN

<p>2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality</p> <p>6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity</p> <p>6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies</p> <p><b>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</b></p> <p><b>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</b></p> <p>7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p><b>8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services</b></p> <p><b>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</b></p> <p><b>9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all</b></p> <p><b>9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities</b></p> <p><b>11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</b></p> <p><b>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</b></p> <p><b>12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse</b></p>	Electricity & Heat	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Reduce emissions intensity	Renewable energy: Bioenergy		Reduced land and resource access for dependent communities. As opposed to similar impacts from other renewable resources, these impacts occur upstream, at the stage of crop cultivation and biomass plantation and collection. These impacts do not apply to biogas from waste.	SCAN
	Electricity & Heat	2.1	By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	Reduce emissions intensity	Renewable energy: Bioenergy		Biofuels production can lead to land price increase, with impact on food prices which could reduce food access	SCAN
	Electricity & Heat	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Reduce emissions intensity	Renewable energy: Bioenergy		<b>Indirect link:</b> Could compete for land and resource access with dependent communities. These impacts could occur upstream, at the stage of crop cultivation and biomass plantations. These impacts do not apply to biogas from waste.	SCAN
	Electricity & Heat	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Reduce emissions intensity	Renewable energy: Bioenergy		<b>Indirect link:</b> Can create new market opportunities for farmers (production and sale of bioenergy crops in addition to food crops). Could also contribute to improving agriculture productivity and income through agricultural knowledge and practices that can be transferred to crops for other purposes (e.g. food).	SCAN
	Electricity & Heat	2.4	By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	Reduce emissions intensity	Renewable energy: Bioenergy		Extensive monocultures can limit biodiversity and intensive use of nutrients for biofuel crops and may affect soil quality and lead to soil degradation. Ecosystems conversion for bioenergy production may occur. These impacts do not apply to waste-to-energy and biomass.	SCAN
	Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Bioenergy		Reduced SOx and NOx emissions to air and related non-communicable diseases. However, PM emissions may be comparable to fossil fuels, depending on the quality of fuels	SCAN
	Electricity & Heat	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce emissions intensity	Renewable energy: Bioenergy		Potential increase in air pollution depending on the displaced energy source (e.g. if gas) and on the biofuels quality. Additional potential supply chain impacts on air, water and soil from agriculture e.g. fertiliser use	SCAN
	Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Bioenergy		Reduced SOx and NOx emissions to air and related non-communicable diseases. However, PM emissions may be comparable to fossil fuels, depending on the quality of fuels	SCAN
	Electricity & Heat	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Reduce emissions intensity	Renewable energy: Bioenergy		Potential increase in air pollution depending on the replaced energy source (e.g. if gas) and on the biofuels quality. Additional potential Lifecycle impacts on water and soil quality from fertiliser use in supply chain	SCAN



Electricity & Heat	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all	Reduce emissions intensity	Renewable energy: Bioenergy		Increased water use for irrigation for bioenergy crop cultivation may reduce local community access to drinking water sources due to water withdrawals	SCAN
Electricity & Heat	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Reduce emissions intensity	Renewable energy: Bioenergy		Non-thermal water pollution. Increase in fertiliser run off from bioenergy crop cultivation. Does not apply to wood and waste energy.	SCAN
Electricity & Heat	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Reduce emissions intensity	Renewable energy: Bioenergy		Increased water use for irrigation of bioenergy crops, biofuel processing and for cooling in power plant operation	SCAN
Electricity & Heat	6.a	6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	Reduce emissions intensity	Renewable energy: Bioenergy			LOCAL EXPERT
Electricity & Heat	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services	Reduce emissions intensity	Renewable energy: Bioenergy		Renewables can help reduce energy imports in countries that rely on trade for energy supply.	SCAN
Electricity & Heat	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix	Reduce emissions intensity	Renewable energy: Bioenergy		Increasing bioenergy contributes to increasing the share of renewables in the global energy mix	SCAN
Electricity & Heat	7.b	7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	Reduce emissions intensity	Renewable energy: Bioenergy		Renewables provide modern and sustainable energy services	LOCAL EXPERT
Electricity & Heat	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Reduce emissions intensity	Renewable energy: Bioenergy		<b>Indirect link:</b> An increase in renewables could contribute to sustained economic growth, through job creation, avoided dependence on limited or imported resources and through creation of new industrial activity	SCAN
Electricity & Heat	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Reduce emissions intensity	Renewable energy: Bioenergy		<b>Indirect link:</b> Deployment of new energy technologies can support economic productivity by creating new industrial activity, supply chain development, and innovation	SCAN
Electricity & Heat	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Reduce emissions intensity	Renewable energy: Bioenergy		<b>Indirect link:</b> Investment in renewables supports productive activities, job creation, supply chain development, innovation, and enterprise development	SCAN

Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy supports increased resource efficiency and reduces environmental damage from GHGs vs economic growth powered by conventional energy sources	SCAN
Electricity & Heat	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Reduce emissions intensity	Renewable energy: Bioenergy		Biofuels production can have significant impacts on ecosystems, water bodies and biodiversity if not carefully implemented. This does not apply to waste-to-energy.	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Bioenergy		Deploying bioenergy can support full employment through creation of decent jobs	SCAN
Electricity & Heat	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Reduce emissions intensity	Renewable energy: Bioenergy		Deploying renewable energy may lead to job losses from displaced alternative power generation activity	SCAN
Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Bioenergy		Deployment of bioenergy systems supports development of sustainable, reliable and resilient infrastructure	SCAN
Electricity & Heat	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy deployment could lead to competition with food supply or increased lifecycle emissions if non-sustainable feedstocks are used	SCAN
Electricity & Heat	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	Reduce emissions intensity	Renewable energy: Bioenergy		Deployment of renewables supports sustainable industrialisation through increased sustainability of power supply and development of sustainable industries related to renewable energy project construction and operation	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Bioenergy		Deployment of bioenergy upgrades infrastructure, increases sustainability of industry, increases resource-efficiency and supports adoption of clean technologies	SCAN
Electricity & Heat	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Reduce emissions intensity	Renewable energy: Bioenergy		Cultivation of bioenergy crops may compete with food production and also lead to pollution and other environmental damage, reducing the sustainability of the power sector if non-sustainable feedstocks are used	SCAN

Electricity & Heat	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Reduce emissions intensity	Renewable energy: Bioenergy		<b>Indirect link:</b> Deploying bioenergy upgrades the technological capabilities of the power sector and other relevant sectors	SCAN
Electricity & Heat	11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Reduce emissions intensity	Renewable energy: Bioenergy		<b>Indirect link:</b> Bioenergy can generate sustainable electricity, which is a prerequisite for sustainable electric transport systems.	SCAN
Electricity & Heat	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	Reduce emissions intensity	Renewable energy: Bioenergy		<b>Indirect link:</b> Deployment of bioenergy can support sustainable urbanisation.	SCAN
Electricity & Heat	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Reduce emissions intensity	Renewable energy: Bioenergy		Deploying bioenergy can contribute to reducing the environmental impact of cities by reducing the amount of GHG and air pollutants from power generation. Further, biogas (waste-to-energy) production reduces food waste and also reduces risk of potential leakage of methane from landfills.	SCAN
Electricity & Heat	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	Reduce emissions intensity	Renewable energy: Bioenergy		Using bioenergy for power generation can contribute to sustainable management and efficient use of natural resources, especially when using waste biomass.	SCAN
Electricity & Heat	12.4	By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	Reduce emissions intensity	Renewable energy: Bioenergy		Using bioenergy (waste-to-energy) for power generation can contribute to reducing de amount of waste being released to air, water or soil.	SCAN
Electricity & Heat	12.5	By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy and biogas (waste-to-energy) production makes productive use of food waste	SCAN
Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Bioenergy		When displacing fossil fuel power plants, bioenergy can reduce thermal and non thermal water pollution potentially entering the marine environment.	SCAN
Electricity & Heat	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy can lead to non-thermal water pollution potentially entering the marine environment, especially from increased use of fertiliser in bioenergy crop cultivation. This does not apply to wood and waste energy.	SCAN
Electricity & Heat	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy crop cultivation may have negative impacts on local water ecosystems through water use and polluted water from fertiliser use. Biofuel production also takes up large areas of land and may lead to land-use conversion.	SCAN



		Electricity & Heat	15.2	By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy could negatively impact sustainable forest management and attempts to halt deforestation due to bioenergy crop cultivation, or deforestation may occur through collection of wood fuel (depending on feedstocks being used)	SCAN
		Electricity & Heat	15.3	By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy can lead to intensive use of nutrients for biofuel crops and extensive monocultures may lead to soil degradation.	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption, if displacing more polluting or intensive alternatives	SCAN
		Electricity & Heat	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Reduce emissions intensity	Renewable energy: Bioenergy		Bioenergy can cause degradation of natural habitats through supply chain and operation of plants. Cultivation of bioenergy crops can lead to soil, water, and air pollution from fertiliser use and burning. Biofuel production also takes up large areas of land and may lead to land-use conversion. Monocultures reduce biodiversity. These impacts do not apply to wood and waste energy. Operation of bioenergy thermal plants may lead to increased local air pollution.	SCAN
Setup of a national grid code Development of a grid code for renewable energy in Lebanon Grid code compliance	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	N/A	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services				A national renewable energy grid code can help create more a affordable and reliable energy services	LOCAL EXPERT
	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix								
	7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	N/A	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix				A national renewable grid code can contribute to increasing the share of renewables in the energy mix	LOCAL EXPERT
	12.2 By 2030, achieve the sustainable management and efficient use of natural resources	N/A	7.b	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support				A national renewable grid code supports more modern and sustainable use of natural resources	LOCAL EXPERT
		N/A	12.2	By 2030, achieve the sustainable management and efficient use of natural resources				A national renewable energy grid code can contribute to sustainable management and efficient use of natural resources	LOCAL EXPERT
A suitable legal and legislative framework The energy conservation law	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	N/A	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services				A comprehensive legal and legislative framework can support more affordable, reliable, and modern energy services	LOCAL EXPERT
	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix								
	7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	N/A	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix				A comprehensive legal and legislative framework can support the expansion of renewable energy in the global mix	LOCAL EXPERT

	<p>countries, in accordance with their respective programmes of support</p> <p>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</p> <p>16.6 Develop effective accountable, and transparent insitutions at all levels</p> <p>17.14 Enhance policy coherence for sustainable development</p>	N/A	7.b	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support				A comprehensive renewable energy legal and legislative framework can support technology upgrades for supplying modern and sustainable energy services	LOCAL EXPERT
		N/A	12.2	By 2030, achieve the sustainable management and efficient use of natural resources				A sound policy and legislatve framework can contribute to sustainable management and efficient use of natural resources, especially when using waste biomass.	LOCAL EXPERT
		N/A	16.6	Develop effective, accountable, and transparent insitutions at all levels				A sound policy and legislative framework is a means to create more effective, accountable and transparent institutions	LOCAL EXPERT
		N/A	17.17	Enhance policy coherence for sustainable development				A sound policy framework can support the expansion of renewable energy	LOCAL EXPERT
<p>Support policies and financial schemes</p> <p>Net metering</p> <p>The National Energy Efficiency and Renewable Energy Action support mechanism</p> <p>Support policies for large-scale renewable energy projects</p> <p>- Set renewable energy targets</p> <p>-Tendering</p> <p>-Capital subsidy or rebate</p>	<p>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</p> <p>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</p> <p>7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p><b>8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services</b></p> <p><b>9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets</b></p> <p><b>12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle</b></p> <p>17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection</p>	General	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Finance	Dedicated financial products and credit		Creation of loan programmes or other dedicated financial products to finance mitigation actions (e.g. pay as you go schemes) would increase accessibility to financial services	SCAN
		General	7.1	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	Finance	Finance		Access to financing can support the expansion of renewable energy thus providing more affordable, reliable and modern energy	LOCAL EXPERT
		General	7.2	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	Finance	Finance		Access to financing can support the expansion renewable energy into the mix	LOCAL EXPERT

General	7.b	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	Finance	Finance		Access to finance can support technology upgrades and modern energy services	LOCAL EXPERT
General	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Finance	Dedicated financial products and credit		Financial support (e.g. grants, credit) to encourage development and uptake of low carbon technologies and services supports entrepreneurship and Micro, Small and Medium Enterprises (MSMEs) through better financial services	SCAN
General	8.1	Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all	Finance	Dedicated financial products and credit		Creation of loan programmes to finance mitigation actions would increase domestic banks ability to offer banking and financial services	SCAN
General	9.3	Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets	Finance	Dedicated financial products and credit		New loan programmes would increase accessibility to affordable credit finance for SMEs, especially if concessional finance from national governments and international development banks is included	SCAN
General	12.6	Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	Finance	Dedicated financial products and credit		Provision of dedicated financial products or grant schemes would support companies in adopting sustainable practices and technologies	SCAN
General	17.1	17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection	Pricing	Carbon and energy pricing interventions		Strengthen the capacity to finance renewable energy through policy and financing tools	LOCAL EXPERT



8.4 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead

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9.1 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

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9.2 9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries

9.3 9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets

9.4 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

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11.3 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

11.6 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

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12.2 12.2 By 2030, achieve the sustainable management and efficient use of natural resources

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12.5 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

12.6 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

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15.1 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

15.4 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

16.6 16.6 Develop effective, accountable, and transparent institutions at all levels

17.1 17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection

17.14 17.14 Enhance policy coherence for sustainable development

17.17 17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships

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