

SDG-NDC Synchronization: Assessment and Recommendations

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

Ministry of Environment
United Nations Development Programme
Nationally Determined Contribution Support Programme



This document should be referenced as:

MoE/UNDP (2019). Solid Waste NAMA SDG-NDC Synchronization: Assessment and Recommendations

Copyright © 2019 by the Ministry of Environment – United Nations Development Programme

Reproduction is authorized provided the source is acknowledged and provided the reproduction is not sold.

The United Nations Development Programme (UNDP) is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. We are on the ground in 166 countries, working with them on their own solutions to global and national development challenges. As they develop local capacity, they draw on the people of UNDP and our wide range of partners.

For more information

<http://climatechange.moe.gov.lb/>
climatechange@moe.gov.lb

Disclaimer

The contents of this document are the sole responsibility of its authors, and do not necessarily reflect the opinion of the Ministry of Environment or the United Nations Development Programme, who will not accept any liability derived from its use. This study can be used for research, teaching and private study purposes. Please give credit where it is due.

Executed by

Ministry of Environment

Funded by

UNDP Funding Window for Climate Change and Disaster Risk Reduction/Climate Change

Implemented by

United Nations Development Programme, Lebanon

Author

Lee Ann Deuben

Reviewers

Mary Awad Menassa

Vahakn Kabakian

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/);
- 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.

Sector:	Waste
Sub-sector:	Solid Waste
Source document:	Nationally Appropriate Mitigation Action (NAMA) in Lebanon's Municipal Solid Waste Sector
Ministry:	Ministry of Environment
URL:	http://climatechange.moe.gov.lb/viewfile.aspx?id=272

Plan/ Policy Overview

The purpose of the Nationally Appropriate Mitigation Action (NAMA) in Lebanon's Municipal Solid Waste (MSW) sector is to, "identify and describe concrete actions needed for the MSW sector in Lebanon to improve the processes leading to higher efficiency and to achieve a transformational shift towards higher sustainable development standards and for reducing GHG emissions" (Ministry of Environment, 2017). The NAMA addresses a variety of issues related to the waste sector including, waste management, collection, sorting and disposal strategies, landfill gas (LFG) collection, implementation of Waste to Energy (WtE), and putting proper legislation in place. The main interventions of the NAMA are:

- Landfill gas is collected and utilized or flared;
- Solid waste is collected and waste streams are diverted to appropriate disposal sites; and
- Waste-to-Energy is applied.

Links to Climate Change and Sustainable Development

In Lebanon's Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, the overall mitigation targets do not include specific solid waste targets. However, where the NDC mentions the energy sector, this covers power and fuel consumption in all sectors, including industry, transport, households, agriculture, etc.

<i>Unconditional Target</i>	A GHG emission reduction of 15% compared to the Business-As-Usual (BAU) scenario in 2030
<i>Conditional Target</i>	A GHG emission reduction of 30% compared to the Business-As-Usual (BAU) scenario in 2030

The plan references Lebanon's Nationally Determined Contribution (NDC) and links co-benefits of the NAMA implementation strategies to specific SDG targets. As per the NAMA, the main SDG co-benefits are as follows:

Co-benefits of the NAMA and contribution to SDGs	
SDG 3: Good Health and Well-being	<ul style="list-style-type: none"> · Reduce hazardous pollution of air, soil and water · Reduce the practice of open dumping and non-sanitary landfills
SDG 6: Clean Water and Sanitation	<ul style="list-style-type: none"> · Reduce hazardous pollution of air, soil and water · Encourage recycling/ reuse of waste and valorize waste · Provide capacity-building and awareness- creation to key local stakeholders for waste management and waste avoidance
SDG 7: Affordable and Clean Energy	<ul style="list-style-type: none"> · Promote and produce energy from renewable energy sources

	<ul style="list-style-type: none"> · Promote environmentally sound technologies and clean energy technologies
SDG 8: Decent Work and Economic Growth	<ul style="list-style-type: none"> · Provide incentives for local private sector engagement that lead to growth of local enterprises, job creation and access to financial services · Provide capacity-building and support for local financial institutions to support the NAMA
SDG 11: Sustainable Cities and Communities	<ul style="list-style-type: none"> · Provide incentives to the local private sector that lead to local enterprises, job creation and access to financial services (incl. PPP) · Provide capacity-building and awareness- creation among key local stakeholders · Encourage recycling / reuse and thus valorize waste
SDG 12: Responsible Consumption and Production	<ul style="list-style-type: none"> · Provide capacity-building and awareness- creation among key local stakeholders for waste management and waste avoidance · Reduce the practice of open dumping and non-sanitary landfills · Encourage recycling/ reuse and thus valorize waste
SDG 13: Climate Action	<ul style="list-style-type: none"> · Improve the regulatory framework and SWM policies in favor of strategic planning and sustainable development
SDG 17: Partnerships for the Goals	<ul style="list-style-type: none"> · Improve the regulatory framework and SWM policies in favor of strategic planning and sustainable development · Support the improvement/establishment of an incentive scheme for domestic resource mobilization in the SWM sector · Mobilize additional financial sources · Provide incentives to local private sector engagement that lead to growth of local enterprises, job creation and access to financial services (incl. PPP)

The following assessment identifies the linkages between the specific recommendations in the Solid Waste NAMA to the SDG targets (Table 1 and 2). It identifies, where landfill gas flaring, for example, can positively or negatively impact SDG targets.

Table 1: Primary SDG Target


Relevant SDG	How does the Solid Waste NAMA contribute to this SDG? (examples)
	<ul style="list-style-type: none"> - Contributes to management of chemicals and all wastes to reduce their release to air, water and soil in order to minimize adverse impacts on human health and the environment - Encourage recycling/ reuse and the valorization of waste - Capacity-building and awareness creation among key local stakeholders for waste management and waste avoidance - Awareness raising approaches to encourage mitigation actions and sustainability would spread information across society - Capacity building and awareness creation on proper waste management can reduce the release of dangerous chemicals and waste into the air, water, and soil

Table 2: Highly Relevant SDG Targets

Relevant SDG	How does the Solid Waste NAMA contribute to this SDG? (examples)
	<ul style="list-style-type: none"> - Health link to respiratory diseases through adequate waste management and avoiding waste burning. Adequate waste management also contributes to less air, soil and water pollution (cause by burning or runoff)
	<ul style="list-style-type: none"> - Improved water quality by eliminating dumping - Reduces the amount of waste and garbage produced by increasing recycling and safe reuse
	<ul style="list-style-type: none"> - Energy produced from landfill gas, as well as waste incineration to produce power (production of renewable energy) - Promotes environmentally sound technologies and clean energy technologies
	<ul style="list-style-type: none"> - Having sustainable landfill systems can prevent spread of diseases caused by floods spreading waste across city. This contributes to reduce the number of deaths and people affected caused by disasters - Reduces environmental impact of cities through waste management - Provide capacity-building and awareness creation among key local stakeholders - Integrated planning and the participation of local residents can increase the uptake in recycling and reuse reducing the impact of waste on cities
	<ul style="list-style-type: none"> - Improves the regulatory framework and SWM policies in favor of strategic planning and sustainable development - Incentives for local private sector engagement can lead to growth of local enterprises, job creation and access to financial services - Support the improvement/establishment of an incentive scheme for domestic resource mobilization in the SWM sector - Mobilization of additional financial sources to support sustainable SWM - Effective private sector engagement can lead to a more sustainable and financially feasible SWM sector

Summary of Recommendations

Solid waste management strategies, including the NAMA, should continue to demonstrate co-benefits 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. The NAMA is highly relevant to at least twenty-two SDG targets and advances the NDC goals in reducing GHG emissions, and therefore co-benefits should be even further demonstrated in the plan so that common entry points can be better understood within and among Lebanon's sustainable development related plans and policies. This assessment found additional SDG linkages beyond what is contained in the current NAMA such as:

- The reduction of illegal dumping could positively impact both life on land (SDG 15) and life below water (SDG 14) through reducing soil and water contamination, and the potential that waste is being dumped into forested or protected areas, or bodies of water.
- Future iterations of the NAMA could further explain how promoting clean technology such as Waste to Energy, supports innovation and infrastructure (SDG 9). For example, the NAMA states, "Innovative approaches are a key concept of this NAMA. Besides the generally innovative approach of providing a rather holistic and mid to long term concept to tackle the current problems of the SWM sector, the specific outcomes under the NAMA will bring several innovations. These include state-of-the-art technologies for LFG utilization, waste management and source sorting, innovation for the entire waste collection and treatment processes and innovative technologies for applying WtE technologies more widely." This could be further elaborated by specifically identifying it as a co-benefit to SDG 9.

Future iterations solid waste strategies, including the Solid Waste NAMA, should continue to 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 and have largest impact on both the NDC and SDGs. In other words, there are opportunities in portraying solid waste through a more holistic approach: looking through the lens of the SDGs and NDC might result in a different prioritization of plan strategies.

- Looking at the NAMA from an environmental justice perspective might demonstrate how implementation of the NAMA could impact low-income families whom are typically disproportionately impacted by poor waste management and open burning SDG 1 (poverty) and SDG 10 (reduced inequalities) (Human Rights Watch, 2017).
- NAMA indicators should be narrowed down and synthesized with other plans and policies, to include a broader assessment of meeting SDG targets and NDC goals. Indicators selection should fully consider data availability, periodicity, reliability, etc.
- 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.

Finally, while developing solid waste strategies, and considering the linkages with non-environment SDGs, stakeholders from other ministries and institutions should be consulted for more comprehensive decision-making (Annex I).

Potential Negative Linkages

The majority of Solid Waste NAMA measures result in largely positive benefits to the environment however, a few measures can have negative or unintended consequences. The overall impact and potential trade-offs need to be weighed to determine if projects have a net positive impact and/or if potential negative impacts can be avoided. Moreover, some negative linkages may not be detrimental specifically to the environment, but they can have negative consequences on other SDGs such as hunger, poverty, health or jobs. Therefore, it is imperative to understand how certain plan recommendations may negatively impact some SDGs. Table 3 illustrates an example of the potential negative linkages that waste management could have on the SDGs that may want to be considered during decision-making processes and policy drafting.

Table 3: Potential Negative Linkages to SDGs

1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	Formalizing the waste management sector to have landfills that can manage GHG emissions instead of dumps can impact lower income population working in the informal waste sector
---	--

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

A key word search and review of the NAMA 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 in each plan.

The following is an assessment of sustainable development and climate change language included the NAMA and recommendations for creating linkages and estimations of impacts 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 with the Solid Waste NAMA

Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
SDG One: No Poverty <ul style="list-style-type: none"> · Low-income · Poor · Poverty · Disadvantaged · Underprivileged 	Poverty is not addressed in the Solid Waste NAMA.	Prevention programs can be aimed toward low-income families whom are disproportionately impacted poor waste management and opening burning.
SDG Two: Zero Hunger <ul style="list-style-type: none"> · Hunger · Food access · Food security · Food affordability · Agricultural Productivity 	Hunger is not addressed in the Solid Waste NAMA.	Programs aimed at reducing food waste, decreases the amount organic waste in landfills and can address assisting individuals who face hunger at the same time.
<p>Highly Relevant SDG</p> SDG Three: Good Health and Well-being <ul style="list-style-type: none"> · Environment · Health · Pollution 	<ul style="list-style-type: none"> - Unmanaged waste is a potential source of environmental and health hazards including significant air, water and soil pollution, especially in densely populated urban area; - The ESIA will assess environmental impacts (i.e. air, water and soil pollution), impacts on biodiversity and ecosystems and social impacts (i.e. public health, safety), impacts on stakeholders and gender- related impacts; - Improved air quality and odor reduction through reduced landfill gas emissions; - Stopping the practice of use of open dumping and non-sanitary landfills leading to reduced leachate. 	No additional recommendations beyond SDG 3 in Table 2.

Table 4: Recommendation for Estimation of Impact of SDGs with the Solid Waste NAMA

Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
SDG Four: Quality Education <ul style="list-style-type: none"> Education Awareness raising Youth 	<ul style="list-style-type: none"> The capacity building components will help to ensure that the stakeholders are well prepared for the activities and to ensure that the information basis is sufficient for stakeholders to engage in the planned activities. The capacity building for the NAMA can be divided into the following general components: <ul style="list-style-type: none"> Capacity building for local stakeholders conducted by international consultants (incl. training and workshops); Capacity building for local stakeholders conducted by local consultants (incl. training and workshops); Feasibility/assessment studies and surveys to enhance the information basis and know-how; Working group meetings to facilitate the coordination and exchange of information between of stakeholder groups; Awareness creation activities. The awareness campaign about waste sorting and recycling, for example, will help to increase awareness of recycling and waste sorting among the public and the stakeholders in general. 	<p>Awareness campaigns to support mitigation actions, especially in schools, would spread skills and knowledge about sustainable development.</p>
SDG Five: Gender Equality <ul style="list-style-type: none"> Women Gender Vulnerable groups Rural communities 	<p>The ESIA will assess environmental impacts (i.e. air, water and soil pollution), impacts on biodiversity and ecosystems and social impacts (i.e. public health, safety), impacts on stakeholders and gender- related impacts.</p>	<p>Awareness campaigns to support mitigation actions such as safe solid waste disposal, as well as reduction, recycling and reuse can recognize and support the expansion of women's role in managing households.</p>
Highly Relevant SDG SDG Six: Clean Water Sanitation <ul style="list-style-type: none"> Clean water Drinking water Wastewater Water quality 	<ul style="list-style-type: none"> Unmanaged waste is a potential source of environmental and health hazards including significant air, water and soil pollution, especially in densely populated urban areas; Reducing GHG emissions and other air, water and soil pollutants; Stopping the practice of use of open dumping and non-sanitary landfills leading to reduced leachate. 	<p>No additional recommendations beyond SDG 6 in Table 2.</p>
Highly Relevant SDG SDG Seven: Affordable and Clean Energy	<ul style="list-style-type: none"> Electricity generation from landfill gas, as well as waste incineration to produce power (production of renewable energy); In Phase 1 the main intervention is to manage LFG at four priority solid 	<p>No additional recommendations beyond SDG 7 in Table 2.</p>

Table 4: Recommendation for Estimation of Impact of SDGs with the Solid Waste NAMA

Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
<ul style="list-style-type: none"> · Energy efficiency · Electricity transmission · Electricity distribution · Reliable energy · Affordable energy · GHG reduction · Mitigation · Energy security 	<p>waste dump sites (SWDS), flare the LFG and utilize it for power generation where feasible. In Phase 2 LFG at four additional landfill or dump sites will be managed and LFG flared or utilized for power generation. In addition, one large waste incineration plant for energy production (WtE) will be constructed and operated;</p> <ul style="list-style-type: none"> - Furthermore, it is assumed that the waste incineration plant, planned under the NAMA for energy production (WtE), would not be implemented in the absence of the NAMA; - Promote and produce energy from renewable energy sources; - Promote environmentally sound technologies and clean energy technologies. 	
<p>SDG Eight: Decent Work and Economic Growth</p> <ul style="list-style-type: none"> · Jobs · Income · Employment 	<ul style="list-style-type: none"> - Provide incentives for local private sector engagement that lead to growth of local enterprises, job creation and access to financial services (including Public Private Partnerships - PPPs); - Beyond these large municipalities, the private sector is largely represented by the informal sector and waste “entrepreneurs” with no formal track record. 	<ul style="list-style-type: none"> - Increase economic productivity through technological upgrading and innovation (as result of implementing modern waste management systems); - Actions to increase recycling can contribute to the formalization of the sector and create decent jobs; - Incentives for local private sector engagement that lead to growth of local enterprises, job creation and access to financial services; - Capacity building associated with creation of new financing programmes could increase domestic banks ability to offer banking and financial services; - Financial support (e.g. grants, credit) and incentives to encourage development of private sector waste management business supports entrepreneurship and Micro, Small and Medium Enterprises (MSMEs) through better financial services.
<p>SDG 9: Industry, Innovation, Infrastructure</p> <ul style="list-style-type: none"> · Industry · Innovation · Infrastructure 	<ul style="list-style-type: none"> - It is evident that a particular emphasis in capacity building is placed on feasibility studies and environmental impact assessments for the waste management infrastructure to be built, in particular the LFG collection and WtE facility; 	<ul style="list-style-type: none"> - Develop sustainable and resilient infrastructure for waste management to support economic development and human well-being; - Promote clean technology (e.g. Waste to energy) and further enhance energy efficiency measures and low carbon infrastructure;

Table 4: Recommendation for Estimation of Impact of SDGs with the Solid Waste NAMA

Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
<ul style="list-style-type: none"> Research and development 	<ul style="list-style-type: none"> Technical, legal and advisory support for Waste Management Infrastructure Implementation; The most significant expenses for this NAMA, however, result from the activities related to the technical interventions including the engineering, procurement, construction and operation of the waste sector infrastructure; Besides its contribution to long-term low-carbon development and sustainable development in the targeted sector and country, the NAMA should also demonstrate how it supports transformational change. This should include: the provision of innovation to the sector; Innovative approaches are a key concept of this NAMA. Besides the generally innovative approach of providing a rather holistic and mid- to long term concept to tackle the current problems of the SWM sector, the specific outcomes under the NAMA will bring several innovations. These include state-of-the-art technologies for LFG utilization, waste management and source sorting, innovation for the entire waste collection and treatment processes and innovative technologies for applying WtE technologies more widely. In addition, the capacity-building activities and awareness- creation campaign will provide knowledge to the relevant stakeholders and to society in a manner and to a scale that has the potential to stimulate waste avoidance and waste sorting at the source. 	<ul style="list-style-type: none"> Demonstrate co-benefits of NAMA to SDG 9 as is described in the specific contributions section.
SDG 10: Reduced Inequalities <ul style="list-style-type: none"> Equity Inclusion 	Equity is not addressed in the Solid Waste NAMA.	Reducing the practice of open burning and illegal dumping can reduce the negative impacts (health environment, quality of life) on neighborhoods particularly, low-income communities whom are disproportionately impacted.

Table 4: Recommendation for Estimation of Impact of SDGs with the Solid Waste NAMA

Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
<p><u>Highly Relevant SDG</u></p> <p>SDG 11: Sustainable Cities and Communities</p> <ul style="list-style-type: none"> · Cities · Communities · Urban · Urbanization · Fuel efficient vehicles · Modal share shift · Public transportation · Accessibility · Mobility 	<ul style="list-style-type: none"> - Given that 50% to 60% of the population lives in Beirut and its surroundings, the main emission sources might be predominantly associated with Greater Beirut Area (GBA) and Mount Lebanon. Some of the technical interventions leading to GHG emission reductions (e.g. the implementation of a WtE facility under NAMA Phase 2) will first focus on these regions because of the amount of MSW there and the urgent need to find solutions thanks to public pressure; - The composition of solid waste changes marginally between geographical areas (cities and commercial centers produce much more paper and plastics than rural areas) and seasons (organic fraction and moisture content is highest in summer); - Outside Beirut and Mount Lebanon, no comprehensive SWM plan exists and the areas are characterized by rudimentary collect and dump practices. However, full or partial SWM systems exist in the main cities (Saida, Tripoli, and Zahle); - The 2010 Waste-to-Energy Plan, based on a COM Decision, advocated Waste-To-Energy (WtE) technologies in large cities, and renewed the GOL's commitment to the 2006 Master Plan in the rest of the country, while also exploring the feasibility of WtE systems in these regions. 	<p>In addition to SDG 11 in Table 2:</p> <ul style="list-style-type: none"> - Increase access to basic services and upgrade slums (through garbage collection); - Increase sustainable urbanization and sustainable human settlement planning and management.
<p><u>Primary SDG</u></p> <p>SDG 12: Sustainable Consumption and Production</p> <ul style="list-style-type: none"> · Consumption · Production · Output · Productivity · Efficiency 	<ul style="list-style-type: none"> - Provide capacity-building and awareness creation among key local stakeholders for waste management and waste avoidance; - Encouraging recycle / reuse of waste and value creation for waste; - Lebanon has a vibrant recycling industry that mainly focuses on paper and cardboard, and plastics; - Provide capacity-building and awareness creation among key local stakeholders for waste management and waste avoidance. 	<p>In addition to SDG 12 in Table 1:</p> <ul style="list-style-type: none"> - Contributes to efficient use of natural resources; - Contributes to reduce waste generation through prevention, reduction, recycling and reuse.

Table 4: Recommendation for Estimation of Impact of SDGs with the Solid Waste NAMA

Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
SDG 13: Climate Change <ul style="list-style-type: none"> Climate Change GHG emissions Resilience Mitigation Adaptation Nationally Determined Contribution (NDC) 	<ul style="list-style-type: none"> In 2000, Lebanon's total GHG emissions recorded 18.5 million tonnes of CO₂ equivalent (mt CO₂-eq). According to the SNC, the solid waste sector was the third highest emitting sector, with 1.74 million tonnes of CO₂-eq (mt CO₂-eq) (9.4% of total national GHG emissions) and the largest source of methane (CH₄) in Lebanon (with 8.8% of total national CH₄ emission). Within the waste sector, solid waste disposal on land remains the highest emitting category, accounting for 94.3% of total waste emissions; UNFCCC, the National Greenhouse Gas Inventory Report of the Waste Sector indicated a 47% increase in GHG emissions from the Waste Sector between the years 1994 to 2011, totaling 1,300,000 t of CO₂-eq (MOE/GEF/UNDP, 2015); Further GHG emissions are caused by the open burning of waste. Although there is no formal waste incineration in Lebanon, open burning is widely practiced at municipal waste dumps. Accurate records of waste burning and the resulting GHG emissions are not available; Prevailing SWM practices in Lebanon typically consist of end-of-pipe solutions, such as open dumping and uncontrolled landfilling, which not only lead to methane emissions from untreated waste streams, but also to significant environmental, social and economic impacts. 	<ul style="list-style-type: none"> Climate change is mainstreamed in Solid Waste NAMA; Provide narrative that describes solid waste issues in the broader context of climate change; Demonstrate how NAMA measures impact the NDC.
SDG 14: Life Below Water <ul style="list-style-type: none"> Water Sea Lakes Streams Rivers Mediterranean Marine life Run-off Water pollution Coastal 	<p>Unmanaged waste is a potential source of environmental and health hazards including significant air, water and soil pollution, especially in densely populated urban areas.</p>	<p>Reduces water pollution due to avoided waste dump in ocean and rivers.</p>

Table 4: Recommendation for Estimation of Impact of SDGs with the Solid Waste NAMA

Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
SDG 15: Life on Land <ul style="list-style-type: none"> · Ecosystems · Biodiversity · Forests · Reforestation/ afforestation · Seed bank · Genetic 	<ul style="list-style-type: none"> - The ESIA will assess environmental impacts (i.e. air, water and soil pollution), impacts on biodiversity and ecosystems and social impacts (i.e. public health, safety), impacts on stakeholders and gender- related impacts; - Reducing GHG emissions and other air, water and soil pollutants; - Stopping the practice of use of open dumping and non-sanitary landfills leading to reduced leachate; - Because of the limited current information about the environmental and social effects caused by the solid waste sector in Lebanon, it is recommended that an Environmental and Social Impact Assessment (ESIA) be conducted before the start of the NAMA; - Prevailing SWM practices in Lebanon typically consist of end-of-pipe solutions, such as open dumping and uncontrolled landfilling, which not only lead to methane emissions from untreated waste streams, but also to significant environmental, social and economic impacts. 	<p>Reducing illegal dumping can help protect natural habitats and land encroachment into important ecosystems.</p>
SDG 16: Peace, Justice and Strong institutions <ul style="list-style-type: none"> · Capacity · Legislation · Regulation · Legal framework · Policy · Participatory · Inclusive (decision-making) 	<ul style="list-style-type: none"> - As the NAMA intends to bring a positive long-term transformation to the SWM sector, leading to GHG emission reductions and higher sustainable development standards, a central component of the NAMA is to support the establishment of a regulatory framework for the SWM sector; - Improve the regulatory framework and solid waste management policies in favor of strategic planning and sustainable development; - Facilitate actions encouraging policy and regulation changes; - With the establishment of the institutional framework and the provision of capacity-building, knowledge transfer and the support to create a better information base, the NAMA will provide benefits across the institutions and local stakeholders (e.g. municipalities) that go beyond the sector and the scope. 	<p>Development of institutions and governance processes for climate change should support development of general governance capacities.</p>

Table 4: Recommendation for Estimation of Impact of SDGs with the Solid Waste NAMA

Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
<p><u>Highly Relevant SDG</u></p> <p>SDG 17 Partnerships for the Goals</p> <ul style="list-style-type: none"> · Resource · Financing mechanism · Public-Private Partnerships 	<ul style="list-style-type: none"> - Revenue collection through tipping fee; - Mobilization of additional financial sources through the NAMA; - Support the improvement and/or establishment of an incentive scheme for domestic resource mobilization in the solid waste sector; - The waste sector NAMA is a co-financed effort between international and domestic financial sources; - To support the broader ambition of Phase 2 (2022-2030), several tax mechanisms will be legally implemented to generate revenue and guarantee the sustainable management of Lebanon's SWM sector; - The general concept of financing the interventions under a PPP business models consists of National Government Support, International Finance Support, Private Sector Support, and municipal or national government in-kind contribution; - The private sector has played a significant role in the design and provision of SWM services in Lebanon; - Beyond these large municipalities, the private sector is largely represented by the informal sector and waste "entrepreneurs" with no formal track record; - The SWM sector in Lebanon needs a long-term strategy and coordinated efforts to improve the enabling environment and to ensure public and private sector investments for necessary technical interventions. This NAMA in the SWM sector of Lebanon has been developed with the clear intention to foster long term transformational change; - Private sector involvement will happen at various stages of the NAMA. Waste collection and transportation will be under the responsibility of the municipalities, who may contract delivery of these services to the private sector; 	<p>No additional recommendations beyond SDG 17 in Table 2.</p>

Table 4: Recommendation for Estimation of Impact of SDGs with the Solid Waste NAMA


Key Words	Description in the Policy/Strategy/Action Plan	Recommendation for Estimation of Impact/Integration of Impact
	<ul style="list-style-type: none">- The NAMA puts a specific emphasis on the engagement and strengthening of the private sector, by supporting the development of mandates and regulation for Public Private Partnerships (PPP) and Independent Power Producers (IPP) business models, including transparent procurement processes under competitive bidding. Furthermore, the NAMA has the objective to further support the already existing strategy to strengthen the private sector and to increase the trend towards a more decentralized structure in the SWM sector with the clear aim to strengthen the engagement of the private sector.	

Annex I: Lead Institution per SDG in Lebanon


Theme: People		Leading Institution: Ministry of Education and Higher Education			
1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	10 REDUCED INEQUALITIES
					

Theme: Planet		Leading Institution: Ministry of Environment			
6 CLEAN WATER AND SANITATION	7 AFFORDABLE AND CLEAN ENERGY	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND
					

Theme: Prosperity		Leading Institution: Ministry of Economy and Trade			
8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	11 SUSTAINABLE CITIES AND COMMUNITIES			
					

Theme: Peace		Leading Institution: Office of the Minister of State for Administrative Reform			
16 PEACE, JUSTICE AND STRONG INSTITUTIONS					
					

Theme: Data and Statistics		Leading Institution: Central Administration of Statistics			
----------------------------	--	---	--	--	--

Cross-cutting theme:					
17 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.

The SDG global framework provides a valuable starting point to integrate the two agendas' indicator framework. However, a barrier to solely utilizing the SDG global framework for both agendas, is that it is limited in its ability to measure NDC implementation. Many of the SDG indicators are too unspecific or insufficient for tracking NDC progress. For example, greenhouse gas emissions are not included as an SDG indicator in the global framework (Bouyé, Harmeling, & Schulz, 2018). Therefore, 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 climate policies were identified to further provide a basis for developing an integrated indicator framework.

The Solid Waste NAMA identifies MRV Parameters for reporting on sustainable development aligning with specific SDGs. These parameters are a good starting point at considering the integration of transport indicators with the SDG indicator framework. Annex II, Table 1 shows the sustainable development parameters contained in the NAMA. This is valuable in considering the impact of waste measures on the SDGs at the policy level but for a 'bigger picture' nationalized SDG/NDC indicator database it would likely be more practical to group and prioritize the Waste NAMA indicators together as transport indicators under SDG 12 (see Annex II, Table 2). Further, the indicators within the Solid Waste NAMA might be too granular in scope to be appropriate for a nationalized indicator framework, so therefore the NAMA indicators would likely have to be assessed for its relevance on the overall impact on climate change and sustainable development.

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. Examples of which are identified in Annex II, Table 2 'other potential indicators' for the SDG targets that are relevant to climate change.

Annex II, Table 1: Waste NAMA MRV parameters reporting on sustainable development		
SDG Target	Contribution of the Waste NAMA	Name of Parameter
3.9: Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Stopping the practice of use of open dumping and non-sanitary landfills leading to reduced leachate	<ul style="list-style-type: none">· Number of LFG collection implemented· Number of operational reception centers· Total waste received· Total waste incinerated
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	Stopping the practice of use of open dumping and non-sanitary landfills leading to reduced leachate	<ul style="list-style-type: none">· Number of LFG collection implemented· Number of operational reception centers· Total waste received

		<ul style="list-style-type: none"> · Total compost · Total treated · Total waste incinerated
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	Electricity generation from landfill gas, as well as waste incineration to produce power (production of renewable energy)	<ul style="list-style-type: none"> · Electricity generated LFG · Electricity generation incinerators
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 8.10: Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all	(1) Implementation of an Integrated Solid (2) Waste Management law. (3) Implementation of a law permitting IPPs. (4) Introduction of tipping fees to secure funding levels. (5) Provide opportunities for banks to provide finance for the newly introduced facilities	<ul style="list-style-type: none"> · Draft Integrated Solid Waste Management (ISWM) · Enacted ISWM · Total collected, month · Enacted IPP · Number of LFG collection implemented · Operational showcase pre-treatment facility
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	Improved waste collection and waste management	<ul style="list-style-type: none"> · Number of operational reception centers · Total waste received
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.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production	(1) Encouraging recycle / reuse of waste and value creation for waste (2) Improved air quality and odor reduction through reduced landfill gas emissions (3) Reduced soil and water pollution through reduced leachate. (6) Promotion of environmentally sound technologies	<ul style="list-style-type: none"> · F_CH4,flared · F_CH4_electricity · Total_compost · Total treated · Total waste incinerated · N_CB held, source sorting · Enacted ISWM
13.2: Integrate climate change measures into national policies, strategies and planning	(1) Integration of emission reductions in the reporting lines of the NAMA (2) Consideration of the achieved emission reductions of the NAMA in the INDC and other governmental strategies	<ul style="list-style-type: none"> · F_CH4,PJ,y · F_CH4,flared · F_CH4_electricity · EC_PJ,k,y · EG_LFG · GEF · Number of operational reception centers · Total waste received · Total compost · PE_comp,y · Total treated · NCV_waste · p · Total waste waste incinerated · PE_inc,y · Electricity generated incinerators · Total waste received

17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection 17.3 Mobilize additional financial resources for developing countries from multiple sources	(1) Revenue collection through tipping fee (2) Mobilization of additional financial sources through the NAMA	· ENACTED_IPP
--	--	---------------



Annex II, Table 2: SDG Indicator and Other Potential Indicators	
SDG	Indicator
	12.5.1 National recycling rate,
	12.5.1 Tons of material recycled
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	Other potential indicators:
	<ul style="list-style-type: none"> · Municipal solid waste generation rate in kg/capita/d · Number of single use plastic bags used per year · Home composting rate (as a percentage of all households) · Community composting rate (as a percentage of all communities) · Return and reuse of packaging rate · Waste collection rate · Percentage of coverage of country- separation at source. · Rate of collection of BMW as a percentage of the total weight of biowaste · Rate of collection of edible used oils as percentage of total used edible used oils · Recycling rate rural · Recycling rate urban · Number of Material Recovery Facilities (MRFs) for recyclables and biological treatment plants for biowastes · Biowaste home composting rate · Waste recovery rates as a percentage of total waste · % of waste driven for treatment or energy recovery · % of waste driven to sanitary landfill · Sanitary landfill coverage (percentage of country) · Percentage of waste disposed to landfill · Percentage of waste driven to sanitary landfill · Number of dumpsites · Number of dumpsite closures · Number of dumpsites rehabilitated · CandDW collection, recovery, treatment and disposal facilities - national coverage % · Separate collection rate of CandDW · Recovery rates of CandDW · GHG emissions (Gg CO₂eq.) from solid waste · CH₄ emissions from solid waste · N₂O emissions (Gg) from solid waste · GHG emissions by solid waste treatment technology · Total waste generated (Gg/year) · % deposited in SWDS · % deposited in sanitary landfills · % going to dumpsites · % recycled reused composted · % of MSW incinerated

Annex III: SDG List

PEOPLE	 <p>Goal 1. End poverty in all its forms everywhere</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
PEOPLE	 <p>Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture</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

PEOPLE	<div> <div>3</div> <div>GOOD HEALTH AND WELL-BEING</div> <div>  </div> </div> <div> Goal 3. Ensure healthy lives and promote well-being for all at all ages </div>	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
PEOPLE	<div> <div>4</div> <div>QUALITY EDUCATION</div> <div>  </div> </div> <div> Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all </div>	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 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	<div>6 CLEAN WATER AND SANITATION</div>  <div> Goal 6. Ensure availability and sustainable management of water and sanitation for all </div>	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	<div>7 AFFORDABLE AND CLEAN ENERGY</div>  <div> Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all </div>	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

PLANET	 <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development</p>	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
PLANET	 <p>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</p>	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

PROSPERITY

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

PEACE

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

[Click here to access the complete SCAN tool for the Solid Waste NAMA](#)

References

- Energy research Centre of the Netherlands (ECN) and New Climate Institute. (2019). Ambition to Action SCAN tool. Retrieved from <http://ambitiontoaction.net/>
- Bassam Khawaja/Human Rights Watch. (2019). As if You're Inhaling Your Death: The Health Risks of Burning Waste in Lebanon. Retrieved from <https://www.hrw.org/report/2017/12/01/if-youre-inhaling-your-death/health-risks-burning-waste-lebanon>
- Ministry of Environment and United Nations Development Programme (MoE/UNDP) (2016). Intended Nationally Determined Contribution (INDC). Beirut, Lebanon: MOE. Retrieved from <http://climatechange.moe.gov.lb/Library/Files/Uploaded%20Files/Republic%20of%20Lebanon%20-%20INDC%20-%20September%202015.pdf>
- Ministry of Environment and United Nations Development Programme (MoE, UNDP). (February, 2019). Integrated Solid Waste Management Lebanon National Strategy (Final Draft Report).
- Ministry of Environment (MoE). (2017). Nationally Appropriate Mitigation Action in Lebanon's Municipal Solid Waste Sector. Lebanon: MOE Publications
- Ministry of Environment, Global Environmental Facility and United Nations Development Programme (MOE, GEF and UNDP) (2015). Lebanon's Third National Communication to the UNFCCC. Retrieved from <http://climatechange.moe.gov.lb/viewfile.aspx?id=239>
- United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) (2018). Turning promises into action: Gender equality in the 2030 Agenda for Sustainable Development. Retrieved from <https://www.unwomen.org/en/digital-library/publications/2018/2/gender-equality-in-the-2030-agenda-for-sustainable-development-2018#view>
- United Nations Statistics Division. (2019). Sustainable Development Goal indicators website: SDG API. Retrieved from <https://unstats.un.org/sdgs/>
- Woroniuk, Sida B. and J. Schalkwyk. (1998). Waste Disposal and Equality Between Women and Men. Sida. Retrieved from OECD website: <https://www.oecd.org/dac/gender-development/1849277.pdf>