AMERICAN UNIVERSITY OF BEIRUT

FRAMEWORK FOR THE FORMULATION AND IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT POLICIES FOR GREEN BUILDINGS IN LEBANON

by

RACHA MOHAMED ITANI

A thesis
submitted in partial fulfillment of the requirements
for the degree of Master of Engineering Management
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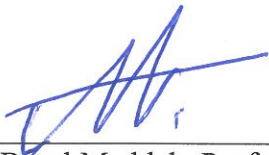
by
RACHA MOHAMED ITANI

Approved by:

_____   Advisor
Dr. Mohamed-Asem Abdul-Malak, Professor
Department of Civil and Environmental Engineering
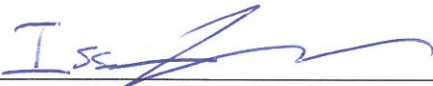
_____   Member of Committee
Dr. Bacel Maddah, Professor
Department of Industrial Engineering and Management

_____   Member of Committee
Dr. Issam Srour, Associate Professor
Department of Civil and Environmental Engineering

Date of thesis/dissertation defense: April 30, 2018

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AN ABSTRACT OF THE THESIS OF

Racha Mohamed Itani   for   <u>Master of Engineering Management</u>
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Title: <u>Framework for the Formulation and Implementation of Sustainable Development</u>
        <u>Policies: for Green Buildings in Lebanon</u>

The world population has reached more than 7 billion people who negatively affecting the environment and the climate due to the lack of development. Hence, there is a need to implement sustainable development strategies within national governments. Since green buildings form a major part in elevating the quality of life, it is essential to form policies that indorse this issue. Therefore, a framework for the formulation and implementation of Sustainable Development policies for green buildings proves a necessity. In Lebanon, there is a slow progress in implementing the concept of green buildings in the construction industry. Although there are some initiatives put into practice, still is there much work to be done. Such is the case of the 41 registered projects in Lebanon for LEED certification, but only 6 were certified. This research is connected to an international agreement by the UN under the name of the seventeen Sustainable Development Goals (SDGs). However, nine out of the seventeen SDGs meet the concept of green buildings, according to the World Green Building Council (WGBC). Therefore, these 9 SDGs form the base for the policy formulation process in Lebanon. However, this process needs a defined framework, with defined stakeholders, which states for each their role towards policy formulation.

The research methodology starts by a literature review providing examples on frameworks for countries similar to Lebanon. Followed by specifying the involved stakeholders, with some interviews that were made with key stakeholders as well as data collection. After specifying the stakeholders' specific tasks, they are distributed in the different bodies of the framework. Finally, the framework paves the way into formulating and implementing sustainable development policies related to green buildings in Lebanon.

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ACRONYMS

AUB: American University in Beirut

APEC: Asia-Pacific Economic Cooperation Secretariat

ASCE: American Society of Civil Engineers

ASHRAE: American Society of Heating, Refrigerating, and Air-Conditioning Engineers

BAU: Beirut Arab University

BDL: Banque Du Liban

BRE: Building Research Establishment

BREEAM: Building Research Establishment Environmental Assessment Method

CDR: Council for Development and Reconstruction

CERD: The Center for Educational Research and Development

CNRS: National Council for Scientific Research

DGUP: Directorate General of Urban Planning

EIA: Environmental Impact Assessment

EDL: Electricité Du Liban

EDZ: Electricité De Zahlé

FCCIAL: The Federation of Chambers of Commerce, Industry and Agriculture in Lebanon

FPM: Free Patriotic Movement

IFC: International Financial Corporation

IFF: Illicit Financial Flows

IMF: Independent Municipal Fund

LAU: Lebanese American University

LCEC: Lebanese Center for Energy Conservation

LCMT: Low-Carbon Model Town

LEED: Leadership in Energy and Environmental Design

LGBC: Lebanon Green Building Council

LIBNOR: Lebanese Standard Institution

LU: Lebanese University

MDGs: Millennium Development Goals

MOE: Ministry of Environment

MOEW: Ministry of Energy and Water

MOIM: Ministry of Interior and Municipalities

MOPH: Ministry of Public Health

NEEREA: National Energy Efficiency and Renewable Energy Action

NDU: Notre Dame University

NGO: Non-Governmental Organization

OEA: Order of Engineers and Architects

OECD: Organization of Economic Co-operation and Development

OMSAR: Office of the Ministry of State for Administrative Reforms

SDGs: Sustainable Development Goals

UN: United Nations

UNCED: United Nations Conference on Environment and Development

UNDESA: United Nations Department of Economic and Social Affairs

UNDP: United Nations Development Programme

UNEP: United Nations Environmental

UNFCCC: United Nations Framework Convention on Climate Change

USGBC: U.S. Green Building Council

USJ: Université Saint-Joseph de Beyrouth

VNR: Voluntary National Report

WGBC: World Green Building Council

WSSD: World Summit on Sustainable Development

CHAPTER 1

INTRODUCTION

1.1. Background

The world is rapidly changing (Klein, 2014) (SIPP, 2014). Studies show that the world population has reached more than 7 billion people; this high number has yielded a dangerous level of change on the environment which has already outpaced some planetary boundaries (SDSN, 2012). Sustainability development strategy is viewed as key for solving such issues (IPCC, 2007).

Some of the research separating "sustainable development" from "sustainability", states that the former is the result of the latter which in turn, is considered a process (Holden, Linnerud, & Banister, 2014). The Brundtland report defines sustainable development as follows: "it seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future" (WECD, 1987). In other words, there are limited resources that the earth holds, and if we do not change our rapid exploitation of them, a day will come where these resources will be depleted (Al-Tekreeti & Beheiry, 2016). However, sustainable development is based on three main pillars which include balancing the environmental, social and economic development (Palekhova & Palekhov, 2016), usually referred to as the triple bottom line. Moreover, "the nature of development should include the improvement of the quality of human life, the level of health and creation of a social environment which should guarantee equality, freedom, education and human rights" (Zhang & London, 2011).

To emphasize on the sustainable development concept in the construction field,

several rating certifications were created; examples of which include: LEED (Leadership in Energy and Environmental Design), USGBC, BREEAM (Building Research Establishment Environmental Assessment Method), BRE - UK, and ARZ rating system - Lebanon Green Building Council (LGBC). These rating systems, among others, did not yet have a wide impact on sustainable development, as there may be not enough incentives for developers to pursue such certifications. To this end, a mix of legislations, voluntary mechanisms, incentives, added to social awareness, should be offered (Gunawansa, 2010). As such, policies should be regarded as more effective tools to reach sustainable development goals (Bond & Devine, 2015).

The key to the successful development of sustainable projects, especially the large-scale ones, is through formal principles (Doorn, Stimac, & Schik, 2013). However, obstacles have been found to stand in the way of formulating needed principles and policies. It is reported that policies, which should be formed at the lowest level possible of policy through the promotion of good governance (Bileišis, 2009). Policy making, therefore, must include key stakeholders who will adopt the sustainable development policies as part of their overall business strategy (Opoku, Cruickshank, & Ahmed, 2014). The latters shall be from both governmental and nongovernmental organizations. Since green buildings help in creating green jobs, within five main areas of focus: Environment–Economy Bridge, Green Entrepreneurship, Nascent Industry Creation, Internal Industry Transformation, and Structural Adjustment (Kouri & Clarke, 2012).

Moreover, COP 21 held in Paris, France in 2015, resulted in the signing of an agreement by more than 174 countries, announcing the adoption of 17 Sustainable Development Goals (SDGs). Striving to achieve these goals shall help pave the way for

a guaranteed sustainably developed world.

Statistics show that 41 projects are registered in Lebanon for LEED certification since 2009, however, to this date only six of them were received certification (USGBC, Projects, 2018). It is important to note also, that some of the registered projects have already started operating and still have not yet received the certification.

1.2. Problem Statement

The planning for, and the process of formulating sustainable development policies, should involve various stakeholders, as the engagement of all concerned is likely to result in a higher chance of success with the implementation of formulated policies. To insure the success of enforcing sustainable development policies the process should include, principles of citizen participation, pluralism, subsidiarity, transparency, accountability, equity, access, partnership, and efficiency (Bileišis, 2009).

In Lebanon, the Directorate General of Urban Planning is the key entity responsible for such policies as it embodies representatives from various other concerned ministries and governmental bodies. Its internal operating laws and regulations sheds light on the absence of several similar parties important for the formulation and implementation of such needed policies. In addition, other concerned entities, regarded as critical to such a process, may include NGOs, think-tanks, educational facilities, etc. The review these entities' mission statements revealed ambiguous descriptions of the roles those may play in formulating and implementing such policies in Lebanon. This is why addressing the lack of hierarchy or framework, also present in the aforementioned entities, proves a dire necessity to formulate the

needed policies, in order to make them more implementable in Lebanon.

1.3. Research Objectives

This thesis aims at investigating the array of entities and authorities concerned with the process of sustainable development policy making. It further targets the implementation of a framework that could delineate the roles and responsibilities of such bodies in the above-mentioned policy-making process. Finally, it concludes with the identification of the potential obstacles that may hinder both the formulation, as well as the implementation, of these long-overdue processes.

1.4. Research Methodology

The adopted research methodology will include:

- Reviewing the related literature to identify the basic factors accounted for in the formulation of sustainable development policies and the possible obstacles hindering the process or its implementation;

- Identifying the various stakeholders: bodies, entities, authorities, etc. involved in such processes;

- Surveying the missions and operating laws and regulations of the identified parties;

- Devising a framework for the effective formulation and implementation of such policies;

- Investigating the possible hindering obstacles - given the political, environmental, social, and economic constraints – to the implementation of this framework in Lebanon; and

- .Offering conclusions and recommendations

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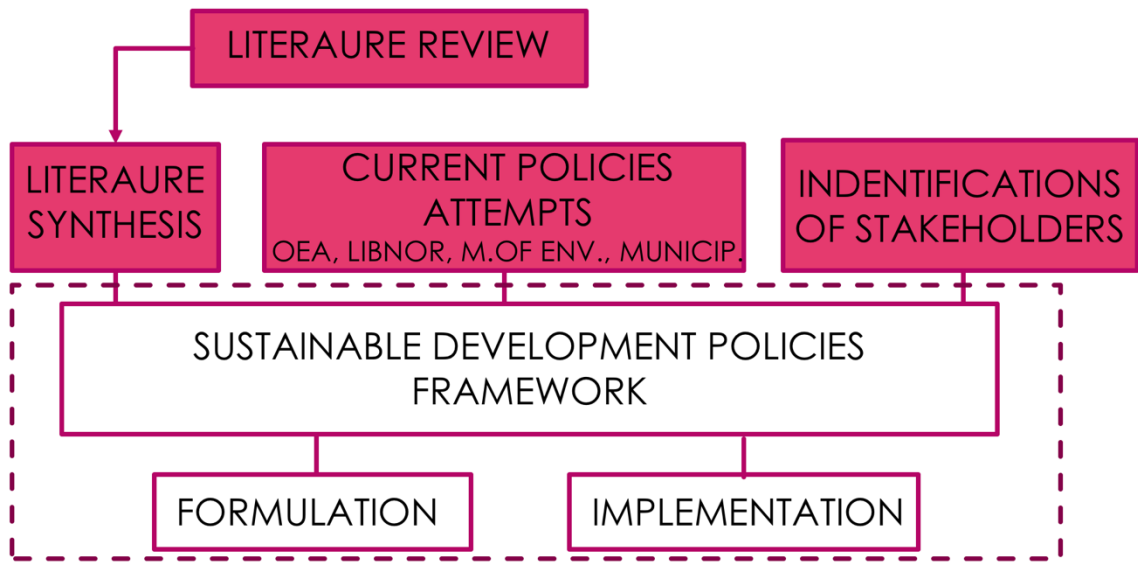
Figure 1.1. Intended Framework.

1.5. Research Contribution

The idea behind this research is to find a clear structure for formulating and implementing sustainable development policies related to construction projects, covering the economic, environmental, and social pillars. The outcome shall result in affording the population of Lebanon a fairer chance of seeing their towns and cities evolve into better, safer, cleaner, sustainable environments.

CHAPTER 2

LITERATURE REVIEW

2.1. Preamble

In order to create a solid background, it is essential to shed light on: sustainability, sustainable development, policy formulation theory, existing rating systems, general governmental and existing frameworks. Furthermore, exploring the seventeen Sustainable Development Goals (SDGs) helps highlight nine of them met by green buildings, as per the World Green Building Council (WGBC), noting that throughout the thesis the term "green buildings" refers to green construction, sustainable buildings, and low efficient buildings. In turn, elaborating on policy formulation theory provides grounds to the process used for policy formulation and explores the possible obstacles pertaining to it. Hence, providing framework examples from countries similar to Lebanon, such as: The Philippines, Kazakhstan, among others, could guide the formulation and implementation of sustainable development policies.

2.2. Sustainability

2.2.1. Definition of Sustainability

In 1994, John Elkington invented the term triple bottom line as a method for measuring sustainability (Henriques & Richardson, 2004). In 1997, the United Nations adopted a definition of sustainability in its Agenda for Development: "Development is a multidimensional undertaking to achieve a higher quality of life for all people. Economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development" (UN,

Agenda for Development, 1997). In most cases, performance measurements are bound to the economic, economic and social scales (Jackson, Boswell, & Davis, 2011). Moreover, the 1987 report, "Our common future", also defined the same three pillars of sustainable development (Bileišis, 2009).

However, city developments founded on poor policies and planning, insufficient sustainability impact analysis, and weak governance mostly fail to meet up the community expectations (Martin & Rice, 2013). Therefore, the integration of sustainable development planning and governance result in a better development outcome (ibid.). However, Davidson and Gleeson argue that sustainability is not merely an intellectual concept, but also a politically contested one (2014); therefore, the governance pillar is added in order to pave the way for better implementation of the previous three pillars (Davidson & Gleeson, 2014).

2.2.2. Sustainability Pillars

2.2.2.1.The Economical Pillar

Williams & Dair provide three main objectives of the economic pillar: The first being, enabling businesses to be efficient and competitive by reducing energy consumption in construction, reducing waste in construction, providing infrastructure and buildings that enable businesses to keep energy and water consumption to a minimum, as well as providing high quality buildings that are flexible and can be adapted with minimum costs. The second objective is to support local economic diversity through providing higher population densities in order to enhance commercial viability, providing several uses to commercial areas, so as to increase their viability and vitality, and using locally produced goods and materials in construction. The third objective is to provide employment opportunities and increase the choice of

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employment by developing high quality buildings for manufacturing and commercial activities (Williams & Dair, 2006).

The indices of Economic Development per capita include: The index of physical volume of industrial production, the index of physical volume of agricultural products, investments in basic capital, retail trade turnover, and degree of depreciation of capital assets (Karimbergenova, 2014).

2.2.2.2. The Social Pillar

The social pillar is constructed of six main objectives as stated in Williams & Dair: The first is to adhere to ethical standards during the development process by ensuring ethical trading throughout the supply chain and providing a safe and healthy work environment. The second is to provide adequate local services and facilities to serve development through providing space for training, developing good quality energy efficient buildings for community activities, and offering a mix of retail spaces. The third objective is to provide efficient housing by developing a mix of housing tenure and type, providing affordable housing, providing high quality and flexible buildings that minimize the use of resources, and providing secure dwellings. The fourth objective is to integrate the development within the locality through providing multiple links to adjacent neighborhoods, rejecting or discouraging gated communities, creating a mix of transportation facilities to provide easy access to the services provided. The fifth objective is to provide high quality livable spaces by ensuring sensitive high-quality architecture and master planning, and efficient road design. The sixth objective is to conserve local culture and heritage through reusing locally valued buildings, as well as designing spaces to reflect the local heritage using local materials. (Williams & Dair, 2006)

The indices for Social development indices: the level of unemployment, the migration balance, the overall area of apartment houses, the volume of health and educational services, the average monthly salary, expected life intervals, infant deaths, and the correlation of income used for consumption to living costs (Karimbergenova, 2014).

2.2.2.3. The Environmental Pillar

William & Dair specify three main objectives behind the Environmental pillar: The first objective aims at minimizing the use of resources, through the use of renewable and recycled materials, renewable energy sources, minimum construction waste, and materials with low energy inputs. The second objective is to minimize pollution through remediating contaminated land, reducing air pollution, providing infrastructure for public transport, walking, cycling, raising population densities on sites within 800 m of existing centers, services and transport corridors, as well as designing energy efficient buildings. The third objective is to protect biodiversity and the natural environment through conserving flora, wildlife and habitats on site, providing wildlife refuges, and using sustainable urban drainage systems to protect rivers and water courses from pollution and flooding (Williams & Dair, 2006).

The environment pillars indices include the current costs of environment protection, the emissions of the most widespread air pollutants from stationary sources, and the treatment plants' pollutants (Karimbergenova, 2014).

2.2.2.4. The Governance Pillar

The governance pillar, also referred to as institutional imperative, aims at

strengthening participation in the development process (Bileišis, 2009). According to Martin & Rice the governance pillar or pathway is multi-layered and can be achieved through three main objectives: The first through planning and implementation of local and regional strategies. The second is achieved through linking all tiers of government through establishing hierarchy and planning integration through coordination of efforts. While the third is achieved through nationally consistent systems, principles and policies, and broad-based community and individual level consultations in the development process (Martin & Rice, 2013).

2.3. Sustainable Development

2.3.1. Definition of Sustainable Development

The Brundtland Commission report described sustainable development "meet[ing] the needs of the present without compromising ability of future generations to meet their own needs" (WCED, 1987). Therefore, since sustainable development is bound by time and space, its consequences for equity within and between generations reach both global and national levels (Holden, Linnerud, & Banister, 2014).

2.3.2. Historical Background on Evolvement of Sustainability Development

Figure 2.1 below details the important periods of Sustainable Development: Noting that the years between 2000 to 2015 cover the duration of the eight Millennium Development Goals (MDGs) declared during the Millennium Summit in September 2000, they represent the timeline spread from the year of adoption to the year of achieving the goals. Moreover, the years between 2015 to 2030 cover the duration of the 17 Sustainable Development Goals (SDGs) as they also represent the timeline spread

from the year of adoption to the year of achieving these goals (Hoornweg, October
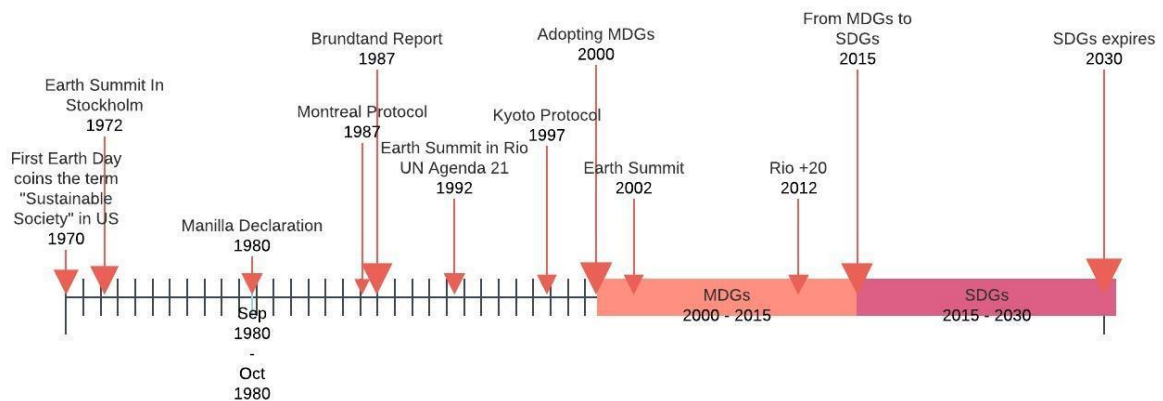
2015).

Figure 2.1. Timeline for Sustainable Development.
(Hoornweg, October 2015)

Table 2.1 holds a description of each of the events shown in figure 2.1. It

shows the date, the title and the description of each of the events which contributed to

the maturity of Sustainable Development.

Table 2.1. Detailed Timeline for Sustainable Development - same source as Figure 2.1

Date of the event	Title of the event	Description of the event
1970	First Earth Day	It was founded by Gaylord Nelson a United States Senator as an environmental teach-in, first held on April 22, 1970 in the US.
1972	Earth Summit Stockholm	Also known as the United Nations Conference on the Human Environment which was held in Sweden from June 5-16, 1972. It was the UN's first major conference on international environmental issues, and highlighted, a turning-point in the development of international environmental politics.
1980	Manilla Declaration	The World Tourism conference was held in Manila, Philippines from 27 September to 10 October 1980. Because of tourism's direct effects on the social cultural, educational and economic sectors of national societies and their international relations, it is considered an activity essential to nations' progress.

1987	World Commission on Environment and Development (WECD)	WCED also known as the Brundtland Report, officially dissolved in December 1987 after releasing "Our Common Future", in October 1987, a document which coined, and defined the meaning of the term "Sustainable Development".
1987	Montreal Protocol	Agreed upon on September 16, 1987. It aimed at reducing the production and consumption of ozone depleting substances that are negatively affecting the atmosphere.
1992	Earth Summit in Rio De Janerio (Agenda 21)	The United Nations Conference on Environment and Development (UNCED) took place in Rio de Janeiro in June 1992, where Agenda 21 was an important product of this summit.
1997	Kyoto Protocol	An international treaty following the 1992 United Nations Framework Convention on Climate Change (UNFCCC), that binds parties to reduce greenhouse gas emissions.
2000	UN Summit, 8 MDGs	191 countries' representatives adopted in September 2000 the Millennium Declaration at the United Nations in New York.
2002	Earth Summit (Rio+10)	From 26 August to 4 September 2002, the World Summit on Sustainable Development (WSSD) took place in Johannesburg, South Africa. Since it was held 10 years after the Earth Summit in Rio de Janeiro, it is also known as "Rio+10"
2012	Rio+20	On 20-22 June, 2012, the United Nations held a conference on Sustainable Development, also known as Rio+20. A focused political outcome document resulted from it, containing pristine and practical measures for implementable sustainable development.
2015	Paris Summit, SDGs	On 25 September 2015, more than 150 world leaders committed to 17 Sustainable Development Goals (SDGs) to fight extreme poverty, inequality, injustice, and reduce climate change.
2016	Habitat III Planned (Quito)	At the United Nations Conference on Housing and Sustainable Urban Development (Habitat III), held on 20 October 2016, in Quito, Ecuador, the New Urban Agenda was adopted.
2030	SDGs expires	By 2030 the 17SDGs must be met with their 169 targets.

2.3.3. UN Sustainable Development Goals

Building on the Millennium Development Goals (MDGs), the eight anti-poverty targets adopted in 2000, to be achieved by 2015, represented a gigantic effort at the time. However, though big progress has been made the need to do more, is always

present (UNDP, 2015).

On 25 September 2015, more than 150 world leaders committed to 17 Sustainable Development Goals (SDGs) to fight extreme poverty, inequality, injustice, and reduce climate change (ibid.). Within the 17 Global Goals,169 specific 'targets' explain in more details what the world could look like by 2030 should the Goals be achieved (UN, 2030 Agenda for Sustainable Development, 2015). By adopting the 2030 Agenda for Sustainable Development and the Addis Ababa Action Agenda, all UN members have committed to "pursue policy coherence and an enabling environment for sustainable development at all levels and by all actors" (UN, General Assembly , 2016).

The 17 Sustainable development Goals showing in Figure 2.2 and Figure 2.3 are as follows: No poverty, No hunger, good Health, Quality education, Gender Equality, Clean Water and Sanitation, Renewable energy, Good Jobs and Economic Growth, Industry, Innovation and Infrastructure, Reduced Inequalities, Sustainable Cities and Communities, Responsible Consumption, Climate Action, Life Below Water, Life on Land, Peace and Justice, Partnerships for the Goals (UN, 2030 Agenda for Sustainable Development, 2015).

Figure 2.2. The 17 SDGs.
Source: www.gloablegoals.org

Referring to the details found in the (UN, The Sustainable Development Goals Report, 2017), 17 goals as follows:

Sustainable Development Goals

Goal 1. End poverty in all its forms everywhere

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

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

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

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

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

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

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

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

Goal 10. Reduce inequality within and among countries

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

Goal 12. Ensure sustainable consumption and production patterns

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

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

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

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

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

———————————

[*] Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

Figure 2.3. Sustainable Development Goals.
Source: UN "Agenda 2030" (2015): 14-35

2.3.4. Existing International Rating Systems

Different international rating systems exist namely: the Qatar Sustainability Assessment System (QSAS), initially developed by the T.C. Chan Center for Building Simulation and Energy Studies, an international non-profit organization, at the University of Pennsylvania, on behalf of the Gulf Organization for Research and Development (GORD); The Haute Qualité Environnementale (HQE) created in France; the Excellence in Design for Greater Efficiencies (EDGE) created by the International Finance Corporation (IFC), a member of the World Bank Group; The Pearl Rating System created for Estidama program by Abu Dhabi Urban Planning Council in United Arab Emirates, and others. However, two of them have crossed beyond their boundaries. The first is the Leadership in Energy and Environmental Design (LEED), is a green building certification created by the U.S. Green Building Council (USGBC), and is the most used internationally. It aims at creating healthy, highly efficient and cost-saving green buildings (USGBC, LEED, 2018). Moreover, the second is the Building Research Establishment Environmental Assessment Method (BREEAM) is another green building certification, generated from the Building Research Establishment in the UK, used to assess master planning projects, infrastructure and buildings (BRE, 2018).

2.3.5. *Green Buildings Meet the Sustainable Development Goals*

World Green Building Council (WGBC), is a non-profit organization and a global network that holds the national Green Building Councils (WGBC, About us, 2018). It supports the UN's Sustainable Development Goals (SDGs) (WGBC, Green building & the Sustainable Development Goals, 2018). Designing green buildings

meets, firstly, the 9th, 11th and 12th SDGs. In addition, adhering to these guidelines will

not only create new jobs but will also contribute to the economic growth, meeting the

8th SDG. More and above, the 3rd, 7th, 13th and 15th SDGs will be enforced indirectly

through the strict implementation of the previous measures. Finally, striving to achieve

the previous automatically achieves the 17th SDG as it demands the engagement of all

stakeholders in the implementation process.

Figure 2.4. The 9 SDGs that WGBC Tackles.
Source: (WGBC, Green building & the Sustainable Development Goals, 2018).

2.4. Policy Formulation and Policy Theory

2.4.1. Definition

As stated in American Public Policy, a certain policy is "a set of actions by the

government that includes, but is not limited to, making laws and is defined in terms of a

common goal or purpose" (Cochran, et al., 2011). Moreover, in Public Policy: Perspective and Choices, public policy is defined "consists of political decisions for implementing programs to achieve societal goals" (Cochran & Malone, 2005).

2.4.2. Implementation

According to Robinson, implementation is considered the most important piece in the "policy puzzle". It starts with the policy design and analysis stages, where it also considers the five main questions: Who, What, Where, When, and How (Robinson, 2017). Moreover, the aim of the policy becomes lost when the implementation process is convoluted (Cochran, et al., 2011).

2.4.3. Programs

Policy comes in different forms such as taxes, regulations, laws, standards, incentives, and others. However, it is important to understand how particular policy instruments work for different types of sustainability challenges (Robinson, 2017).

2.4.4. Societal Goals

Policies should reflect the sustainable consequences of the country (Robinson, 2017). Also, the changing in the goals over time are obvious when discovering the history of the United States in energy policies (ibid.).

2.4.5. Possible Implementation Barriers and the Means to Overcome them

The United Nations is forming policies on an international level with disregard to national mechanisms of accountability, hence leading to the formulation of

standardized, one-size-fit-all, "unsustainable" policies on the global level, which goes against the concept of sustainable development (Bileišis, 2009). However, having a common debate about sustainable development (SD), in both the political and scientific fields, paves the way for endorsing good governance for SD policy implementation (ibid.). Adding to this, the project cost is considered a principal barrier when it comes to green building construction management (Hwang & Tan, 2010). However, to avoid this problem, the government should take the lead in incentivizing the usage of green products and technologies (ibid). The great effect pertaining to the implementation of green incentive policies comes into focus two to three years after being put to action (Bond & Devine, 2015). Another obstacle hindering the process is the scope width which is easily overcome by the integration of reasonable milestones, so as to play the role of monitoring the evolution of sustainable development policies, such as: the Bruntland report (1987), Agenda 21 (1992) and the recent Green Economy (2011) (BRAN, 2011).

2.5. General Governmental Framework Theories for Sustainable Development Policies

Government approaches may differ with respect to their views to sustainable development (van Zeijl-Rozema, Cörvers, Kemp, & Martens, 2008), which creates the necessity to move from government to governance, by involving an assortment of societal actors to aid in the formulation of new policies (Loorbach , 2007). In Europe for example, NGOs and businesses are participating in the development of policies and limiting any top-down decisions (ibid.). Moreover, top-down decisions are modeled by managers with the concentration on both the effectiveness and efficiency of SD policy results (Loorbach , 2007).

Sustainable development requires a management model that includes a multilevel model of governance due to its never-ending process of progressive social change (Kemp, Loorbach, & Rotmans, 2007). Transition management is a suitable model for a multilevel approach since it involves the interaction between three levels. The strategic level includes problem structuring, strategic discussions, long-term goal formulating and others. The tactical level involves processes of agenda building, negotiating, and others. The operational level contains processes of experimenting, project building, implementation, and others (ibid.), shown in figure 2. 5
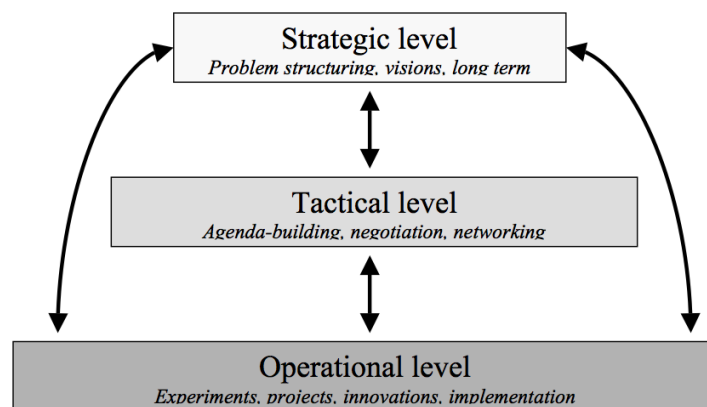
Figure 2.5. Multilevel Approach to Transition Management.
Source: (Kemp, Loorbach, & Rotmans, 2007)

Moreover, the conceptual model, which involves transition management, was applied and established for the 4th National Environmental Policy plan of the Netherlands (NMP-4) (Loorbach D. & Rotmans J. , 2006). In addition, this model performs a structural change at the societal system levels, it may take one or two generations to fulfil (Loorbach , 2007). A schematic view showing the difference between the regular policy process and the transition management is given in figure 2.6.

Current policy process: flow oriented and gradual

Transition management: oriented towards long-term sustainability goals (plurifocal)
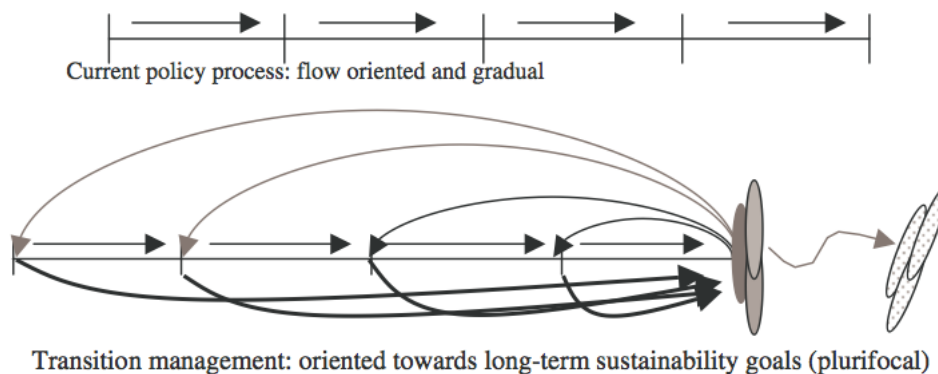
Figure 2.6. Current Policy Process Versus Transition Management Process.
Source: (Loorbach D. & Rotmans J. , 2006)

Before formulating any policy, and in order to have a great effect on sustainable development, the economic, social and environmental pillars should be considered prior to the policy design stage (UNDESA, 2016). Figure 2.7 shows the assessment stage, where the three pillars are measured and studied in order to have what is coined as a "win-win-win and balanced outcomes" (ibid.). In addition to this, engaging mutli-stakeholders in the early stages helps optimize policy implementation (ibid.).
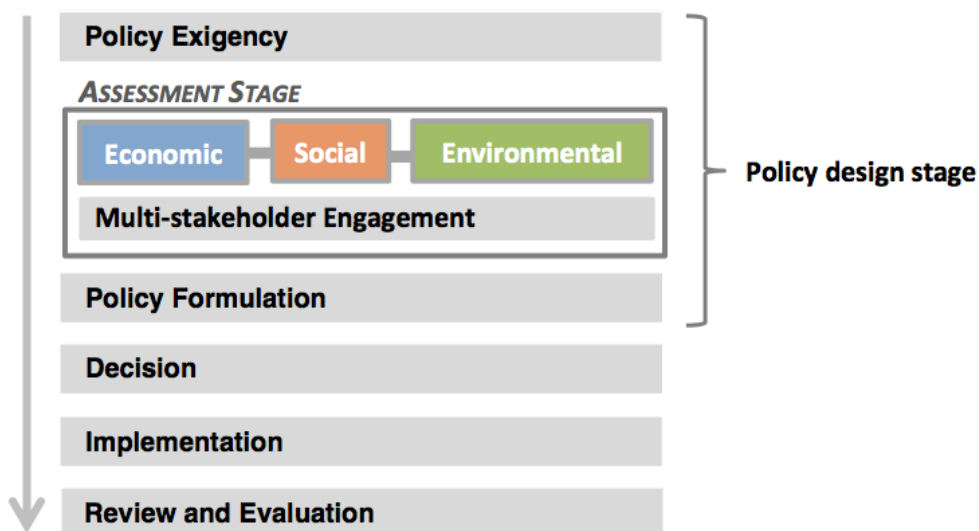
Figure 2.7. Processes in Policy Integration and Implementation.
Source: UNDESA 2016

Multi-stakeholders are divided into three groups: the public sector, the private

sector and the civil society as shown in Figure 2.8 (OECD, Policy Coherence for

Sustainable Development 2017: Eradicating Poverty and Promoting Prosperity, 2017).

The different actors involved in policy making have six interrelated roles: facilitation,

financing, enabling, monitoring, communication and advocacy (ibid.). The combination

of both the six roles and the different actors form the "actor-role space" for the

achievement o
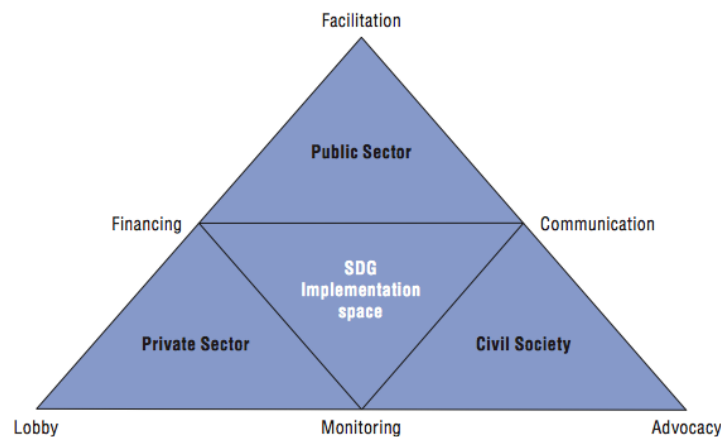
Figure 2.8. The SDG Implementation Pyramid.
Source: (Spitz, Kamphof, & Hogeling, 2016)

Conceptual frameworks are highly adaptive concepts which tailor to specific

needs and environment. One conceptual framework evolved for an individual company

merging sustainability development and permitting its assimilation on the all

management levels (Baumgartner, 2013) shown in Figure 2.9. There are three

management levels: Normative Management, also known as Objective Legitimation

determines the management philosophy. Strategic Management, referred to as Objective

Effectiveness, offers a holistic approach for the provided mission and vision; and

Operational Management, also known Objective Efficiency insures the proficient

implementation of the Normative and Strategic objectives and policies (ibid.).
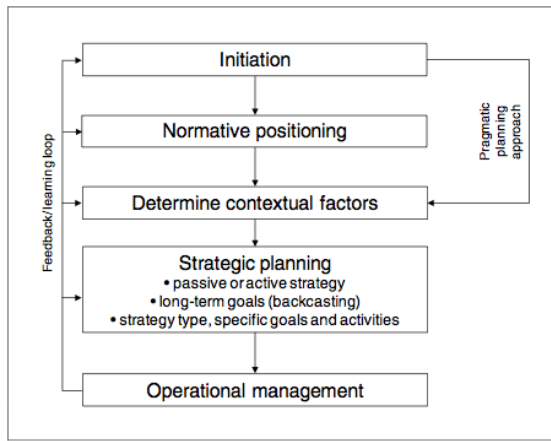
Figure 2.9. Phases of Corporate Sustainability Management.
Source (Baumgartner, 2013)

To create specific frameworks, key actors should be each given a specific

position and role. Taking the example of the key actors in figure 2.10, it shows the illicit

financial flows (IFF) making sure that combating these flows is meant to insure a well-

defined assignment of responsibilities for a better management and cooperation, on both

policy design and policy implementation levels (OECD, Better Policies for Sustainable

Development 2016: A New Framework for Policy Coherence, 2016).
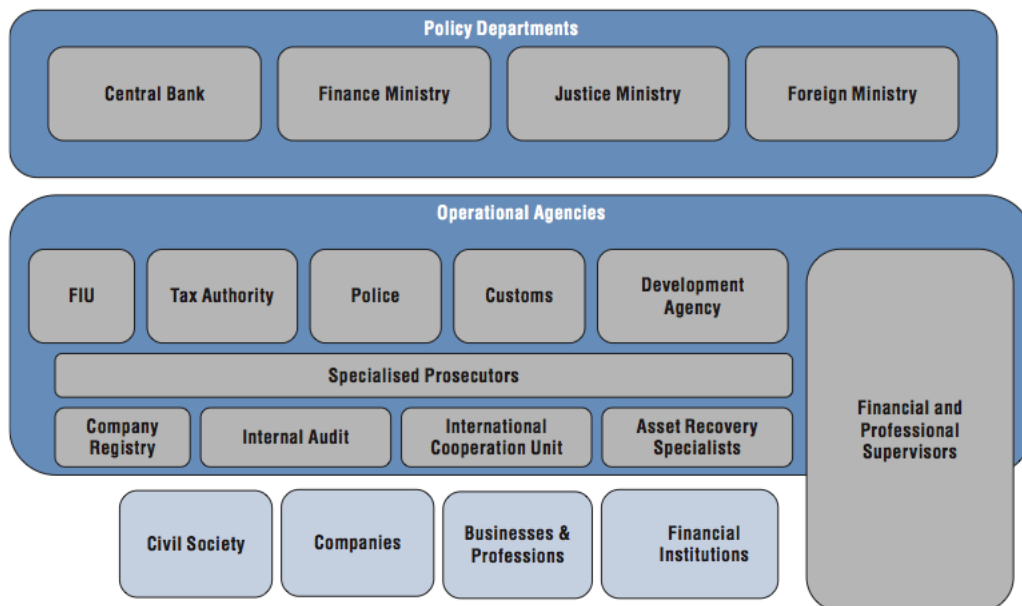
Figure 2.10. Key Actors Involved in Combating IFFs. National Organization.
*Source: (OECD, Better Policies for Sustainable Development 2016: A New Framework
for Policy Coherence, 2016)*

2.6. Existing Frameworks

2.6.1. Adaptation of the 17 SDGs in Sierra Leone

The Government of Sierra Leone is committed to the implementation the 17 SDGs it by issuing a report, dated July 2016, defining a framework to the National Policy Plans (Sierra Leone, July 2016). Figure 2.11 shows the different bodies responsible for SDGs' implementation: namely the Presidential Body, which provides the strategic guidance to the implementation of SDGs, and the Steering Committee that provides the operational guidance through the governmental ministries. The framework also categorizes the SDGs to fit the Pillar Working Groups on the Agenda for Prosperity (A4P, 2013-2018) that was originated by the Government of Sierra Leone (ibid.). It also shows the involved stakeholders, where both the Ministry of Finance & Economic Development and the Ministry of Foreign Affairs & International Cooperation are common entities found in the Presidential Body and the Steering Committee to insure the monitoring of SDGs' implementation process.
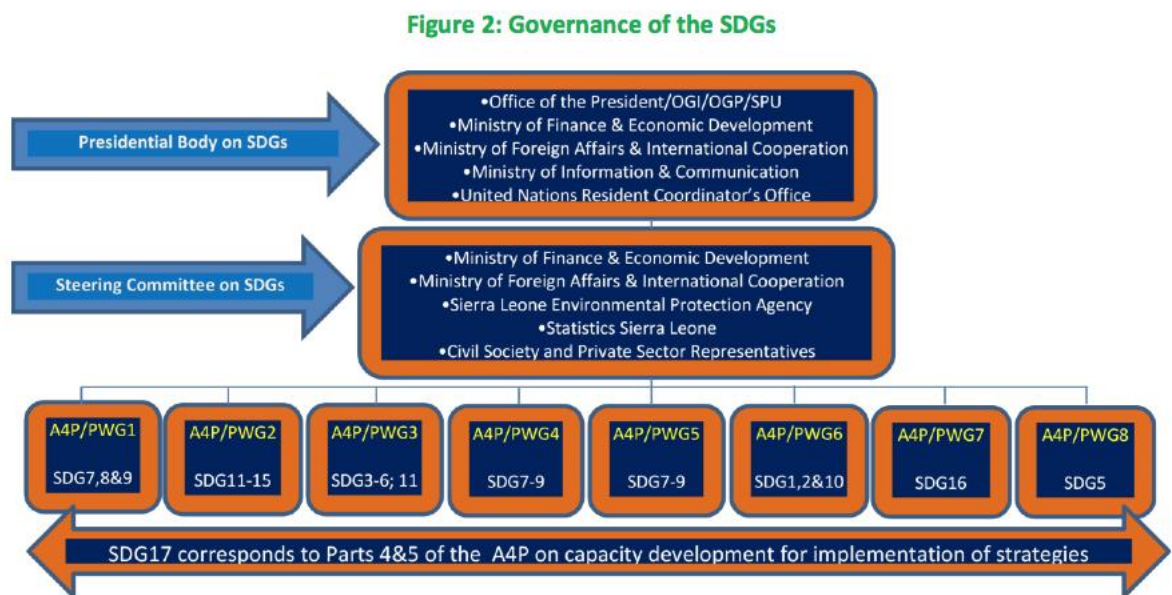
Figure 2.11. Governance of the SDGs.
Source: (Sierra Leone, July 2016)

2.6.2. The Republic of Kazakhstan's Experience with Sustainable Development

Contradictory interests between the central management authorities, the local state management authorities, and the populations directly make it difficult to coordinate state and regional policies into sustainable development ones (Karimbergenova, 2014). Figure 2.12 shows the algorithm of policy realization of sustainable development on the macro and micro levels, illustrating, specifically in italics, the poorly developed areas in Kazakhstan.
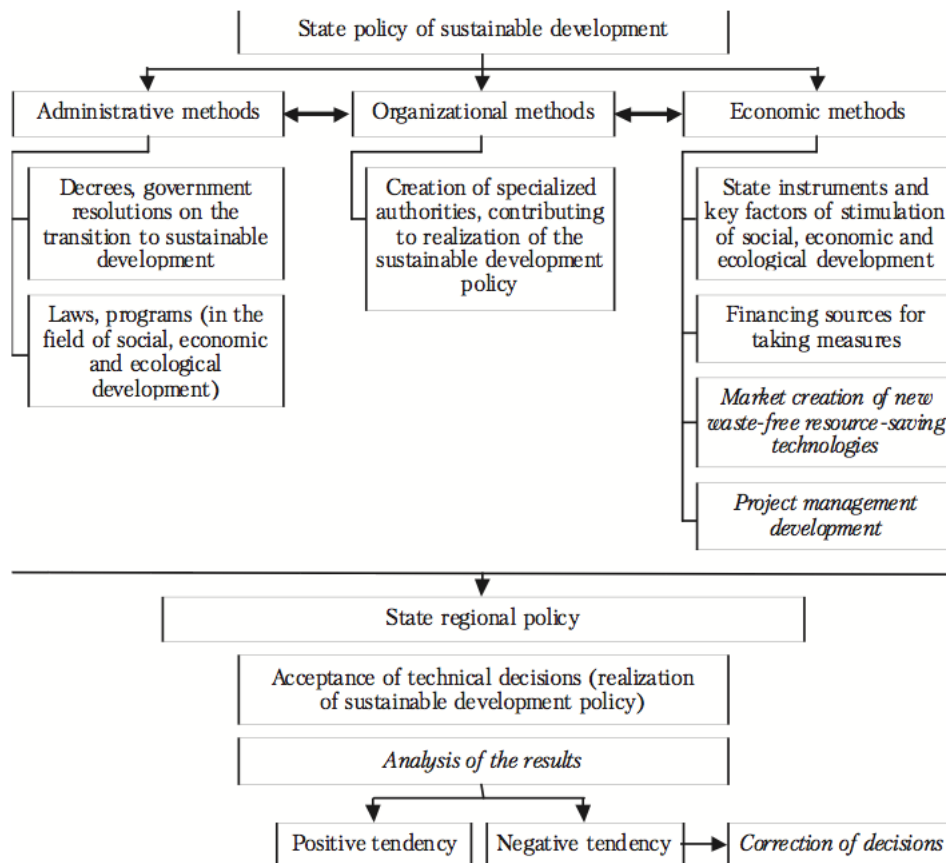
Figure 2.12. Algorithm of Sustainable Development Policy Realization.
Source: (Karimbergenova, 2014)

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2.6.3. Da Nang, Vietnam Experience on Sustainable Urban Energy and Emissions Planning

The central Vietnamese government and Da Nang City People's Committee are the ones responsible for policy formulation. However, when it comes to energy planning and energy system operations, local entities are strongly involved (Ostojic, Bose, Krambeck, Lim, & Zhang, 2013). Figure 2.13 demonstrates the different entities forming the city government structures, such as departments, committees, and external agencies. These are the ones accountable for the planning, development, and operation of energy-consuming sectors.
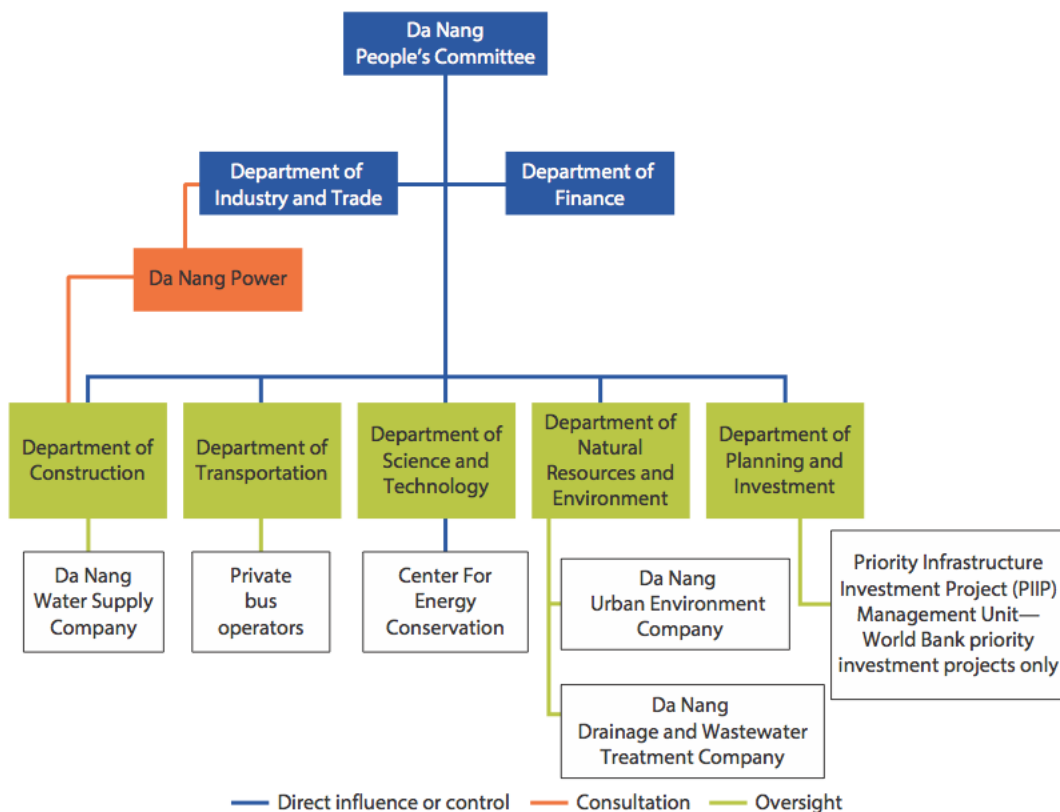
Figure 2.13. Overview of Energy Planning System in Da Nang.
Source: Phase 1 pilot study

2.6.4. Surabaya, Indonesia Experience on Sustainable Urban Energy and Emissions Planning

Bappeko, the long-term planning body for the city government of Surabaya, Indonesia, provides policy change guidance and implementation, affecting energy supply and consumption to the departments and agencies of Surabaya (Ostojic, Bose, Krambeck, Lim, & Zhang, 2013). Figure 2.14 highlights Surabaya's energy-consuming agencies, as well as demonstrates a summary of the institutional structure and the city's energy management complex connections.
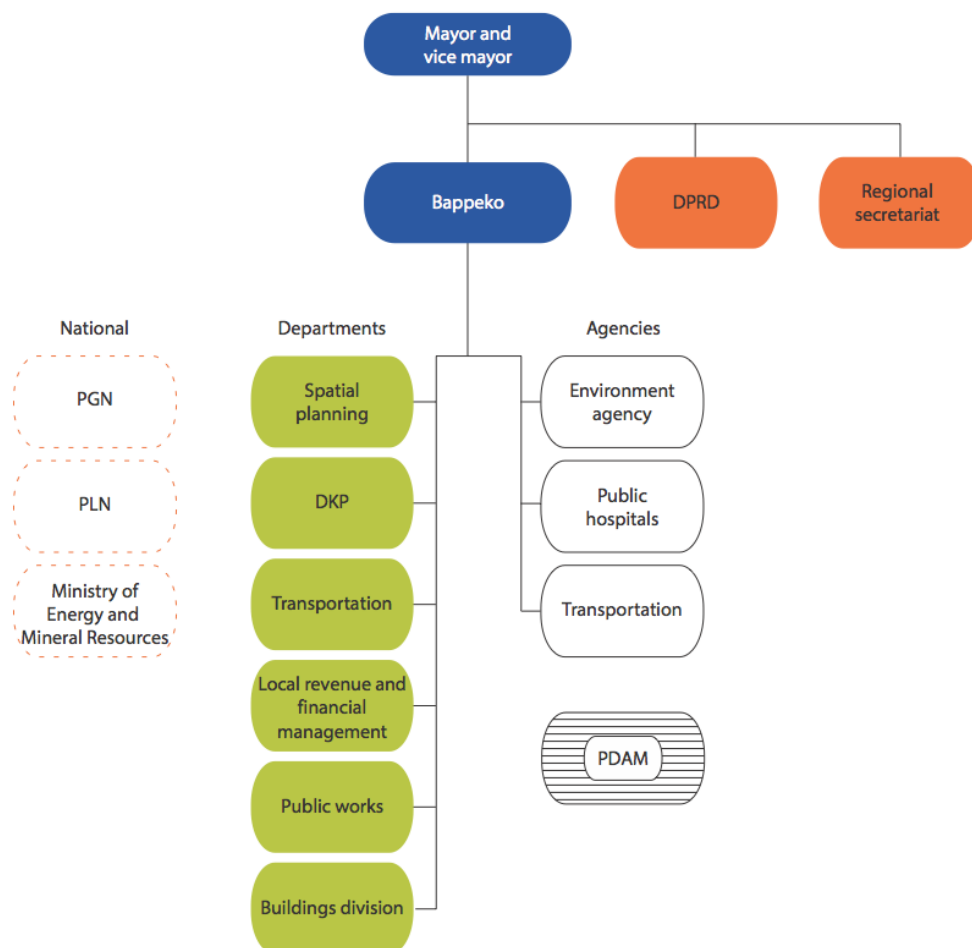
Figure 2.14. Surabaya Government Structure for Energy-Consuming Agencies.
Source: (Ostojic, Bose, Krambeck, Lim, & Zhang, 2013) Note: Bappeko=city spatial and development agency; DKP= Cleansing and Park Department; DPRD= city parliament; PDAM= Regional Drinking Water Company; PGN= state-owned gas company; PLN=state-owned electricity company

2.6.5. The Philippines' Experience

Cebu and Mandaue cities are two examples that sum up the Philippines' experience as they share several common aspects stemming mainly from their common geographical position in the Cebu Province. The first example is of a policy review report that provides recommendations for policy implementation of priorities of immediate action (in 2-3year span, as well as long term). The second shows a flow chart of key actors in the Cebu City.

The 9th APEC (Asia Pacific Economic Cooperation) Energy Ministers Meeting that was held in Fukui, Japan 2010, in which the Philippines is a member, implemented the APEC Low-Carbon Model Town (LCMT) with the acknowledgment that promoting energy efficiency should be originated in city planning consisting mainly of low carbon technologies (APEC Low-Carbon Model Town Task Force & Asia Pacific Energy Research Centre , 2017). Six LCMT projects have been carried out since 2011, each dedicated to a certain city in six different countries (ibid.). The sixth LCMT project, mainly covering Cooperation with Neighboring Areas, was known as Phase 6 for Mandaue city. The resulting report was published in May 2017, constituting of 52 recommendations categorized under different topics, among which are the Legal and Institutional Frameworks, Sustainable Urban Planning, Low Carbon Buildings, Area Energy Management System, Energy Efficiency, Renewable Energy and Untapped Energy Planning, Transport, Environmental Planning and Others (ibid.).These recommendations are determined with respect to their priority to be implemented and labeled as follows: Immediate action, action needed in the next two to three years, and action required in the long-term.

The principal entities responsible for policy formulation in Cebu City are the

central government and Cebu City government (Ostojic, Bose, Krambeck, Lim, & Zhang, 2013). However, the latter has the sufficient control and power to develop plans, programs and priorities by creating a structured plan (ibid.). Figure 2.15, shows the Main stakeholders accountable for energy-consuming sector planning, developing and operating as their plan consists of departments, committees, and external agencies that are found in Cebu City.
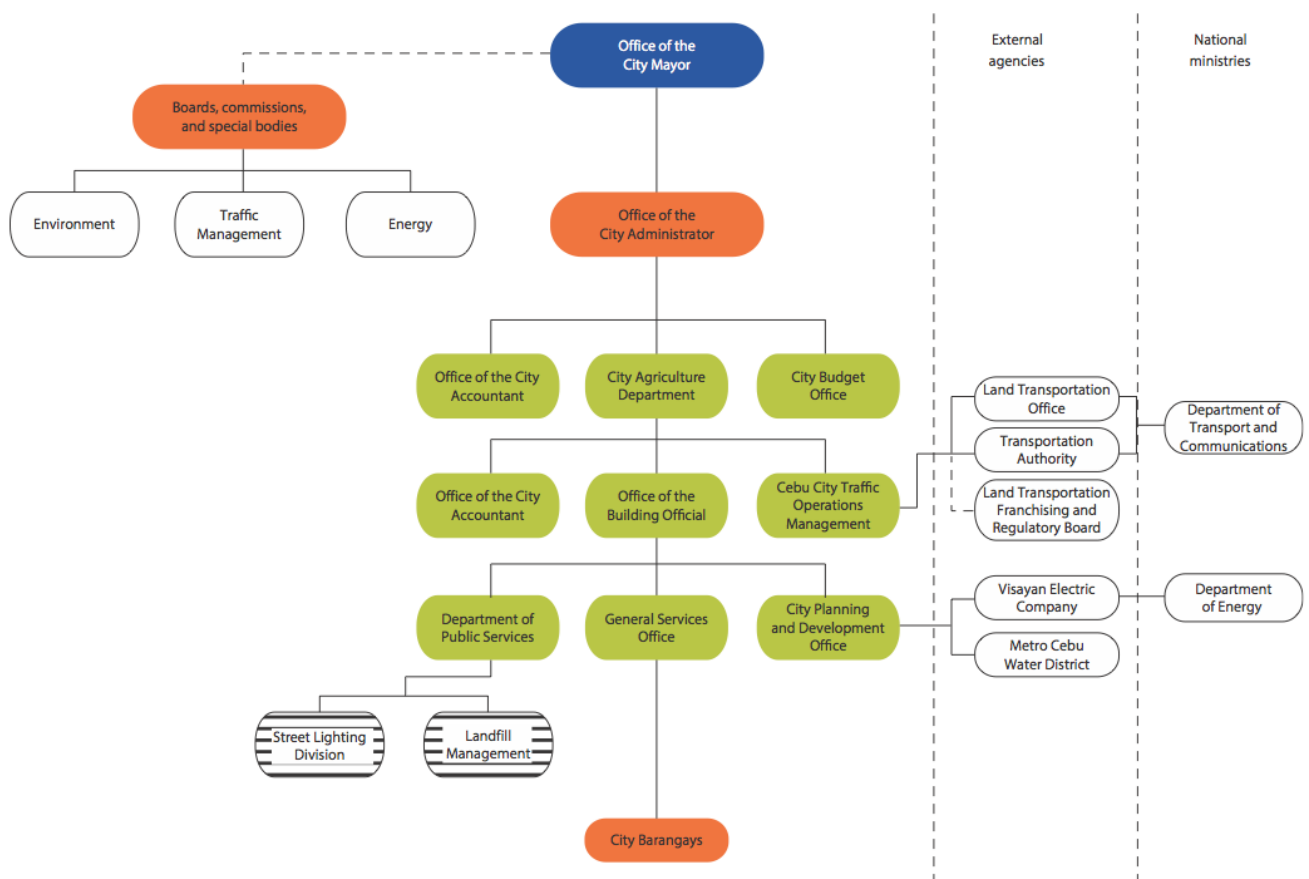
Figure 2.15. Cebu City Government Structure for Energy-Consuming Agencies.
Source: Phase 1 pilot study (Ostojic, Bose, Krambeck, Lim, & Zhang, 2013)

2.7. Conclusion

After covering the necessities needed for a framework to be implementable, it is also worth noting that the experiences in each of the Philippines, Kazakhstan and others are not entirely applicable in Lebanon due to Lebanon's different experiences and particulars. Chapter three, therefore, will elaborate more on the initiatives of different stakeholders in Lebanon.

CHAPTER 3

GREEN BUILDING POLICIES IN LEBANON

3.1. Preamble

This chapter provides an overview on how policy formulation is being made in Lebanon resulting of actions and incentives that provide awareness on green buildings. An agreement between United Nations Development Programme (UNDP) and the Council of Ministers of Lebanon, made on 21 June 2017, defined the 55 stakeholders responsible for implementing the 17 SDGs in the National policies. Moreover, these stakeholders are filtered and some others added to shape the framework for formulating and implementing sustainable development policies related to green buildings in Lebanon through a series of interviews and data collection, in order to build a stronger argument as to the purpose behind the variations made.

3.2. Current Attempts Towards Green Buildings

Several interviews were held with key stakeholders involved contribution to green building policy awareness the such as: The Directorate General of Urban Planning (DGUP), the Council for Development and Reconstruction (CDR), (LIBNOR), the chairperson of the public works and energy committee of the Lebanese Parliament. In addition, the Ministry of Environment provided additional resources and the Order of Engineers and Architects(OEA).

3.2.1. Directorate General of Urban Planning (DGUP)

DGUP has worked with OEA on the "Criteria for Green Buildings in Lebanon" (OEA & DGUP, Criteria of Green Buildings in Lebanon, 2017), the first initiative related to creating solid guidelines for green buildings, in which the main criteria to be implemented for all future projects above 8000m2. In an interview with a Principle Architect at the DGUP, under the Ministry of Public Works & Transport, he noted that CDR is responsible in implementing these criteria (R. Haddad, personal communication, February 19,2018). Moreover, it is DGUP's jurisdiction to review similar projects in order to enforce the implementation of the said criteria.

Moreover, he relates that the poor implementation of these criteria is mainly due to the ambiguity of the roles assumed by each of the following entities: the DGUP, the municipalities, the Council for Development and Reconstruction (CDR) and the Ministry of Environment which is attempting to take the lead in the green buildings' field (R. Haddad, personal communication, February 19,2018). He also remarked that "Criteria for Green Buildings in Lebanon" remains a decree, until the council of ministers, with the collaboration of DGUP, change this decree into a law, allowing its enforcement (ibid.).

3.2.2. Council for Development and Reconstruction (CDR)

A specialist in Environment & Land Use Management at the Council for Development and Reconstruction (CDR), said that on 21 June 2017, a meeting for the Council of Ministers was held in the Presidential Palace where a decision was taken to establish a national committee, led by the Prime Minister or his delegate, holding 55 members being the presentative and directors-generals of all ministries and main

governmental institutions [e.g. Banque Du Liban] (N. Awad, personal communication, February 22, 2018). In addition to the 55 members, specialists may be called in for technical support. Moreover, the UNDP is responsible for the secretary position of the national committee, under the supervision council of ministers (Council of Ministers, 2017).

The national committee has several rights and responsibilities: a) Coordinating the national efforts towards achieving the SDGs, b) Incorporating the SDGs into national programs and into national strategies for sustainable development, c) Contributing to raising awareness about the SDGs and the importance of their implementation, d) Developing a national statistical database for the SDGs indicators, and e) Contributing in preparing the Voluntary National Report (VNR) delineating the workflow towards the realization of the SDGs, in order to submit it to the UN periodically (Council of Ministers, 2017).

3.2.3. The Lebanese Standards Institution (LIBNOR)

In an interview with the Head of Engineering Standards Division at the Lebanese Standards Institution (LIBNOR), under the Ministry of Industry, she mentioned that its main role is to prepare, publish and amend national standards. LIBNOR is currently in the process of producing a green building standard for Lebanon (R. El Hajj, personal communication, February 16, 2018). However, it is important to mention that the previous standards stand alone, unrelated to the criteria mentioned above as the communication between different parties is missing.

3.2.4. Beirut Municipality

Beirut Municipality, represented by a member of the City Council, is working on a "Big Portfolio" that tackles the whole city from solid management, to water and power supply, in addition to public spaces such as gardens and main roads. This type of thinking goes hand in hand with the criteria mentioned above. She explained how the first year was dedicated to planning for public infrastructure namely roadways, energy efficient led street lights and the municipality buildings (M. Khoury, personal communication, February 27, 2018). She added that the municipality has been working on two programs, the first depicts the replacement of existing street lights with led ones in order to reduce the energy consumption by 50% (ibid.). The second is related to waste water treatment, the plan is to reduce the negative impact of waste water on the sea by upgrading the city's infrastructure (ibid.).

3.2.5. The Parliamentary Committee on Public Works, Transportation, Energy and Water

In an interview with the Head of the Parliamentary Committee on Public Works, Transportation, Energy and Water since 2000, he claimed that "[they] did not do much about green buildings" (M. Kabbani, personal communication, March 2, 2018). The fact that green buildings weren't among the committee's priorities sheds light on the miscommunication between the different governmental and legislative bodies. However, he did mention that the committee is undergoing the process of creating a workshop detailing the concept, feasibility, and implementation of green buildings in coordination with DGUP (ibid.).

3.2.6. Other Attempts

The Head of Service of Environmental Technology at the Ministry of Environment provided documents detailing how a law was decreed - No. 8633 9/8/2012 Environmental Impact Assessment Fundamentals– detailing a link between the MOE's efforts towards green buildings and that of other entities. However, much like the parliament committee mentioned above, the MOE's efforts stand alone with no direct link or cooperation with other governmental or legislative bodies.

In addition to the "Green building criteria in Lebanon" that was in cooperation with the DGUP and the Order of Engineers and Architects (OEA). OEA is endlessly trying to update the existing construction law for it to meet the concept of green buildings by organizing several workshops as well as green weeks. One of the current workshops held was on green buildings, under the patronage and the presence of the current Minister of Public Works and Transport on 20 April, 2018, in OEA Beirut branch, insuring the effectiveness of green buildings on different aspects such as economy (OEA, Green Buildings Workshop, 2018). Moreover, the latest green week was the third, held on 27 April, 2017, in OEA Tripoli branch, highlighting on the current actions as well as recommending for future ones such as updating the construction law (OEA T. b., 2017).

The Lebanese Center for Energy Conservation (LCEC), a governmental organization, is linked to the Lebanese Ministry of Energy and Water. LCEC teamed up with Banque Du Liban (BDL) to create a plan, by the name of the National Energy Efficiency and Renewable Energy Action (NEEREA), for subsidized loans hinging on LEED and BREEAM certification levels for different projects in Lebanon (LCEC, 2018).

Lebanon Green Building Council (LGBC) in partnership with International Finance Corporation (IFC), a member of the World Bank, created a Lebanese rating system for existing commercial buildings called ARZ. ARZ highlights on the culture of Lebanon, this is what differentiate it from the international rating systems (BREEAM and LEED) (ARZ, 2013).

M. Of ENVIRONMENT	LAW #444 ENVIRONMENT PROTECTION	LAW #591 WORK ENVIRONMENT (NOISE, AIR POLLUTION..)	LAW#64 AGAINST TOXIC WASTE
ORDER OF ENGINEERS AND ARCHITECTS	UPDATING CONSTRUCTION LAW	CRITERIA OF GREEN BUILDINGS IN LEBANON	SUSTAINABLE WEEK
LIBNOR	GREEN BUILDING CODE	DECREE 5382, MANDATORY CONSTRUCTION STANDARDS, 05-11-2010	
LEBANON GREEN BUILDING COUNCIL (LINOR)	**ARZ** RATING SYSTEM FOR EXSTING COMMERCIAL BUIDLINGS	UPDATING CONSTRUCTION LAW	WORKING WITH MUNICIPALITIES (GREEN ROOFS)
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION (CDR)	SDATL, 2005	DECREE 5382, MANDATORY CONSTRUCTION STANDARDS, 05-11-2010	TECHNICAL ASSISTANCE TO CDR (S.D. PROGRAM 2030)

Figure 3.1. Current Attempts Towards Green Buildings.

3.3. Possible Obstacles Hindering the Implementation of Policies, Standards and Rating Systems

As mentioned in the previous section, several obstacles stand in the way of policy formulation, standards, as well as, rating systems that aim at the effective implementation of the green buildings concept. One of which is the lack of coordination between all the necessary parties as mentioned in the case of the

Parliamentary Committee on Public Works, Transportation, Energy and Water. Another obstacle is the lack of communication and harmony between entities, such is the case, for example, the work of CDR and OEA for the green building criteria was not taken into consideration while LIBNOR is creating green building standards. As long as there is no clear hierarchy and no defined role for each of the involved stakeholders, the green buildings concept will indeed remain a concept on paper.

3.4. Selected Stakeholders to Influence Future Green Building Policies in Lebanon

Referring to the agreement that was made on 21 June 2017, between the Council of Ministers and the UNDP, for the implementation of the 17 SDGs in the national policies, it is essential to choose from the 55 members stated in this agreement, the ones that can affect directly and indirectly the Green Building sector. Added to those members are some other public institutions or members necessary to the completion of the mission, given their great impact on the sector. These members will be grouped in four categories: the governmental stakeholders including the ministries, the public authorities and institutions, the non-governmental stakeholders, the syndicates, as well as the think tanks that involve Universities and the Professional Organizations.

3.4.1. Governmental Entities

The Governmental stakeholders are divided into two tables. The first includes the ministries involved in the framework of SD policies for green buildings. The second contains the public authorities, directorates and departments

Table 3.1. Ministries' Missions

	MINISTRIES	
NUMBER	**Ministry**	**Its mission related to SD**
1	**President the of Lebanese Republic**	"... ويتولى المفاوضة في عقد المعاهدات الدولية وإبرامها بالاتفاق مع رئيس الحكومة. ولا تصبح مبرمة إلاّ بعد موافقة مجلس الوزراء. على أن بعض المعاهدات لا يمكن إبرامها إلاّ بعد موافقة مجلس النواب." (presidency, 2018)
2	**President of the Council of Ministers**	"وللوصول إلى هذا الهدف، تضع حكومتنا في الأشهر القليلة المتاحة لها سلسلة أولويات وعلى رأسها إقرار موازنة ٢٠١٧ وإقرار التشريعات الجاهزة أمام مجلسكم النيابي الكريم، وتقديم مشاريع قوانين من شأنها أن تسهل بيئة العمل الاقتصادي في لبنان وتعزز دور القطاعات الانتاجية (الصناعية والزراعية والسياحية) وتنظيمها وتطويرها، والتخطيط للإصلاحات والمشاريع البنيوية والاقتصادية والانمائية دون اغفال الخطط الحكومية الموضوعة سابقاً." (Council of Ministers, 2016)
3	**Ministry of Foreign Affairs & Emigrants**	NA
4	**Ministry of State for Planning Affairs**	NA
5	**Ministry of Public Works & Transport**	NA
6	**Ministry of Energy & Water**	"وضع مشروع التصميم العام لتخصيص وتوزيع الموارد المائية للشرب والري على نطاق الدولة ووضع مشروع المخطط التوجيهي العام للمياه والصرف الصحي وتحديثه باستمرار ورفعه بواسطة الوزير الى مجلس الوزراء... اقتراح مشاريع القوانين والمراسيم المتعلقة بقطاع الكهرباء... " (Ministry of Energy and Water, 2018)
7	**Ministry of Environment**	NA
8	**Ministry of Public Health**	"The Ministry of Health will work in partnership with all stakeholders, following good governance principles, to develop its institutional capacity for

		effective stewardship of the health sector, … with particular emphasis on the poor, disadvantaged and vulnerable populations, thereby contributing to sustainable development of the country" (Ministry of Public Health, 2018)
9	**Ministry of Interior and Municipalities**	"The Ministry has two goals: the internal policy of Lebanon that relates to creating policies which can play an important role in formulating policies related directly to green buildings, and the municipality (box) that could help in creating an incentive for the enforcement of such policies. Moreover, the ministry is the legislative link for the municipalities to insure the implementation of policies" (Ministry of Interior and Municipalities, 2018)
10	**Ministry of Culture**	"The ministry's remit includes various tasks such as planning cultural and sectoral policy, organizing and sponsoring literary and artistic affairs, developing the knowledge economy and establishing and coordinating expertise…" (Ministry of Culture , 2018)
11	**Ministry of Education and Higher Education**	**NA**
12	**Ministry of Finance**	"The Ministry of Finance shall continue to achieve its vision by pursuing process efficiency in the delivery of its services, using latest proven technologies and best managerial practices at lowest costs, in an effort to consolidate the trust and confidence of the public, and ensure cohesion between fiscal and social policies." (Ministry of Finance, 2018)

13	**Ministry of Economy and Trade**	"The Ministry of Economy is the principal institution coordinating the development of the Long-Term Development Strategy of the State which identifies measures aimed at accelerating economic growth, … The Ministry of Economy makes active efforts to cooperate at all levels with public authorities, social partners, scientific establishments and business associations that can bring helpful consultations, advice and proposals instrumental in pursuing the Ministry's objectives in order to contribute to more rapid national economic growth." (Ministry of Economy and Trade, 2018)
14	**Ministry of Industry**	"The Ministry of Industry has the mission of elaborating, with all the actors, a policy to assure the industrial sector development. The Ministry is responsible for: Creating the industrial legislative bases and frames; Protecting the national industrial production in case from dumping; Searching and supporting the creation opportunities and the industrial production development to respond to the evolutions of the national needs and the international orientations; Searching opportunities allowing the industrial production development to meet the evolutions of the national needs and the international orientations; Assuring Lebanon as an industrial country at the national and international level; Promoting the small and medium enterprises and small and medium industries (SMEs, SMIs); Collecting, analyzing and publishing industrial statistics in order to provide the different industrial stakeholders by studies and indicators, aiming to help them to make decisions. Creating a database of the industrial factories serving as reference for the exporters." (Ministry of Industry, 2018)

15	**Ministry of Tourism**	Regulating, coordinating, and monitoring tourism professions; Regulating, coordinating, and monitoring private companies and associations working in the tourism sector; Promoting and executing tourism investment projects; facilitating and simplifying rules and requirements related to these projects; and applying laws and regulations related to tourism and tourism enterprises…" (Ministry of Tourism, 2018)
16	**Ministry of Social Affairs**	"Promoting and executing tourism investment projects; facilitating and simplifying rules and requirements related to these projects; and applying laws and regulations related to tourism and tourism enterprises…"(Ministry of Social Affairs, n.d.)
17	**Office of the Ministry of State for Administrative Reforms (OMSAR)**	"…Identifying, implementing and evaluating development projects that translate the strategies into action. OMSAR is keen to remain responsive to the demands of the Lebanese administrations and to modernize them by building effective partnerships with them as well as with international donors, non-government organizations and the civil society." (OMSAR, 2018)
18	**Ministry of State for Combatting Corruption**	**NA**
19	**Ministry of Justice**	"the Ministry of Justice is responsible for… ensuring effective law enforcement and the application of the related regulations…" (Ministry of Justice, 2018)

Table 3.2. Public Authorities /Directorates/ Departments' Missions

PUBLIC AUTHORITIES /DIRECTORATES/ DEPARTMENTS

NUMBER	Public Authority/Direct. /Dep.	Its mission related to SD
1	**Directorate General of Urban Planning**	"Directorate General of Urban Planning, responsible for setting and putting into practice land use policies." (Ministry of Public Works and Transport, 2018)
2	**Central Bank of Lebanon (BDL)**	"BDL is a legal public entity enjoying financial and administrative autonomy. It is not subject to the administrative and management rules and controls applicable to the public sector. Its capital is totally appropriated by the State… BDL is entrusted with the general mission of safeguarding the national currency in order to ensure the basis for sustained social and economic growth." (BDL, 2018)
3	**Council for Development and reconstruction (CDR)**	"During the first period, the CDR applied itself to an elaborate sector-based master plan, starting with the formulation of adequate terms of reference and later negotiating the funding of various priority projects... Following the change of regime, the CDR has been requested for additional tasks including an accentuated commitment in project implementation... The CDR simultaneously assumed its responsibilities in the areas of planning and financing of projects." (CDR, 2018)
4	**Railway and Public Transportation Authority (RPTA)**	NA
6	**Directorate General of Land and Maritime Transport**	"Directorate General of Land and Maritime Transport, responsible for setting, implementing and monitoring all policies related to land and maritime transport." (Ministry of Public Works and Transport, 2018)
7	**Directorate General of Roads and Buildings**	"Directorate General of Roads and Buildings, which is responsible for the construction, rehabilitation, and maintenance of public roads and government buildings." (Ministry of Public Works and Transport, 2018)

8	**Directorate General of Investment in MOEW**	"To apply control and guardianship over public institutions and other bodies operating under the Ministry of Energy & Water… Contributing to the development of standards to be adopted in the studies of public investment institutions and implementation of their works, conditions and regulations for the investment of surface and groundwater, sewage and standard systems for water quality and control. Monitoring the quality of water in all public water investment institutions and taking samples to ensure their safety… Participate in planning for the protection of water resources…Training and supervising the technicians in public water and sanitation institutions…" (Ministry of Energy and Water, 2018)
9	**The Lebanese Center of Energy Conversation (LCEC)**	"LCEC, with its highly professional and hard-working team, has succeeded in establishing itself as a technical point of reference specialized in energy conservation issues within the Lebanese Ministry of Energy and Water (MEW). LCEC targets fundamental energy issues and its experts are determined to make LCEC the ideal and trusted leader in innovating programs delivering results that exceed the set goals. LCEC works on setting national strategies and action plans to be adopted by the Lebanese Government. LCEC also works on the implementation and the quality control of national projects and initiatives in the country. LCEC is also involved in the update and development of the legal and administrative framework needed for the greening of the energy sector. Until date, LCEC has implemented numerous energy efficiency and renewable energy projects and initiatives that have resulted in many positive changes within the Lebanese society and economy. The main driver of the LCEC is the National Energy Efficiency Action Plan (NEEAP) (LCEC, 2018)
10	**Dep. of Environmental Policy in MOE**	**NA**
11	**Dep. of Program and Follow up in MOEW**	"... تأمين الارتباط مع الجهاز المختص في مجلس الإنماء والاعمار فيما يعود للخطة العامة الشاملة للتنمية ..." (MOEW, 2018)

12	**Directorate of Water in MOEW**	"تتولى مديرية المياه درس وتنفيذ مشاريع مياه الشفة والري أو الإشراف على تنفيذها..." (MOEW, 2018)
13	**Directorate of Energy in MOEW**	"درس أوضاع المجموعات السكنية الجديدة التي تحتاج إلى إنشاءات كهربائية. تقديم الدراسات والتوصيات الآيلة إلى مسايرة التطوير التقني في حقل الإنارة الريفية من مختلف النواحي وضع مشروع الموازنة السنوية وروزنامة الأشغال الكهربائية وضع خرائط إجمالية بمقاييس مختلفة لخطوط التوتر العالي والمتوسط ومحطات التحويل الرئيسية والفرعية..." (MOEW, 2018)
14	**Department of Technical Studies in MOI**	"درس أوضاع مختلف القطاعات الصناعية عموما، والصناعات القائمة في كلمنها، من الناحية التقنية، والطرق المعتمدة في الانتاج، وتقديم الاقتراحات والدراسات الفنية اللازمة، الرامية الى تحديث هذه الصناعات وتطويرها وتوسيعها ورفع مستواها وخفض كلفة الإنتاج..." (Ministry of Industry, 2018)
15	**Department of Standards and Quality Control in MOI**	"مراقبة جودة الانتاج الصناعي واتخاذ الاجراءات اللازمة للتثبت من انطباقه على المواصفات بما في ذلك اخذ العينات وطلب اجراء الفحوصات والتحاليل المخبرية اللازمة. التعاون والتنسيق مع مؤسسة المقاييس والمواصفات اللبنانية لوضع أو تحديث مواصفات السلع الصناعية المنتجة محليا ـ اقتراح الخطط والوسائل المناسبة لتأمين انتاج سلع مطابقة للمواصفات العالمية. اجراء التحقيقات والكشوفات الميدانية ورفع التقارير وابداء الرأي فيما يعود للمهمات الموكلة اليها..." (Ministry of Industry, 2018)
16	**Lebanese Standards Institute (LIBNOR)**	"The Lebanese Standards Institution (LIBNOR) is a public institution attached to the Ministry of Industry. It was established in 23-7-1962 by a law giving it solely the right to prepare, publish and amend national standards, as well as to grant the Lebanese Conformity Mark NL. Lebanese standards are prepared by technical committees formed by LIBNOR. They include setting the dimensions, conventions, symbols, and the definition of products quality, as well as the methods of testing and analysis. They also include the codes of practice for professional and structural work. Lebanese standards are voluntary in principle. However, for reasons of public health, public safety or national interest, a standard can be rendered mandatory by a decree from the council of ministers…"(LIBNOR, 2018)

17	**Directorate General of Education**	NA
18	**Directorate General of Higher Education**	NA
19	**National Council for Scientific Research (CNRS)**	"Since its establishment in 1962, the National Council for Scientific Research – Lebanon (CNRS-L) is serving the scientific community in Lebanon covering all scientific disciplines. Its main objective is to encourage scientific research and support human resources development along the general scientific policies adopted by the government. CNRS-L is committed to keep the scientific community in Lebanon connected with advances achieved worldwide, at the same time dedicate its resources to meet local development objectives." (CNRS, 2018)
20	**The Center for Educational Research and Development (CERD)**	"This objective has revolved around the following: Establish an official central body to handle educational matters by attracting and using highly qualified personnel to enable the government to carry out an educational development process within the framework of Lebanon's comprehensive development plan; Be proactive with scientific progress and technological and cultural development in the world; Create a formal educational authority to cooperate with similar bodies in other countries; Upgrade the quality of education in Lebanon." (CERD, 2018)
21	**Directorate General of Administrative and Local Council**	NA
22	**Traffic, Trucks, and Vehicles Management Authority**	NA
23	**Directorate General of Cadastre and Real Estate**	NA

24	**Directorate General of Public Finance**	NA
25	**Directorate General of MOET**	NA
26	**Directorate General of M. of Culture**	"وضع وتنفيذ السياسات والخطط والبرامج والأنشطة الخاصة بميادين اختصاصها... وضع الدراسات والبحوث في المجالات المعنية كافة وتحضيرها للنشر... التعاون مع الإدارات والمؤسسات العامة والخاصة، والبلديات، والهيئات والجمعيات الأهلية، والأفراد لتحقيق مهامها." (Ministry of Culture, 2018)
27	**Investment Development Authority of Lebanon (IDAL)**	"… providing a framework for regulating investment activities in Lebanon, and providing investors with a range of incentives and business support services. It identified a set of priority sectors that showed the most promising opportunities in terms of their investment potential and impact on socio-economic growth, including Agriculture, Agro Industry, Industry, IT, Media, Technology, Telecommunication and Tourism sectors..." (IDAL, 2018)
28	**Federation of Chamber of Commerce, Industry and Agriculture in Lebanon**	NA
29	**Public Authority for Consumer Markets for Lebanon**	NA
30	**Public Corporation for Housing (PCH)**	" بناء المساكن وملحقاتها مباشرة أو بواسطة الغير وفق برامج تخضع لموافقة مجلس الوزراء في حال تجاوز كل برنامج عدد وحداته السكنية مائة مسكن. تشجيع الادخار والتسليف للسكن وفقا لنظام يضعه المجلس ويصدق بمرسوم يتخذ في مجلس الوزراء بناء على اقتراح الوزير." (PCH, 2018)
31	**Electricity of Lebanon (EDL)**	"The mission of Electricité du Liban (EDL) is to generate, transmit, and distribute electricity to all Lebanese territories up to the highest possible quality standards and in compliance with the laws and regulations of the Lebanese Republic. EDL strives to play a beneficial and constructive

		role in supporting and promoting economic growth and social development in Lebanon and is strongly committed to offering all its customers dependable and courteous services in a transparent manner within existing possibilities." (EDL, 2018)
32	Industrial Research Institute (IRI)	"To conduct studies and research relevant to the establishment of new industries… To provide, on an international scientific level, reliable services in testing and analysis and to grant certificates of quality or conformity with standards and purchase specifications. To provide specialized technological, management and economic consulting services to existing industries and industrial development schemes. To maintain close co-operation with official institutions, industrial organizations, and development boards both on the national and international levels in matters relating to the industrial development of the country." (IRI, 2018)

3.4.2. Non-Governmental Entities

The non-governmental stakeholders are divided into four tables: the syndicates,

the non-governmental organizations, universities, and professional organizations.

Table 3.3. Syndicates' Missions

<table>
<tr><th colspan="3">SYNDICATES</th></tr>
<tr><th>NUMBER</th><th>Syndicate</th><th>Its mission related to SD</th></tr>
<tr><td>1</td><td>Order of Engineers and Architects (OEA)</td><td dir="rtl">"وتسعى النقابة الى رفع شأن مهنة الهندسة، وهي تؤدي دوراً أساسياً في الشأن التشريعي والتنظيمي المتعلق بالمهنة. وتبدي النقابة الرأي في مشاريع القوانين والأنظمة المتعلقة بمهنة الهندسة بناء لطلب الوزير المختص، وفي تنظيم المهن المساعدة في حقل الهندسة بناء لطلب الوزير المختص. وفي الإطار نفسه، تقدم النقابة الاقتراحات في شأن المواصفات الفنية والأنظمة القياسية ودفاتر الشروط العامة والنموذجية للأشغال، وكذلك فيما يتعلق بالمناهج الدراسية الهندسية في كليات الهندسة ومعاهدها في لبنان. وتشارك النقابة مع المنظمات الهندسية العربية والدولية في كل المسائل المتعلقة بمهنة الهندسة. "
(OEA, Mission, 2018)</td></tr>
</table>

NUMBER		
2	**Real Estate Syndicate of Lebanon (REAL)**	"The Real Estate Syndicate of Lebanon (REAL) is a representative body, functioning on a national scale, bringing together several brokers and consultants from different regions to ensure the representation, legitimacy and protection of the real estate sector." (REAL, 2018)
3	**Lebanese Contractors Syndicates of Public Works and Buildings (SLETP)**	**NA**

Table 3.4. Non-governmental organizations' Missions

NON-GOVERNMENTAL ORGANIZATIONS

NUMBER	NGO	Its mission related to SDGs
1	**Lebanon Green Building Council (LGBC)**	"LGBC shall endeavor: Identifying and promoting procedures, methods and solutions for the design, planning, construction and utilization of both new buildings and major renovation of existing buildings that achieve the goal of sustainability… Conducting research and educational activities and engaging in lobbying efforts to promote green building practices and legislation…" (LGBC, 2018)
2	**Real Estate Developers Association- Lebanon (REDAL)**	"REDAL seeks to be the representative body providing effective leadership in the advancement of the real estate industry and contributing to the development of Lebanon as a country of distinction…REDAL will communicate with governmental and private sector bodies about challenges and opportunities for the sector…REDAL will work

NUMBER	Association / University	Its mission related to SDGs
		towards more reliable information about the sector and the market and will propose measures that protect buyers and enhance the trust of the public in the sector." (REDAL, 2013)
3	**Association of Lebanese Industrialists (ALI)**	"The Association plays a major role in economic and social policy matters and is actively committed to fostering the development of Lebanese industries and supporting their response to the new challenges of global competition and international integration." (ALI, 2018)
4	**Association of Banks in Lebanon (ABL)**	"…Highlighting the fundamental role of banks in upholding the national economy, through catering for an important share of the necessary financing needs to promote growth. Working with the concerned authorities to find and develop the regulations and promulgate the legislations in order to develop the banking profession, in addition to expressing opinions regarding the projects and laws pertaining to the financial and banking affairs…" (ABL, 2018)

Table 3.5. Universities' Missions

THINK TANKS (1)		
NUMBER	**University**	**Its mission related to SDGs**
1	**American University of Beirut (AUB), [Issam Fares Institute (IFI)]**	"The AUB Policy Institute (Issam Fares Institute for Public Policy and International Affairs) is an independent, research-based, policy-oriented institute.

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		Inaugurated in 2006, the institute aims to harness, develop, and initiate policy-relevant research in the Arab region. The institute is committed to expanding and deepening knowledge production in and about the Arab region; and to creating a space for the interdisciplinary exchange of ideas among researchers, civil society actors and policy-makers." (AUB, 2018)
2	**Beirut Arab University (BAU)**	"…The University promotes a stimulating academic atmosphere for its academic staff to ensure excellence in research and the dissemination of its outcomes to address community needs, both nationally and internationally. BAU relies on the contribution of the University's expertise in the sustainable development of the local community while maintaining engagement with its alumni. BAU believes in its highly efficient leadership, well-structured governance system and greatly motivated academic staff." (BAU, 2018)
3	**Lebanese American University (LAU)**	"Lebanese American University is committed to academic excellence, student centeredness, civic engagement, the advancement of scholarship, the education of the whole person, and the formation of leaders in a diverse world." (LAU, 2018)
4	**Université Saint-Joseph (USJ)**	"…USJ is a teaching and research institution. It promotes excellence and aims to mold its students into the best of the

		country and region, thereby opening wide the doors of opportunity for them. Not only that, but it also seeks to promote dialogue through biculturalism and plurilingualism, all while remaining a safe haven for reflection and character building." (USJ, 2018)
5	**Lebanese University (LU)**	"الجامعة اللبنانية هي المؤسسة الرسمية الوحيدة في لبنان التي تقوم بمهام التعليم العالي الرسمي في مختلف اختصاصاته ودرجاته، وبالبحث العلمي والإعداد والتدريب المستمر بحيث تحقق الجامعة دورها الوطني والإنساني والإنمائي لمختلف القطاعات والمناطق من خلال: توفير القدرات البشرية المؤهلة علميا،... خدمة المجتمع من خلال الدراسات والتدريب المستمر لتلبية حاجاته وتطوره، الحضور العلمي على المستوى الوطني والإقليمي والعالمي، تعميق الاندماج الاجتماعي والوطني تأصيل القيم الإنسانية في نفوس المواطنين." (LU, 2018)
6	**Notre Dame University (NDU)**	"Our mission at Notre Dame University Model United Nations (NDU MUN) is to introduce high school students to the MUN program that promotes diversity, respect for human dignity and rights, concern for the common good, in addition to permitting students to diplomatically resolve issues at the forefront of international relations. Furthermore, we aim to familiarize these students with what NDU stands for and prepare them to be future leaders who can exercise reason upon knowledge and shape a world of truth, justice, love, and freedom." (NDU, 2018)

Table 3.6. Professional Organizations' missions

THINK TANKS (2)

NUMBER	Professional Organization	Its mission related to SDGs
1	**American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) [Lebanese Chapter]**	"…serve the local industries in all matters related to heating, refrigerating and air-conditioning as well as associated activities." (Lebanese ASHRAE Chapter, 2018)
2	**ASCE [Lebanese Chapter]**	"…The objective of the Lebanon Group shall be the advancement of the science and profession of engineering, in a manner consistent with the purpose of the American Society of Civil Engineers." (ASCE, 2018)

3.5. Conclusion

The data collection and interviews paved the way for a clearer definition of the stakeholders responsible for green building policies, on both the formulation and implementation fronts. Each of the stated stakeholders is assigned in a group with a specific role.

CHAPTER 4

FRAMEWORK FOR SUSTAINABLE DEVELOPMENT POLICY FORMULATION IN LEBANON: RELATED TO GREEN BUILDINGS

4.1. Preamble

After specifying the different stakeholders, each will then be given a specific role to play in the framework of SD policy formulation and implementation. In order to delineate their roles, tables are provided showing the relationship between each of the involved stakeholders with the 9 SDGs selected by the WGBC. This will lead to the creation of an implementable framework for Sustainable Development Policies that tackles green buildings directly, all the while elaborating on the committees forming the policy formulating bodies.

4.2. Stakeholders' Contribution to the 9 SDGs

In order to assign respective roles to each of the previously mentioned entities with relation to the 9 SDGs, tables 4.1, 4.2, and 4.3 respectively show the level of involvement of each of these entities with the selected SDGs. This correlation aims at showing the level to which each of these entities could be effective in the implementation of the SDGs. This correlation is hence restricted to three main levels of effectiveness: direct, indirect and no effectiveness. These levels are determined through each stakeholder's mission, its initiatives towards green buildings and the description of the nine goals themselves.

Table 4.1. Ministries Relation to the 9 SDGs

| Ministries	SDGs related to Green Buildings (as per WGBC)								
	Goal 3	Goal 7	Goal 8	Goal 9	Goal 11	Goal 12	Goal 13	Goal 15	Goal 17
Rep. of President of Lebanese Republic									
Rep. of President of Council of Ministers									
M. of Foreign Affairs & Emigrants									
M. of State for Planning Affairs									
M. of Public Works & Transport									
M. of Energy & water									
M. of Environment									
M. of Interior & Municipalities									
M. of Finance									
M. of Education & Higher Education									
M. of Industry									
M. of Public Health									
M. of Culture									
M. of Justice									
M. of Tourism									
M. of Social Affairs									
M. of State for Administrative Dev. Affairs									
M. of Economy & Trade									
M. of State for Combating Corruption									

Table 4.2. Organizations Relation to the 9 SDGs

Non-governmental Organizations		SDGs related to Green Buildings (as per WGBC)								
		Goal 3	Goal 7	Goal 8	Goal 9	Goal 11	Goal 12	Goal 13	Goal 15	Goal 17
Syndicates	Order of Engineers and Architects (OEA)									
	Real Estate Syndicate of Lebanon (REAL)									
	Lebanese Contractors Syndicates of Public Works and Buildings (SLETP)									
Associations & NGOs	Lebanon Green Building Council (LGBC)									
	REAL ESTATE DEVELOPERS ASSOCIATION- LEBANON (REDAL)									
	ASSOCIATION OF LEBANESE INDUSTRIALISTS (ALI)									
	ASSOCIATION OF BANKS IN LEBANON (ABL)									
Universities	AMERICAN UNIVERSITY OF BEIRUT (AUB)									
	BEIRUT ARAB UNIVERSITY (BAU)									
	LEBANESE AMERICAN UNIVERSITY (LAU)									
	UNIVERSITÉ SAINT-JOSEPH (USJ)									
	LEBANESE UNIVERSITY (LU)									
	NOTRE DAME UNIVERSITY (NDU)									
Prof. Org.	ASHRAE									
	ASCE									

Table 4.3. Public Authorities & Directorates Relation to 9 SDGs

Public Authorities /Directorates/ Departments	SDGs related to Green Buildings (as per WGBC)								
	Goal 3	Goal 7	Goal 8	Goal 9	Goal 11	Goal 12	Goal 13	Goal 15	Goal 17
Directorate General of Urban Planning									
Central Bank of Lebanon (BDL)									
Council for Development & reconstruction (CDR)									
Railway and Public Transportation Authority (RPTA)									
Directorate General of Land and Maritime Transport									
Directorate General of Roads & Buildings									
Directorate General of Administrative & Local Council (OMSAR)									
Traffic, Trucks, and Vehicles Management Authority									
Directorate General of Investment									
The Lebanese Center of Energy Conversation (LCEC)									
Lebanese Standards Institute (LIBNOR)									
Directorate General of Education									
Directorate General of Higher Education									
National Council for Scientific Research									
Educational Center for Research and Development (CERD)									
Directorate General of Cadastre & Real Estate									
Directorate General of Public Finance									

Investment Development Authority of Lebanon (IDAL)									
Federation of Chamber of Commerce, Industry and Agriculture in Lebanon									
Public Authority for Consumer Markets for Lebanon									
Public Corporation for Housing (PCH)									
Electricity of Lebanon (EDL)									
Industrial Research Institute									
Lebanese Parliament (Legislative Authority)									

Direct relation	Indirect relation	No relation
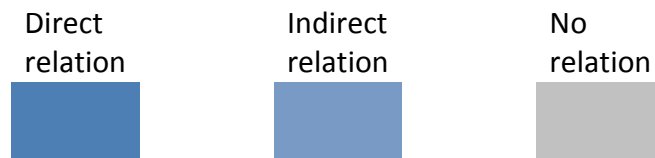
The legend for tables 4.1, 4.2 and 4.3.

Table 4.1 shows that the Presidency of the Lebanese Republic fulfills all the seventeen SDGs since, in the constitution, it is essential to implement the country's signed international agreements. Also, the Presidency of the Council Members fulfills the seventeen SDGs as well, including the nine SDGs, since the official ministerial statement, shown in chapter three, clearly states Lebanon's adherence to international agreements. The Ministry of Energy and Water is in direct relation with six out of the nine SDGs, since it is the ministry's mission to "Contribut[e] to the development of standards to be adopted in the studies of public investment institutions and implementation of their works…" shown in chapter three. The Ministry of Public Health is in direct relation with four out of the nine SDGs since it focuses its concentrates its efforts with "particular emphasis on the poor, disadvantaged and vulnerable populations, thereby contributing to sustainable development of the country".

Table 4.2 shows that the universities are in direct relation with two out of nine SDGs since they only can contribute through their research centers and institutions: the American University of Beirut (AUB), for example, contains the Issam Fares Institute (IFI) which "aims to harness, develop, and initiate policy-relevant research" as shown in chapter three. In addition, the syndicate, Order of Engineers and Architects (OEA), has a direct relation with only 4 out of 9 SDGs since it is essential for the order to give its opinion on the draft laws and regulations that is related to the engineering profession, also mentioned in chapter three. Lebanon Green Building Council (LGBC) meets four out of the nine SDGs, since its mission and vision states that "Conducting research and educational activities and engaging in lobbying efforts to promote green building practices and legislation".

Table 4.3 shows that the Directorate General of Urban Planning (DGUP), that functions under the ministry of public works and transportation, is in direct relation with seven out of nine SDGs. This is due to the responsibility that it holds for formulating and implementing land use policies, as stated in its mission statement. The Lebanese Center for Energy Conservation (LCEC), however, is in direct relation with six out of nine SDGs, since its mission is concentrated "on setting national strategies and action plans to be adopted by the Lebanese Government". It is also worth mentioning that the Lebanese Standards Institution (LIBNOR) is in direct relation with three out of nine SDGs as it sets the Lebanese standards, but is not responsible for their implementation. Moreover, Banque Du Liban (BDL) is in direct relation with five out of nine SDGs, since its mission is "to ensure the basis for sustained social and economic growth" only, as mentioned in chapter three.

4.3. Framework for Implementable Sustainable Development Policies in Lebanon for Green Buildings

4.3.1. The Overall Framework

This Framework consists of four different bodies, each having a clearly defined responsibility serving the main purpose behind this thesis. The four bodies are: The Presidential Body, ranking highest in the framework hierarchy and providing general national strategic guidance. The Steering Body is where national strategy forming takes place. The Policy Formulating Body will translate strategy into implementable policies, taking into account various technical and financial needs. And Finally, the Implementing Body where policies are enforced and implemented using the necessary mechanisms, shown in figure 4.1.

The Presidential Body, includes a representative of the President of the Lebanese Republic, a representative of the President of the Council of Ministers, a representative of the Ministry of Foreign Affairs and Emigrants, as well as a representative of the Ministry of State for Planning Affairs, Directorate General of Urban Planning in the Ministry of Public Works & Transport. This body's main role is to provide the needed general guidelines and awareness pertaining to the necessity of moving forward with policy formulation.

The Steering body also includes a representative of the Ministry of Foreign Affairs and Emigrants, a representative of the Ministry of State for Planning Affairs, Directorate General of Urban Planning in the Ministry of Public Works & Transport. It also comprises representatives from the UNDP, BDL, CDR, the Ministry of Energy & Water, the Ministry of Environment, the Ministry of Interior & Municipalities, the Ministry of Finance, the Ministry of Education and Higher Education, the Ministry of Culture, the Ministry of Public Health, the Ministry of Justice, and finally the Ministry of Tourism.

The Policy Formulation Body also includes representatives from the Directorate General of Urban Planning in the Ministry of Public Works & Transport, the UNDP, BDL, CDR, the Ministry of Energy & Water, the Ministry of Environment, the Ministry of Interior & Municipalities, the Ministry of Finance, as well as, the Ministry of Education and Higher Education. In addition to the previous entities, the Policy Formulation Body draws on the expertise of public institutions, NGOs, Syndicates and think tanks, as it forms the main part of the framework where policy formulation takes place.

The Implementing Body, involves either a representative, or the Directorate

General (D.G.), of each the following: the Ministry of Energy & Water, Ministry of Environment, the Ministry of Interior & Municipalities, the Ministry of Finance, the Ministry of Culture, the Ministry of Public Health, the Ministry of Justice, the Ministry of Tourism, the Ministry of Economy, the Ministry of State for Combating Corruption, the Ministry of Social Affairs, the Ministry of State for Administrative Development Affairs, in addition to Municipalities, Municipality Unions, added to some public institutions like EDL, PCH and others.
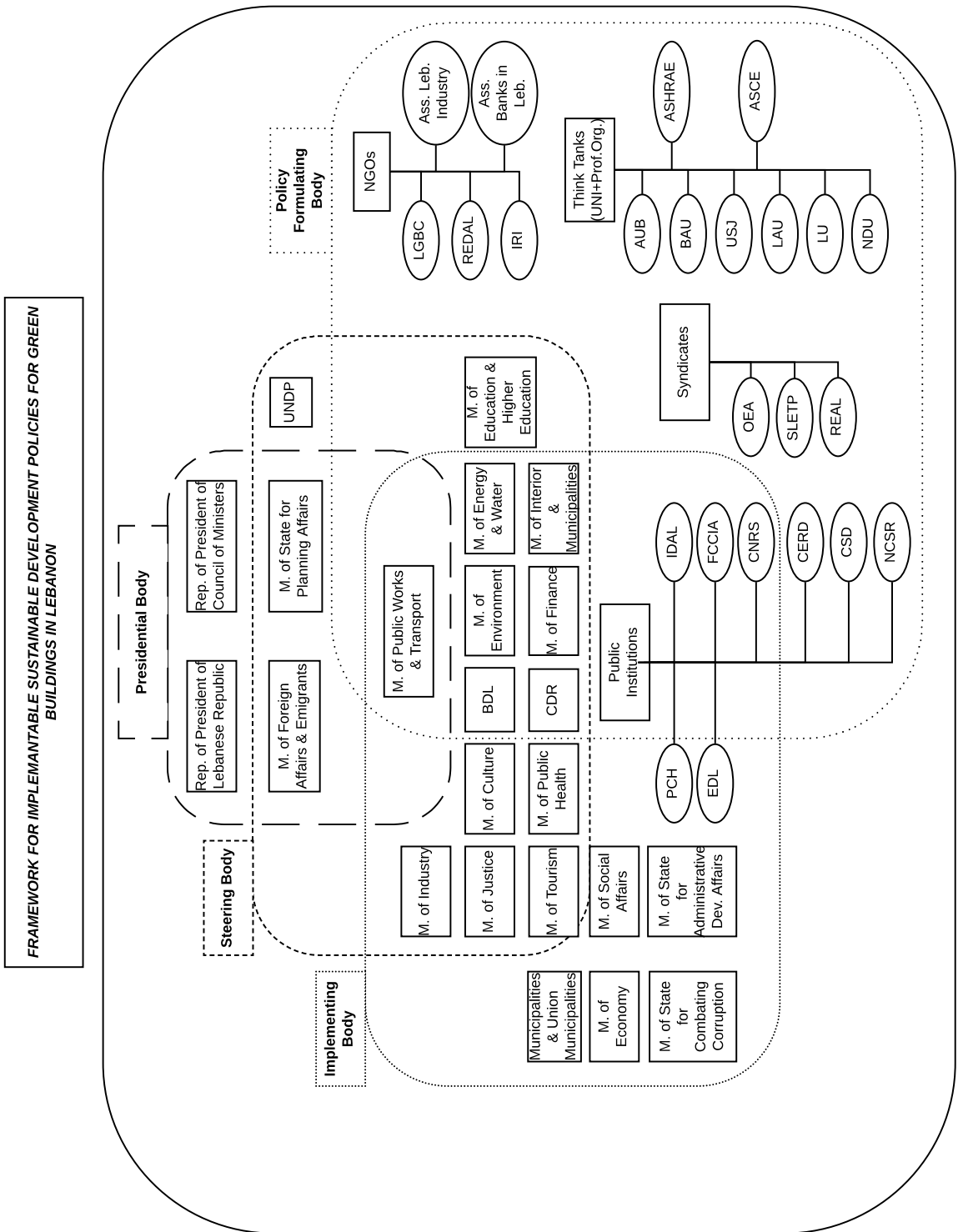
Figure 4.1. Flow Chart of the Framework for Implementable Sustainable Development Policies in Lebanon
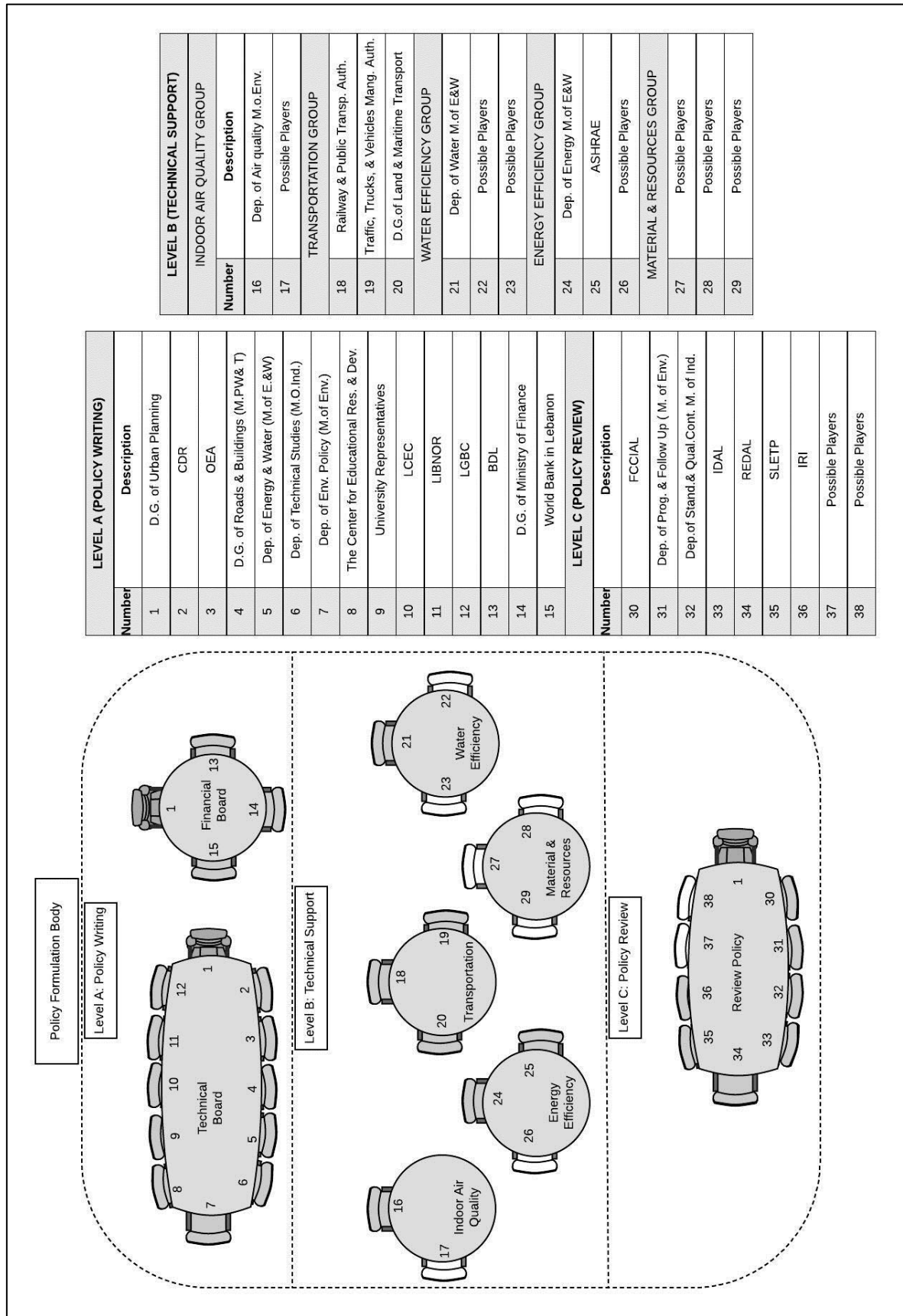
4.3.2. The Policy Formulation Body

Building upon the framework shown in figure 4.18, most of the stakeholders form the policy formulation body, which dictates the necessity of grouping them into committees with specific goals to increase efficiency. An attempt at this is shown in figure 4.2.

This body consists of three levels: the first is level A, Policy Writing Committee, where policy formulation begins in respect of two main aspects, the technical and the financial restrictions. The second is level B, titled the Technical Support Committee, its job is to give the technical group in level A any needed assistance in one of these five topics: Indoor Air Quality, Transportation, Water Efficiency, Energy Efficiency, as well as, Material & Resources. The third is level C, the Policy Review Committee, its job is to review and comment on the formulated policies, shown in figure 4.19.

Level A, the Policy Writing Committee consists of a Technical Board including: the D.G. of Urban Planning who takes on the lead role in this committee, CDR, OEA, D.G. of Roads & Buildings in Ministry of Public Works & Transport, Department of Energy & Water in Ministry of Energy & Water, and others.

Level B, the Technical Support Committee consists of five groups related to the green buildings concept, such as the energy efficiency group which includes the department of energy in the Ministry of Energy and Water, as well as, ASHRAE. Moreover, Level C, the Policy Review Committee involves IDAL, REDAL, SLETP, IRI and others.

LEVEL A (POLICY WRITING)

Number	Description
1	D.G. of Urban Planning
2	CDR
3	OEA
4	D.G. of Roads & Buildings (M.PW& T)
5	Dep. of Energy & Water (M.of E.&W)
6	Dep. of Technical Studies (M.O.Ind.)
7	Dep. of Env. Policy (M.of Env.)
8	The Center for Educational Res. & Dev.
9	University Representatives
10	LCEC
11	LIBNOR
12	LGBC
13	BDL
14	D.G. of Ministry of Finance
15	World Bank in Lebanon

LEVEL C (POLICY REVIEW)

Number	Description
30	FCCIAL
31	Dep. of Prog. & Follow Up (M. of Env.)
32	Dep.of Stand.& Qual.Cont. M. of Ind.
33	IDAL
34	REDAL
35	SLETP
36	IRI
37	Possible Players
38	Possible Players

LEVEL B (TECHNICAL SUPPORT)

Number	Description
	INDOOR AIR QUALITY GROUP
16	Dep. of Air quality M.o.Env.
17	Possible Players
	TRANSPORTATION GROUP
18	Railway & Public Transp. Auth.
19	Traffic, Trucks, & Vehicles Mang. Auth.
20	D.G.of Land & Maritime Transport
	WATER EFFICIENCY GROUP
21	Dep. of Water M.of E&W
22	Possible Players
23	Possible Players
	ENERGY EFFICIENCY GROUP
24	Dep. of Energy M.of E&W
25	ASHRAE
26	Possible Players
	MATERIAL & RESOURCES GROUP
27	Possible Players
28	Possible Players
29	Possible Players

Figure 4.2. Policy Formulation Body

4.4. Conclusion

The framework, including the policy formulation body, is subject to additions and modifications that necessitate the meeting of its main objective. Therefore, chapter 5 highlights on the conclusions, recommendations, as well as research contributions needed to ensure better efficiency.

CHAPTER 5

SUMMARY AND CONCLUSIONS

5.1. Summary of Research

There are different individual attempts in Lebanon aiming at meeting green buildings concept; however, none of them is mandatory, which is making the progress of reaching this aim very slow and very challenging. Such is the case of the 41 registered projects in Lebanon for LEED certification, but only 6 were certified to date. The first step needed to tackle this issue was a comprehensive review of literature, which included previously published articles, theses, and books examining other countries' attempts at producing somewhat similar frameworks aiming at formulating and implementing sustainable development policies. One of the most important findings was the COP 21 meeting that was held in Paris in 2015, where more than 150 leaders gathered to agree on implementing seventeen SDGs by 2030. However, WGBC has announced that by implementing green buildings concept nine of the seventeen SDGs agreed upon would automatically be met, hence the focal point of this research.

The previous naturally led to many interviews and investigation attempts for two main reasons: The first being to get enlightened about the current attempts made towards achieving green buildings in Lebanon, and the second to know the role of each stakeholder and how each is handling the implementation of such attempts. Moreover, during my interview with the Specialist in Environment & Land Use Management at the Council for Development and Reconstruction (CDR), she provided me with an agreement that was signed between UNDP and the Council and Ministers in June 2017. This agreement is to bind the Lebanese government to implement the seventeen SDGs

in its national strategy and include a national committee to oversee the process. This committee currently includes fifty-five members, of which thirty-one were chosen as the focus of this research since they are in direct correlation with nine of the SDGs dealt with in this paper.

Each of the selected stakeholders is identified by its mission, and how each contributes to the nine SDGs, as well as, the role each plays in terms of policy formulation and policy implementation. Therefore, a matrix showing the main three levels of correlation (direct, indirect, and no relation) was needed to clearly highlight the relationship between each of the selected stakeholders and the nine SDGs. This matrix helped in locating the stakeholders in both the overall framework and later in the policy formulation body.

To sum up, this framework for the formulation and implementation of the sustainable development goals resulted from the following process: the literature review, the interviews, the investigations be it through official documents or on the internet, the selected stakeholders mission identification, as well as the matrix done between the stakeholders and the nine SDGs.

5.2. Conclusions

In conclusion, the main obstacle standing between the stakeholders and true implementation is mainly the complexity of the process needed to transform current attempts into tangible policies. This is due to the fact that any law or nation-wide policy is mainly the parliament's decision. However, since Green Buildings is not a current priority as expressed by the Head of the Parliamentary Committee on Public Works, Transportation, Energy and Water, this obstacle remains far from being resolved. In

addition, unnecessary redundancy and conflict of stakeholders' roles is rendering the implementation process difficult. Also, the existence of many players and the variety of parameters is standing in the way of promoting green buildings concept.

More specifically, by analyzing and understanding the roles of each of the stakeholders, some seem to have more weight than others proving that they have more roles to play: Such as the DGUP that is the core of the framework, found in its four bodies, highlighted in red in figure 4.20. The DGUP plays an important role in formulating and implementing such policies due to its mission stated in its bylaws. In addition, CDR, BDL, the Ministry of Environment, the Ministry of Energy and Water, the Ministry of Finance, and the Ministry of Interior and Municipalities share three bodies of the framework, highlighted in blue in figure 5.1, since they share responsibilities and roles in the field of Green Buildings.
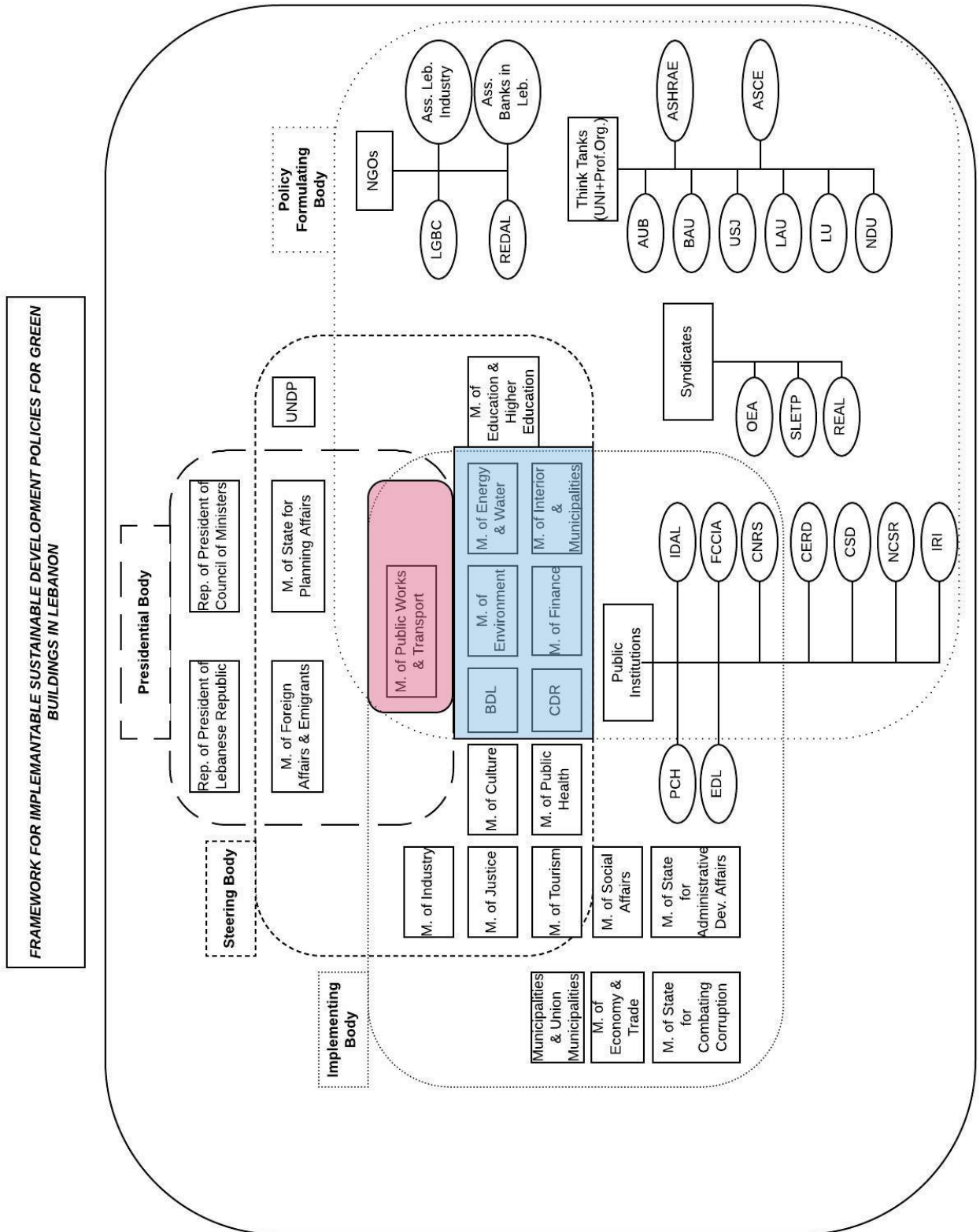
Figure 5.1. Flow Chart of the Framework for Implementable Sustainable Development Policies in Lebanon- Stakeholders with Most Functions

5.3. Recommendations

This framework is recommended to the Council of Ministers since it aims at facilitating the advancement in meeting the SDGs, since the mere existence of a national committee in which the role of the fifty-five members is not clear gives little chance for achieving any progress in meeting the SDGs. This framework consists of a clear hierarchy with defined roles for each of the selected stakeholders. Also, this framework aims at engaging the "forgotten stakeholders" to insure a wider involvement in the implementation process, which will eliminate some of the obstacles mentioned earlier. Moreover, since the SDGs themselves have specific targets, they play a principal role in monitoring the formulation process. Moreover, future policies should include penalties for shortcomings, as well as, incentivized rewards given based on target achievements.

Formulating sustainable development policies is not enough to successfully meet the SDGs, as a clear mechanism of implementation should be taken more into consideration and should be provided for the executive stakeholders. For instance, the Ministry of Interior and Municipalities, being a main stakeholder and responsible for the implementation process, should have suitable mechanisms and tools that will facilitate their work. This framework, therefore, could be adopted by the government or by any other entity, and in turn, can be further developed.

5.4. Research Contribution

This thesis helped in recognizing the involved stakeholders, then defining each of them and highlighting their specified roles, as well as finding the specific relationship each of them has with the nine SDGs. This makes it easier for the future decision makers, especially the government, to assign the right task to the right stakeholder.

Therefore, the 55 members of the national committee, who are currently neither linked nor grouped, have been thoroughly grouped into committees based on their roles, common interests, duties and relationships, in order to redirect the efforts being put into the green buildings concept into a more feasible, structured and specific work strategy.

5.5. The Way Forward

Good governance is based on two main platforms, the first, is involving an assortment of societal actors to aid in the formulation of new policies; and the second is having clear and identified models for the implementation of the national strategies. Therefore, adopting the presented framework will pave the way into reaching the good governance concept. In addition, embracing this framework provides the bylaws and procedures for each of the stated bodies by setting the principles delineating the relationship between each of the players, as well as, defining the role of each, and how their work should be executed in order to redirect the collective effort.

APPENDICES

APPENDIX A

MINUTES OF MEETING BETWEEN UNDP AND THE COUNCIL OF MINISTERS

الجمهورية اللبنانية

مجلس الوزراء

الامانة العامة

رقم المحضر : ٣٢

رقم القرار : ٦٩

سنـــــة : ٢٠١٧

من محضر جلسة مجلس الوزراء

المنعقدة في :القصر الجمهوري   يـــــوم :الأربعاء   الواقـــع في : ٢٠١٧/٦/٢١

الموضـــوع: تشكيل اللجنـة الوطنيـة لقيـادة وتنسيق الجهـود الوطنية لتنفيذ خطـة الأمـم المتحـدة للتنميـة المستدامة لعـام ٢٠٣٠ – "أجنـدة ٢٠٣٠" – لتحقيق أهداف التنمية المستدامة.

المستندات:

– قــرار الجمعيــة العامــة للأمـم المتحـدة بتـاريخ ٢٠١٥/٩/٢٥ (خطة التنمية المستدامة لعام ٢٠٣٠).

– كتــاب دولــة رئيس مجلـس الــوزراء رقــم ١٢٢١/ص تـاريخ ٢٠١٧/٦/١٧ ومرفقاته.

قرار المجلس

اطلع مجلس الوزراء على المستندين المذكورين اعلاه ،

وقد تبين منها أن دولة رئيس مجلـس الـوزراء يفيد بـان لبنـان قـد وافـق علـى خطـة التنميـة المستدامة التـي أقرتها الأمـم المتحـدة بعنـوان "تحويل عالمنا: خطة التنمية المستدامة لعـام ٢٠٣٠"، والتـي باتـت تعرف بـ "الأجنـدة ٢٠٣٠" وذلك مـن خـلال الكلمـة التـي ألقاها دولـة رئيس مجلـس الـوزراء في حينه الاستاذ تمـام سلام في قمة التنمية المستدامة في ٢٠١٥/٩/٢٦ في نيويورك.

وحيـث ان تنفيـذ هـذه الأجنـدة يسـتدعي إيجـاد آليـة تنسـيق بـين جميـع الـوزارات والادارات الرسـمية المعنية،

لذلك،

فإن دولة رئيس مجلس الوزراء يعرض الموضوع على مجلس الوزراء ويقترح الموافقة على ما يلي:

١– تأليف لجنة وطنية برئاسة دولة رئيس مجلس الوزراء أو من يفوضه بذلك، قوامها:

– ممثل عن رئاسة الجمهورية

– ممثل عن رئاسة مجلس الوزراء

– ممثل عن وزارة الخارجية والمغتربين

– ممثل عن وزارة الدفاع الوطني

– ممثل عن وزارة البيئة

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الجمهورية اللبنانية

مجلس الوزراء

الامانة العامة

رقــم المحضر : ٣٢

رقم القرار : ٦٩

تاريخ القرار : ٢٠١٧/٦/٢١

- ممثل عن وزارة الدولة لشؤون مكافحة الفساد

- ممثل عن وزارة الدولة لشؤون النازحين

- ممثل عن وزارة الدولة لشؤون التخطيط

- ممثل عن وزارة الدولة لشؤون المرأة

- ممثل عن وزارة الدولة لشؤون التنمية الادارية

- ممثل عن وزارة الدولة لشؤون حقوق الانسان

- ممثل عن وزارة الدولة لشؤون مجلس النواب

- مدير عام الادارات المحلية والبلديات في وزارة الداخلية والبلديات

- مدير عام الأحوال الشخصية في وزارة الداخلية والبلديات

- مدير عام الدفاع المدني في وزارة الداخلية والبلديات

- مدير عام الشؤون السياسية واللاجئين في وزارة الداخلية والبلديات

- مدير عام قوى الأمن الداخلي في وزارة الداخلية والبلديات

- مدير عام هيئة ادارة السير والآليات والمركبات في وزارة الداخلية والبلديات

- مدير عام الشؤون الثقافية في وزارة الثقافة

- مدير عام الآثار في وزارة الثقافة

- مدير عام التربية في وزارة التربية والتعليم العالي

- مدير عام التعليم العالي في وزارة التربية والتعليم العالي

- مدير عام التعليم المهني والتقني في وزارة التربية والتعليم العالي

- مدير عام وزارة شؤون المهجرين

- مدير عام الصيانة والاستثمار في وزارة الاتصالات

- مدير عام أوجيرو في وزارة الاتصالات

- مدير عام الطرق والمباني في وزارة الاشغال العامة والنقل

- مدير عام التنظيم المدني في وزارة الأشغال العامة والنقل

- مدير عام الطيران المدني في وزارة الاشغال العامة والنقل

- مدير عام النقل البري والبحري في وزارة الاشغال العامة والنقل

- مدير عام الاستثمار في وزارة الطاقة والمياه

٢

الجمهورية اللبنانية

مجلس الوزراء

الامانة العامة

رقم المحضر : ٣٢

رقم القرار : ٦٩

تاريخ القرار : ٢٠١٧/٦/٢١

– مدير عام النفط في وزارة الطاقة والمياه

– مدير عام وزارة الاقتصاد والتجارة

– مدير عام مكتب الحبوب والشمندر السكري في وزارة الاقتصاد والتجارة

– مدير عام وزارة الزراعة

– مدير عام التعاونيات في وزارة الزراعة

– مدير عام وزارة الشباب والرياضة

– مدير عام وزارة الشؤون الاجتماعية

– مدير عام وزارة الصناعة

– مدير عام وزارة الإعلام

– مدير عام وزارة السياحة

– مدير عام وزارة الصحة

– مدير عام وزارة العدل

– مدير عام وزارة العمل

– مدير عام وزارة المهجرين

– مدير عام المالية العامة في وزارة المالية

– مدير عام الشؤون العقارية في وزارة المالية

– مدير عام الجمارك العامة في وزارة المالية

– مدير عام إدارة الاحصاء المركزي

– ممثل عن مجلس الإنماء والإعمار

– ممثل عن مصرف لبنان

– ممثلان عن إتحاد غرف التجارة والصناعة والزراعة في لبنان

– ممثلان عن المجتمع المدني

٢- تستعين اللجنة الوطنية بمن تراه مناسباً عند الحاجة.

٣- يتولى مشروع "برنامج الأمم المتحدة الانمائي" في رئاسة مجلس الوزراء مهام أمانة سر اللجنة الوطنية.

٤- مهام اللجنة:

أ) تنسيق الجهود الوطنية لتنفيذ أهداف التنمية المستدامة.

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الجمهورية اللبنانية

مجلس الوزراء

الامانة العامة

س.غ

رقـم المحضر : ٣٢

رقم القرار : ٦٩

تاريخ القرار : ٢٠١٧/٦/٢١

ب) دمج أهداف التنمية المستدامة ضمن البرامج والخطط الوطنية للتنمية المستدامة.

ج) المساهمة في نشر التوعية حول أهداف التنمية المستدامة وأهمية تحقيقها.

د) تطوير قاعدة بيانات وطنية لمؤشرات أهداف التنمية المستدامة.

ه) المساهمة في إعداد التقرير الوطني الطوعي حول سير العمل على تحقيق أهداف التنمية المستدامة، ليتم رفعه الى الأمم المتحدة بشكل دوري.

بناء عليه،

وبعد المداولة،،

قـرر المجلس الموافقة على اقتراح دولة رئيس مجلس الوزراء الآنف الذكر.

أمين عام مجلس الوزراء

فؤاد فليفل

يبلغ لجانب :

– السادة الوزراء

– الوزارات والادارات العامة والمؤسسات العامة التابعة لها كافة.

– المديرية العامة لرئاسة الجمهورية

– المديرية العامة لرئاسة مجلس الوزراء

– مؤسسة المحفوظات الوطنية

– مركز المعلوماتية

– المحفوظات

بيروت في ٢٢ / ٦ / ٢٠١٧

نسخة طابق الاصل

الأمين علي الحاج شحادة

التوقيع

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     A7%D8%AD%D9%8A%D8%A7%D8%AA-
     %D9%88%D9%85%D9%87%D8%A7%D9%85-
     %D9%88%D8%B2%D8%A7%D8%B1%D8%A9-
     %D8%A7%D9%84%D8%B7%D8%A7%D9%82%D8%A9-
     %D9%88%D8%A7%D9%84%D9%85%D9%8A%D8%A7%D9%87

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