Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region

Study on Gender Mainstreaming, Social Inclusion, Human Rights Processes and Outcomes of Access to Energy in Targeted Local Communities in Lebanon

UNITED NATIONS
الاسكوا
ESCWA

Shared Prosperity Dignified Life

السويد
Sverige

E/ESCWA/CL1.CCS/2020/TP.3

Economic and Social Commission for Western Asia

Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region

Study on Gender Mainstreaming, Social Inclusion, Human Rights Processes and Outcomes of Access to Energy in Targeted Local Communities in Lebanon

UNITED NATIONS
Beirut

United Nations publication issued by ESCWA, United Nations House, Riad El Solh Square, P.O. Box: 11-8575, Beirut, Lebanon.

Website: www.unescwa.org.

Photo credit:
Cover: © iStock.com
Inside Images: © iStock.com and © Author

Preface

This gender assessment report was developed by the Energy Section in the Climate Change and Natural Resource Sustainability Cluster (CCNRS) of the United Nations Economic and Social Commission for Western Asia (ESCWA) within the framework of the "Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region" (REGEND), implemented by ESCWA in partnership with the Swedish International Development Cooperation Agency (Sida).

The REGEND project focuses on three pilot countries, namely Lebanon, Jordan and Tunisia and includes country gender assessments on entry points to energy access, entrepreneurial development, gender mainstreaming, social inclusion, human rights processes, and building resilience to climate change in targeted communities of the Arab rural areas. The assessments collect existing and relevant qualitative and quantitative information which will serve as a basis for the identification of the main barriers and challenges to be addressed, gender mainstreaming potentials, and recommendation and opportunities for promoting the economic empowerment of women through renewable energy technologies, entrepreneurial development, education, awareness raising, and policy development.

The present report covers the case study for Lebanon, and was prepared by Ms. Hania Chahal, Gender Expert, with substantive contribution and under supervision of Ms. Radia Sedaoui, Chief Energy Section, CCNRS, ESCWA and inputs from Mr. Jil Amine, Sustainable Development Officer, CCNRS, ESCWA.

Data sources

This report relies on data collected from a combination of data sources, data collected in the field, and data provided by interviewed key national stakeholders and the members of REGEND's Local Facilitating Team as well as the outcomes of national workshops and focus group discussions on the development of the study; namely the National Meeting on "Women Empowerment and Entrepreneurial Development in the Rural Context: The Role of Renewable Energy".

https://www.unescwa.org/events/women-empowerment-entrepreneurial-development-rural-renewable-energy.

Executive Summary

Access to clean and reliable energy is not an easy target to achieve. In many countries, it is viewed as a challenge, particularly for rural areas. This negatively affects economic performance and, in the long term, results in lower living standards and a poor quality of life for rural populations.[1] Relying on renewable energy (mainly decentralized systems) can help rural communities overcome such challenges, with access to renewable energy technologies helping to reduce energy poverty, create jobs, and improve livelihoods and socioeconomic conditions for the rural population.

Renewable energy in Lebanon accounts for almost 4 per cent of total electricity production in the country, mainly via hydropower and, to a limited extent, solar photovoltaic (PV), while the rest is generated from imported fossil fuels.[2] The gradual increase in reliance on renewable energy sources in Lebanon, as in other countries, will create new economic opportunities and could improve livelihoods for the population, while mitigating the impacts of climate change. However, the impact of such a shift would differ across genders, and the different Government policies and actions adopted or planned may not have taken full consideration of the gender context in their development. Lebanon ranks 140th out of 149 in the World Economic Forum's 2018 Global Gender Gap Index.[3] Women still face gender inequalities in Lebanon on all levels, be it in terms of discriminatory laws, the lack of a regulatory framework on gender-based violence, weak participation in political decision-making, or weak participation in the labour force and the economy.

Within this context, the United Nations Economic and Social Commission for Western Asia (ESCWA) launched the "Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region". The main objective of the project is to improve livelihoods, satisfy energy needs, increase economic benefits, and ensure social inclusion and gender equality for Arab rural communities, and particularly for marginalized groups.

This report presents the findings of a detailed review and analysis of gender issues associated with energy services in Lebanon. It calls attention to the challenges and barriers rural women face in employment and entrepreneurship in energy sectors. It also highlights the potential for gender mainstreaming and identifies the opportunities to support the local private sector, and to promote and expand the use of small-scale renewable energy technologies, while emphasizing the environmental/climate benefits associated with them.

The situation of women and the division of gender roles in Lebanon varies slightly between urban and rural areas. While there has been some progress in terms of women's employment in urban areas, women in rural areas still fulfil their traditional role: bearing responsibility for all aspects of household management and care. Inequalities and discrimination greatly affect women in Lebanese rural areas, where they remain subject to a patriarchal society that limits freedom of choice for women and girls. Prominent among the laws that have the most severe impact on women is the personal status law, which covers areas like marriage and inheritance, where discrimination is the most acute. Inheritance law has the greatest impact on rural women, as it affects their access to assets (such as land) and limits their economic opportunities in terms of access to financing, since obtaining loans is conditional on providing collaterals. Currently, rural women suffer from poor access to productive resources, ranging from a lack of capital to a lack of appropriate technology and job opportunities, outside of the agricultural sector, in addition to the inability to own or inherit land.[4]

The prevailing traditions and stereotypes consider women inferior to men in society, and perceive them as possessing fewer of the skills required for employment. Furthermore, in rural areas, women are not expected to generate income for their families. It is the man who is the main decision maker, and the one responsible for taking care of the family. These cultural norms limit women's mobility and their ability to allocate time for work. This prevents them from accessing job opportunities in neighbouring regions, or even starting their own businesses, for fear of not being able to achieve the work-family balance. At the policy level, the focus on gender in the analysis, formulation and development of national policies is not adequately supported by gender statistics, and this represents a major obstacle for projects on gender. Major gaps persist not only in gender-related issues, but also in terms of the linkage between renewable energy and gender in Lebanon, particularly in rural areas.

Women, especially in rural areas, face several key gender issues associated with energy service needs, ranging from their access to energy to their participation in the energy sector. Access to energy affects time allocation, health issues, and livelihood for women in general, whether in urban or rural areas. Meanwhile, participation is more closely connected to equal opportunities for livelihood in the sector, the availability of training and capacity-building, the availability of business development services, and women's interest in joining the sector. Among the main challenges women face in the energy sector in particular are the following:

- *Access to financial resources:* such access is strongly affected by inheritance law, which in many cases denies women the right to own land. Women in Lebanon still face obstacles to secure collaterals or guarantors for loans, especially in rural areas;

- *Lack of education in science, technology, engineering and mathematics (STEM):* women are rarely oriented towards pursuing STEM education. The majority of rural women work in the agricultural sector, which employs 40 per cent of the labour force in rural areas in Lebanon;

- *Lack of access to technical and capacity-building training:* in addition to the lack of orientation towards STEM education opportunities, women are further hindered by the lack of technical skills – and of training programmes to help develop them – that would improve their access to the renewable energy sector;

- *Lack of awareness off opportunities in the renewable energy sector:* there is a prevailing perception that the energy sector is not appropriate for women, which can be traced back to social and cultural norms that suggest that such a sector only involves jobs for men, and may require physical strength which women are perceived as lacking;

- *Lack of inspiring role models and success stories:* role models play a vital role in encouraging rural women and young girls to choose specific career paths. Given the currently limited participation of women in the sector, such inspiring stories do not exist, or, when they do, are not easy to get hold of;

- *Lack of mobility and flexibility:* this concerns both the working hours required, and the ability to travel to different locations for installation and maintenance;

- *Lack of access to technology:* as women must carry out tasks dictated by social norms, such as traditional housekeeping or planting and harvesting, they are usually end-users, when it comes to renewable energy, rather than partners in design and installation.

Despite such challenges, there are some entry points or opportunities that could catalyse women's participation in the renewable energy sector in the rural areas of Lebanon. The involvement of different international organizations in economic empowerment projects for women provides a great boost, as such initiatives offer women technical and business support. They also work with communities to sensitize them to gender issues and the importance of gender mainstreaming

across all activities. The Ministries of Agriculture and Women's Affairs have both prioritized women's economic empowerment, thus providing an opportunity to work on promoting the meaningful participation and representation of women in the renewable energy sector. The private sector, with the support of incubators such as Berytech, the Diane Foundation, and others, is engaged in start-ups and businesses that are connected to the renewable energy sector, whether in the areas of photovoltaics, biomass or others. Women cooperatives in rural areas provide a good entry point for projects related to renewable energy and energy efficiency, which can reduce costs, increase productivity and create success stories for other businesses, as well as increase job opportunities and social inclusion.

Reliance on renewable energy sources in Lebanon would create new economic opportunities and improve livelihoods for the country's population, but efforts need to be made to ensure equal access to such opportunities in terms of gender. Among the main recommendations for improving women's access to and participation in the renewable energy sector, at the policy and local levels, are the following:

- *Improved counselling and orientation towards STEM education for young women:* change should start at school, with the integration of additional orientation sessions to inform students of the different opportunities in various sectors. There should be a special focus on rural communities;

- *Awareness campaigns on renewable energy sources and technologies:* more awareness campaigns should be carried out on the renewable energy sector, the different sub-sectors it comprises, the benefits of integrating energy-efficient solutions, and how women can integrate and contribute to the advancement of this sector;

- *Support for the establishment of rural incubators:* rural incubators are required, specifically for renewable energy, as they can be a one-stop shop for rural communities, provide potential entrepreneurs with opportunities to test their ideas and acquire technical support, and coach them to further develop ideas and business models;

- *Working closely with financial and micro-finance institutions to improve financial access for women:* more work needs to be done with financial institutions to facilitate women's access to financing;

- *National and transnational dialogue on the need for change in social norms:* there is a need for continuous dialogue and exchange of experiences, be it at the national or regional level, to promote change in social and cultural norms, so as to improve the status of women in Lebanon and in the region as a whole;

- *Research and research-based advocacy for gender justice:* a platform is required for conducting evidence-based research on gender issues within the renewable energy context, as a basis for developing advocacy campaigns and activities for gender justice;

- *Conscious and concerted efforts towards a gender-responsive shift in policy and practice:* while such efforts are currently being made, there is a need to further strengthen them and make them more effective in application, by exploring synergies between the two areas.

Contents

List of Tables

Abbreviations and Explanatory Notes

AUB	American University of Beirut
BDL	Banque du Liban (Lebanese Central Bank)
CAS	Central Administration of Statistics
CDR	Council for Development and Reconstruction
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CEDRE	Conférence Economique pour le Développement, par les Réformes et avec les Entreprises
EBRD	European Bank for Reconstruction and Development
ESCWA	Economic and Social Commission for Western Asia
FAO	Food and Agriculture Organization of the United Nations
GBV	gender-based violence
GDP	gross domestic product
GEFF	Green Economy Financing Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ILO	International Labour Organization
INDCs	Intended Nationally Determined Contributions
IRENA	International Renewable Energy Agency
kWp	kilowatt-peak
LCEC	Lebanese Center for Energy Conservation
LCRP	Lebanon Crisis Response Plan
MDGs	Millennium Development Goals
MW	megawatt
MWp	megawatt-peak
NCLW	National Commission for Lebanese Women
NEEAP	National Energy Efficiency Action Plan
NGO	non-governmental organization
NOWARA	National Observatory for Women in Agriculture and Rural Areas
NREAP	National Renewable Energy Action Plan
OMSWA	Office of the Minister of State for Women's Affairs
PPAs	power purchase agreements
PPP	purchasing power parity
PV	photovoltaic
REGEND	Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region
SDGs	Sustainable Development Goals
Sida	Swedish International Development Cooperation Agency
SMEs	small and medium-sized enterprises
STEM	science, technology, engineering and mathematics
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund (formerly the United Nations Fund for Population Activities)
UN Women	United Nations Gender Equality and Women Empowerment
USAID	United States Agency for International Development

Introduction

Lebanon, a small country of 10,452 km^2, has been through various waves of external conflict, civil war, and sociopolitical transformation, which have strengthened its ability to evolve and adapt to new situations. However, while being resilient to some extent in terms of its economy, the country has shown more vulnerability in terms of its ability to shield itself from external shocks, such as the current Syrian crisis, with the latter having had a considerable impact on the economy, the environment and social structures in the country. In spite of its political instability, Lebanon is well known for its high level of human development and its open economy, as well as for its large, educated and diversified diaspora, of Lebanese who left the country for better opportunities abroad, residing in various countries across Latin America, Europe and the United States, as well as Africa.[5]

The Lebanese economy can be described as a free market economy, open to foreign investment and ownership, and dominated by micro, small, and medium-sized enterprises. Small and medium-sized enterprises (SMEs) account for 97 per cent of all enterprises in Lebanon, and employ around 51 per cent of the country's total workforce.[6] The entrepreneurial scene is well developed in Lebanon, and self-employment is very common. As per the most recent census, conducted by the Central Administration of Statistics (CAS) in 2009, 30.7 per cent of all working individuals were self-employed.[7]

The Lebanese economy relies heavily on the service sector, which includes tourism, information technology (IT) services, banking and financial services, and trade. Banking, financial and trade services account for around 60 per cent of the country's gross domestic product (GDP) and employ around 73 per cent of its labour force.[8]

Agriculture is the main job provider for people residing in rural areas across the Bekaa Valley, North and South Lebanon, with 50 per cent of them citing it as their main source of income, and the rest divided between public and private sector employment.[9] However, there are large disparities in economic opportunities and employment across different parts of the country, as higher poverty rates are recorded in areas outside Beirut and Mount Lebanon: 38 per cent in the Bekaa, 36 per cent in the North, and 31 per cent in the South.[10] Investment in infrastructure or economic projects has been more focused on Beirut, the country's political and economic capital, to the detriment of more remote areas. This has led to lower job creation opportunities in the latter, and thus to higher unemployment and poverty rates, lagging development and higher rates of participation in the informal sector.[11]

In terms of human development and the provision of equal opportunities for men and women, Lebanon ranks 140th out of 149 in the World Economic Forum's 2018 Global Gender Gap Index.[12] Women's participation in the labour force is low: three times less than that of men. Moreover, 83 per cent of working women are wage-employed and only 17 per cent are self-employed, compared to 43 per cent of men in the same category.[13] For example, in 2016, the early stage entrepreneurship level for women (16 per cent of the population) was lower than the one for men (26 per cent of the population). In addition, 37 per cent of female and 41 per cent of male early stage entrepreneurs report having started their business out of necessity rather than opportunity.[14]

Demographically, over 80 per cent of the total Lebanese population is concentrated in urban areas, with 50 per cent in the capital Beirut and its surroundings.[15] In fact, such an imbalance can be found in most other Arab countries, as shown in a study on energy vulnerability in the Arab region published by ESCWA in 2019. The study estimates that around 56 per cent of the population in the Arab region reside in cities, and predicts that this proportion will increase to 68 per cent by 2050. This will add more pressure on water, food and energy access and availability, coupled with increased environmental degradation and pollution.[16] Rural areas will face the greater struggle in terms of access to energy.

Considered a key factor for achieving the Sustainable Development Goals (SDGs), energy is an important resource for influencing and driving socioeconomic development, as well as gender equality. SDG7 focuses on sustainable energy by supporting the transition to clean, renewable and affordable energy sources, which would help reduce poverty, and improve the quality of education and healthcare.

Keeping in mind the importance of such resources, access to clean, affordable and reliable energy is not an easy target to achieve, and is viewed as a challenge in many countries. Access to clean and reliable energy is certainly a major challenge in developing countries, particularly for their rural areas. This lack of access negatively affects economic performance and, in the long term, results in lower living standards and a poor quality of life for rural populations.[17]

The global population without access to electricity decreased from 1.2 billion in 2010 to about 840 million in 2017, of which the majority is concentrated in Sub-Saharan Africa.[18] Electricity in Sub-Saharan African countries is mainly provided through access to the national grid, to which most rural areas are not connected. The transmission and distribution of such electricity is centrally controlled by government enterprises, which often monopolize the production and distribution process.[19] In the Arab region, the electrification rate,[20] i.e. the percentage of the total population with access to electricity, rose from 88.4 per cent in 2010 to 92.5 per cent in 2017. In fact, electrification access is virtually universal in all Arab countries. However, three Arab countries, namely Mauritania, the Sudan and Yemen, stand out as exceptions, in view of their low rates of electrification access, and bring the average electrification rate across the Arab region down to 92.5 per cent. The region's total population without access to electricity was of around 30 million in 2017.[21]

Relying on renewable energy, and its mainly decentralized systems, can help rural communities overcome the challenges of accessing clean, affordable and reliable energy. Access to renewable energy technologies can help reduce energy poverty, create jobs, and improve livelihoods and socioeconomic conditions for the rural population.

The Global Status Report on Renewables published in 2019 estimates that renewable energy accounts for around 18.2 per cent of the world's total final energy consumption, with traditional biomass representing 7.8 per cent.[22] Among renewables, solar photovoltaic (PV) energy stands at the top of the list, exceeding 100 gigawatt (direct current) for the first time, with a year-end total of 505.5 gigawatt in 2019.[23] In fact, solar PV installations have doubled in growth over the past 10 years. Wind energy comes in second place, and modern biomass accounts for only 8 per cent of the total energy demand.[24] Renewable energy is also a major source of employment globally, with around 10.3 million jobs being created in the renewable energy sector. Out of the 10.3 million jobs created in 2017, 3.4 million jobs were estimated to be in the solar PV sector.[25]

In Lebanon, renewable energy consumption as a share of total final energy consumption has

been steadily falling since the 1990s, down to 3.6 per cent in 2016, reflecting the declining use of solid biofuel in favour of electricity and liquid fuels.[26] The total installed capacity of hydropower plants is 280 megawatt (MW),[27] as compared with about 25 MW for PV systems for electricity production.[28] By 2017, 93 per cent of the installed solar PV capacity in Lebanon was based on decentralized applications.[29] PV-based electricity generation and water heaters are an increasingly attractive alternative to diesel-based back-up generators, to help households compensate for chronic disruptions in the power supply and reduce their energy bills.[30] The remaining power is generated from imported fossil fuels, which remain largely the most prevalent and dominant source of energy.[31]

To reduce reliance on imported fossil fuels, the Lebanese Government has committed to increasing the percentage of renewable energy sources to 12 per cent by 2020, by improving access to renewable resources. To achieve this, it turned to the International Renewable Energy Agency (IRENA) in 2011. As a result, the National Energy Efficiency Action Plan (NEEAP) for 2010-2015 was developed, in addition to the National Renewable Energy Action Plan (NREAP) 2016-2020. The Government also played an active role in promoting decentralized renewable energy applications. In 2010, it launched the National Energy Efficiency and Renewable Energy Action (NEEREA) through the Central Bank of Lebanon. NEEREA is a national low-interest financing mechanism dedicated to the financing of green energy projects in Lebanon. By the end of 2017, NEEREA had funded 533 solar PV projects, valued at $42 million and totalling 22.5 megawatt-peak (MWp),[32] or 64 per cent of the total solar PV capacity installed in Lebanon.[33] This emphasizes the positive and disruptive impact such policies can have on decentralized renewable energy growth. Along the same lines, the Government also committed, at the Paris Conference on Climate Change, through the Intended Nationally Determined Contributions (INDCs), to increase the percentage of renewable energy to 15 per cent by 2030, and to reduce the demand in power by 3 per cent through energy efficiency.[34] Moreover, in September 2018, the Government of Lebanon, through its participation in the 2018 Climate Vulnerable Forum Virtual Summit, set a new target of 30 per cent of the nation's electricity and heat to be sourced from renewable energy by 2030.[35]

Background of the Study and Objectives

The gradual increase in reliance on renewable energy sources in Lebanon, as in other countries, would create new economic opportunities and improve livelihoods for the population, while mitigating the impacts of climate change. However, the impact of such a shift would differ across genders, and the different Government policies and actions adopted or planned may not have taken full consideration of the gender context in their development.

A study by the United Nations Gender Equality and Women Empowerment (UN Women) in 2012 revealed a large gender gap in the energy sector, where women account for less than 6 per cent of the technical staff and only 1 per cent of the top managers.[36] Additionally, IRENA points out that, while renewable energy provides considerable employment potential worldwide, women's global share of such employment represents only 32 per cent[37] of the renewable energy workforce. This indicates that women are under-represented, and that there is inequality in access to jobs in this sector between men and women. The same study highlights the need to engage both men and women in the renewable energy sector, and to integrate gender mainstreaming in national policies, so as to ensure that the energy needs of all communities are met, and that no one is left behind.

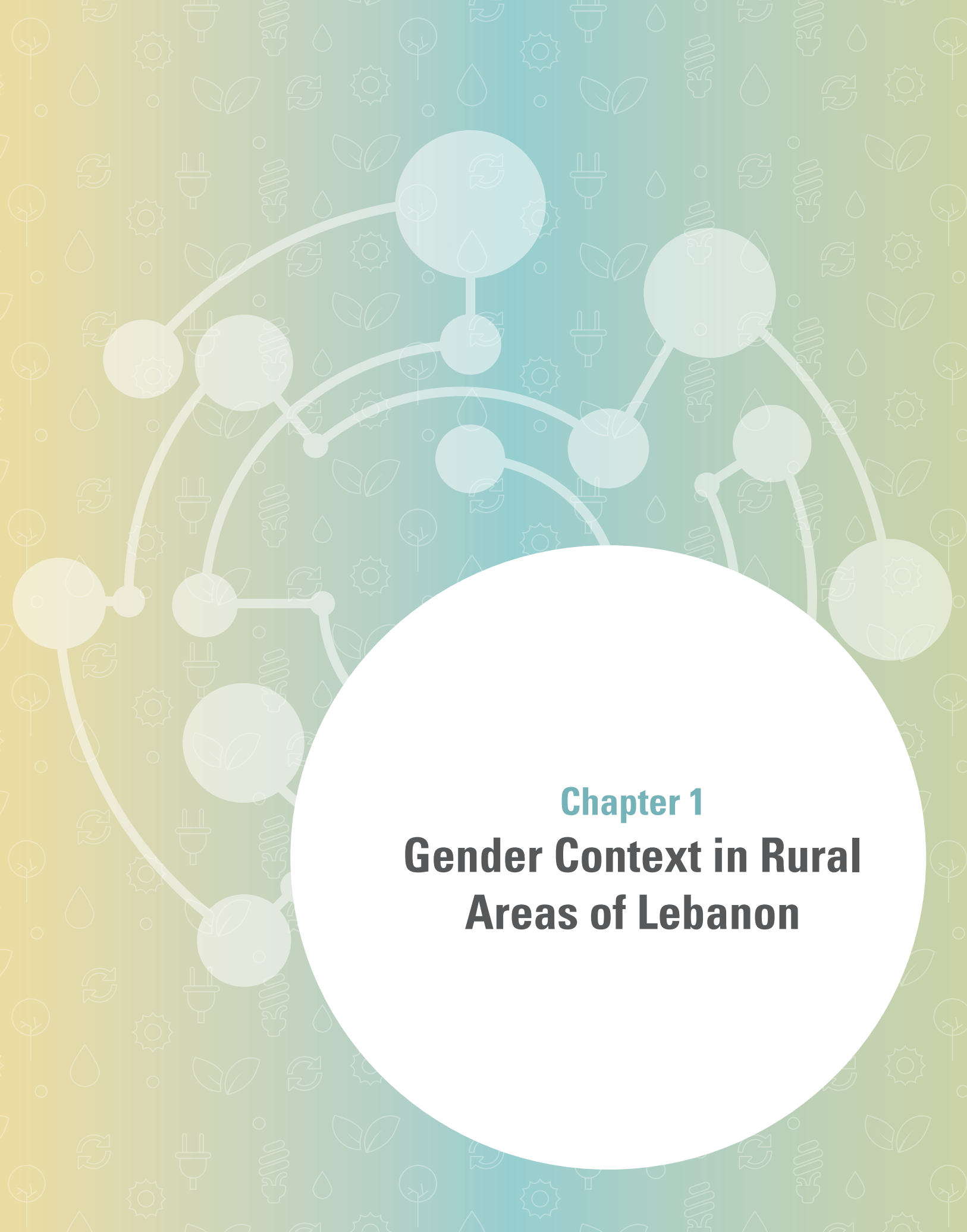
Within this context, ESCWA launched the "Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region" (REGEND), in partnership with the Swedish International Development Cooperation Agency (Sida). The main objective of the project is to improve the livelihoods, economic benefits, social inclusion and gender equality, in addition to satisfying the energy needs, of Arab rural communities, and of marginalized groups in particular. To achieve this, the project will focus on addressing energy poverty, water scarcity and vulnerability to climate change, by promoting pro-poor investments using appropriate small-scale renewable energy technologies for productive activities and entrepreneurial development. In addition, the project will showcase supporting initiatives meant to stimulate private sector investment, entrepreneurial development, and women's empowerment. Such initiatives would emphasize job creation and the development of robust value chains, in a nexus approach, so as to encourage a sustainable economy.

Prior to implementation, a gender assessment needs to be conducted, to provide a better understanding of the gender context in rural areas, and to highlight key issues related to women's employment and livelihood. This should be conducted with a focus on the barriers and challenges women face in accessing renewable energy technologies and employment, as well as on opportunities for entry points. The goal should be to promote economic opportunities for the private sector that encourage it to engage in renewable energy technologies, while placing women at the heart of such opportunities.

This report presents the findings of a detailed review and analysis of gender issues associated with energy services in Lebanon, focusing on the challenges and barriers rural women face in employment and entrepreneurship in the energy sector. Furthermore, it highlights the potential for gender mainstreaming, and identifies opportunities to support the local private sector,

and to promote and expand the use of small-scale renewable energy technologies, while emphasizing the environmental/climate benefits associated with them.

The report is comprised of four chapters. Chapter 1 introduces the gender context in rural areas in Lebanon, highlighting indicators and statistics related to gender (health, education, employment, and others), existing policies on gender mainstreaming, and key constraints on socioeconomic development in these areas, with a focus on gender. Chapter 2 focuses on gender mainstreaming in the energy sector, identifying key gender issues associated with energy services for productive activities, gender mainstreaming in enterprise and entrepreneurship promotion, and the gap in gender-energy data. Chapter 3 covers gender integration in the renewable energy sector, identifying the potential for gender mainstreaming, and opportunities to promote private sector investments in renewable energy technologies, as well as the challenges facing women's integration in the energy sector in rural areas. Chapter 4 of the report presents case studies from different countries, focused on the creation of economic opportunities for women in the renewable energy sector. Based on these examples, it identifies key issues that should be taken into consideration when choosing entry points for access to small-scale renewable energy technologies; indicators that should be considered when monitoring gender mainstreaming; and potential stakeholders that should be involved in the process. Finally, it provides recommendations on how to integrate all of this in a comprehensive approach to improve gender integration in the renewable energy sector, both at the policy and institutional levels.



Chapter 1

Gender Context in Rural Areas of Lebanon

1. Gender Context in Rural Areas of Lebanon

As gender inequality is widespread globally and in all cultures, the issues of gender equality and women's empowerment stand at the top of agendas across the world. In developing countries, gender disparity is exceedingly extensive, as compared with developed countries.[38] In Lebanon specifically, gender-based discrimination and inequalities are still prevalent, due to the various cultural, legal, and financial factors discussed in further detail in the sections below, despite the Government's efforts to improve the situation. Some progress has been made in terms of drafting and updating laws, but constraints remain deeply embedded in sociocultural norms, as well as in the Lebanese personal status law, alongside religious considerations. With the adoption of the SDGs, and in order to achieve its commitments on gender issues and its development objectives, Lebanon has laid out an action strategy aligned with SDG5: "Achieve gender equality and empower all women and girls".

The following presents an overview of gender equality, globally and in Lebanon, while highlighting the main statistics connected to population and families, as well as national policies concerned with gender mainstreaming and rural development, in Lebanon.

A. Gender equality in the global and local contexts

While equality does not mean that men and women have to become one and the same, it indeed implies that the rights, duties and opportunities of both men and women should not be determined by whether they are born male or female.[39] In that sense, equality between the two genders is seen as a human rights concern, as well as a requirement for and an indicator of more sustainable people-centred development.[40]

As defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO), gender equality means that men and women are offered equal opportunities to fully achieve their basic human rights, and accordingly to benefit from all aspects of development: socially, economically, culturally, and politically.[41]

Therefore, gender equality implies that the needs, interests, aspirations and priorities of both men and women are not only taken into consideration, but are also[42] equally valued by society. This would allow men and women to be full partners in their home, their community and their society, regardless of differences and similarities in the roles they play.[43]

From another perspective, gender equality is not only a human rights issue, but also an important factor for productivity, economic growth, education, healthcare and freedom.[44]

B. Gender equality in Lebanon

Lebanon has made some limited progress in promoting gender equality, empowering women, and engaging them in various sectors, so that they may take part in the sustainable development of the country. Every step forward that has been taken has been connected to legal and constitutional reforms. In this context, gender equality in Lebanon can be considered from four different perspectives:

a. *The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW):* in 1979, the United Nations adopted the CEDAW. Lebanon ratified the CEDAW[45] on 16 April 1997, but with reservations on various articles, namely article 9, paragraph 2 (on a woman's right to grant citizenship), article 16, paragraphs 1 (c, d, f, g) and 2 (on marriage rights), and article 29 (on interstate procedures).[46] By doing so, Lebanon has refuted the purpose and objectives of the CEDAW. Indeed, through these reservations, Lebanon effectively denies women the same rights as men in instances of marriage, divorce, and other family matters, in addition to maintaining the ban on Lebanese women passing on their nationality to their husbands and children;

b. *Gender mainstreaming:* in the late 1990s, Lebanon adopted gender mainstreaming in the collection and analysis of gender statistics;[47]

c. *The Millennium Development Goals (MDGs):* Lebanon was dedicated to achieving the MDGs 2000-2015, including goal G3: "Promote gender equality and empower women". However, the 2013 Lebanon Millennium Development Goals Report, submitted by the United Nations Development Programme (UNDP) and the Council for Development and Reconstruction (CDR), revealed that various gaps persist in the economic and political fields, due to "entrenched sociocultural, political, legal and structural factors that contest women's rights as equal citizens in Lebanon".[48] Once again, Lebanon had failed to implement its international commitments and remained far from achieving gender equality;

d. *SDGs:* In 2015, all of the countries that had endorsed the MDGs, including Lebanon, committed themselves once again to achieving gender equality and empowering women, through SDG5 of the 2030 Agenda for Sustainable Development.[49]

SDG5 emphasizes the fact that gender equality is not only a fundamental human right, but also one of the indispensable foundations for peace, development and sustainability, at the social as well as the economic level.[50] In accordance with the main objectives of this goal, Lebanon has made various efforts to achieve gender equality by reducing discrimination and empowering women, but those efforts remain scarce.[51]

Despite their seemingly favourable position, Lebanese women continue to face discrimination at numerous levels and in different aspects of their social, economic, and political rights.[52] In its 2012 gender assessment for Lebanon, the United States Agency for International Development (USAID) identified a number of constraints, rooted in persistent archaic laws and regulations, patriarchal sociocultural values, as well as current political systems and national public policies.[53]

C. Gender equality in statistics

At many levels, the unequal condition of women in Lebanon is a reflection of the country's deficient political and social structures. What follows is an analysis of the main statistics and indicators for the Lebanese population, to which the main obstacles to gender equality and women's empowerment can be traced back.

The following sections present factors that affect gender equality and women's empowerment, focusing on the four fundamental areas considered by the Global Gender Gap Index,[54] and examine the existing gap between men and women:

a. *Economic participation and opportunity:* this area covers three gaps between men and women: the participation gap, based on the difference in workforce participation rates; the remuneration gap; and the gap in advancement in high-level and technical positions[55];

b. *Educational attainment:* this area addresses the gap between women and men's current access to primary, secondary and tertiary level education;[56]

c. *Health and survival:* this area provides an overview of the differences between women and men's health, using two indicators: sex ratio at birth and the gap between women and men's healthy life expectancy. This sub-indicator takes into account the years spent in situations of violence, disease, malnutrition and other significant factors;[57]

d. *Political empowerment:* this area measures the gap between men and women at the highest level of political decision-making, in ministerial and parliamentary positions.[58]

Table 1 indicates for Lebanon in each area: a rank out of 149 countries, from the 2018 Global Gender Gap Index; a score ranging from 0.00

Table 1 Economic participation and opportunities for Lebanon

Country score card for Lebanon					
Economic participation and opportunity					
General country rank (1-149)	136				
General country score (0-1)	0.432				
	Rank (1-149)	**Score (0-1)**	**Female (%)**	**Male (%)**	**Ratio f/m (0-1)**
Labour force participation	139	0.340	25.9	76.2	0.34
Estimated earned income (PPP, $)	137	0.251	5.877	23.411	0.25
Legislators, senior officials and managers	137	0.092	8.4	91.6	0.09
Professional and technical workers	81	0.933	48.3	51.7	0.93
Educational attainment					
General country rank (1-149)	110				
General country score (0-1)	0.959				
	Rank (1-149)	**Score (0-1)**	**Female (%)**	**Male (%)**	**Ratio f/m (0-1)**
Literacy rate	98	0.934	88.1	94.3	0.93
Enrolment in primary education	124	0.938	83.5	89.1	0.94
Enrolment in secondary education	1	1.000	65.0	64.8	1.00
Enrolment in tertiary education	1	1.000	45.8	39.6	1.16
Health and survival					
General country rank (1-149)	122				
General country score (0-1)	0.967				
	Rank (1-149)	**Score (0-1)**	**Female (%)**	**Male (%)**	**Ratio f/m (0-1)**
Sex ratio at birth	1	0.944	N/A	N/A	0.95
Healthy life expectancy	31	1.020	66.8	65.5	1.02
Political empowerment					
General country rank (1-149)	147				
General country score (0-1)	0.024				
	Rank (1-149)	**Score (0-1)**	**Female (%)**	**Male (%)**	**Ratio f/m (0-1)**
Women in Parliament	146	0.049	3.7	95.3	0.05
Women in ministerial positions	143	0.036	3.4	96.6	0.04
Years with a female head of State	71	0.000	0.0	50.0	0.00

Source: World Economic Forum, 2018.

for inequality to 1.00 for equality; as well as a female/male ratio ranging from 0.00 for imparity to 1.00 for parity. A ratio above 1.00 indicates that the proportion of women exceeds the proportion of men for a particular index.

With a population of 6,100,075 people[59] in 2018, a population growth rate of 0.72 per cent, and a population sex ratio (female/male) of 0.99[60] in the 2018 Global Gender Gap Index of the World Economic Forum, Lebanon ranked 140th, out of 149 countries in the world, and tenth, out of 14 Arab countries.[61]

Upon closer examination of the ratio (female/male) of the indexes of every sub-indicator, it is clear that women still face gender inequality at all levels and in all areas. In terms of economic participation, women have a lower rate of participation in the workforce (25.9 per cent) than men (76.2 per cent), resulting in a ratio of 0.34. Women in high-level positions only represent 8.4 per cent, as compared with 91.6 per cent for men, producing a ratio of 0.09. Conversely, in terms of enrolment in tertiary level education, women have a higher rate of integration, at 45.8 per cent, as compared with 39.6 per cent for men. This provides a ratio of 1.16, meaning that, for this particular index, there is no inequality, since it is above 1.00. When it comes to healthy life expectancy, women are expected to have a higher rate of healthy life expectancy, at 66.8 per cent, as compared with 65.5 per cent for men, and with a ratio of 1.02. In terms of political participation, women are still underrepresented in parliamentary positions, with a ratio of 0.05, as well as in ministerial positions, with a ratio of 0.04.

Focusing further on each indicator, the following tables provide more details on Lebanon: population and family; access to education; health; participation in the economic sector; political leadership; power and decision-making; poverty and living conditions.

Table 2 Population and family indicators

Population and family			
	Female	**Male**	**Value**
Age and sex structure of the population (0-14 years)	694 453	728 025	23.32%
Age and sex structure of the population (15-24 years)	477 784	500 592	16.04%
Age and sex structure of the population (25-54 years)	1 363 386	1 398 087	45.27%
Age and sex structure of the population (55-64 years)	267 747	241 206	8.34%
Age and sex structure of the population (65 years and over)	243 015	185 780	7.03%
Average length of single life	28.3 years	32.3 years	0.88 (score 0-1)
Proportion married by age 25	19.3%	2.9%	6.64%
	Value		
Total population	6 100 075		
Growth rate	0.72%		
Mean age of women at birth of first child	30 years		
Women's unmet demand for family planning	12.00%		
Parity of parental rights in marriage	Partial		
Parity of parental rights after divorce	No		
Fertility rate	1.7 births per woman		

Source: World Economic Forum, 2018; CIA, 2019; World Bank, 2018a.

As shown in table 2, Lebanon has a fairly low population growth rate, of 0.72 per cent, which places it in an advanced stage of transition. Nevertheless, Lebanon has a somewhat young population, since the proportion of those aged 15-24 is 16.04 per cent, and those of working age (25-54) represent the highest proportion, at 45.27 per cent. The proportion of elderly people (65 and older) remains small, at 7.03 per cent, and is dominated by women. With the exception of the latter group, the number of women and men is almost equal in all age groups.

Economic and societal changes in recent decades, like the urbanization of the population and the rising rates of educational attainment, have had important effects on the timing and character of marriage. Indeed, there has been a shift towards a later age of marriage, at an average of 28.3 years for women and 32.3 years for men. In addition, household size is of around four persons in Lebanon,[62] and since it is connected to fertility rate, Lebanon is considered to have a low fertility rate, at 1.7, which is below the replacement-level rate of 2.1.[63]

Though Lebanon was ranked 110th out of 149 countries for educational attainment by the World Economic Forum in 2018, some analysts consider the Lebanese education system to perform quite well, as compared with those of neighbouring countries. However, critics point out that equity remains one of the main challenges it faces.[64] Approximately two thirds of Lebanese children attend private schools, making public schools the least appealing choice for families.[65] With no tuition fees, public schools are left to those who cannot afford the cost of private ones. This has given rise to a noticeable gap in educational standards between private and public schools, despite the adoption of a National Education Strategy Framework (2011-2015) that promotes freedom and equal educational opportunities for all Lebanese citizens.[66]

Although these problems affect all of the student population in the country, they are likely to have a larger impact on female students. Females remain those most affected by traditional and patriarchal cultural and social values.[67] Thus, as shown in table 3, female children are more likely to be dropped out of school, at a rate of 19.2 per cent, as compared with 13.7 per cent for male children. Males also seem to have better educational attainment at the primary level, in a proportion of 82.5 per cent, as compared with 74.7 per cent for females. All of this indicates unequal access and participation for women, when it comes to educational attainment.

Table 3 Access to education indicators

Education and skills — access to education			
	Female (%)	Male (%)	Value Score (0-1)
Out of school – children	19.2	13.7	1.40
Primary educational attainment – adults	74.7	82.5	0.91
Out of school – youth	33.6	33.9	0.99
Secondary educational attainment – adults	32.5	33.4	0.97

Source: World Economic Forum, 2018.

Table 4 Health indicators

Health			
	Female (%)	**Male (%)**	**Value (score 0-1)**
Mortality, children under age 5	0.4	0.4	0.87
Mortality, non-communicable diseases	15.0	17.3	0.87
Mortality, infectious and parasitic diseases	0.1	0.2	0.57
Mortality, accidental injuries	0.7	1.4	0.52
Mortality, intentional injuries, self-harm	0.2	0.5	0.31
	Value		
Legislation on domestic violence	Yes		
Prevalence of gender violence in lifetime	35.0%		
Law permits abortion to preserve a woman's physical health	No		

Source: World Economic Forum, 2018; Avis, 2017 (the UNFPA study was conducted in 2002).

With its ratification in 1972 of the International Covenant on Economic, Social and Cultural Rights, adopted by the United Nations General Assembly in 1966 and coming into effect in 1976, which enshrines health care as a fundamental human right, Lebanon pledged to provide its citizens with satisfactory health care. Lebanon has made significant efforts to improve its health services in recent years, and was ranked 122nd out of 149 for health and survival by the World Economic Forum in 2018. The results shown in table 4 seem to confirm this improvement, especially when it comes to gender equality. Thus, the mortality rate for children under the age of 5 is of 0.4 per cent for both genders, and for every other mortality category, the rate is lower for women than for men. For example, the rate of mortality by accidental injuries is of 0.7 per cent for women and 1.4 per cent for men. However, important gaps persist in the delivery of health services. Women and girls from poor social backgrounds or living in rural areas are generally those most affected by limited and poor services.[68]

Regarding gender-based violence (GBV), Lebanon has no legislation for domestic violence, and the Lebanese legal system does not offer any tools for monitoring violations. That is why many civil society organizations are working and lobbying for policies and changes geared towards the prevention and recognition of GBV.

Nevertheless, since it became one of the primary goals of its National Strategy for Women 2011-2021,[69] Lebanon has made some progress in addressing GBV, especially with the passing of the Law on the Protection of Women and Family Members from Domestic Violence in April 2014. However, the law has various flaws, among which can be cited the failure to recognize marital rape, and the primacy of the personal status law, which is intrinsically discriminatory. In a study conducted by the United Nations Population Fund (UNFPA) in 2002,[70] out of the 1,415 women interviewed, 35 per cent had been victims of domestic violence.

The Lebanese labour market is characterized by low employment rates, and especially by a low contribution of women to economic life. Although the Lebanese labour law (a decree issued in 1965) states that men and women undertaking the same job must receive the same remuneration, this is not applied in practice, according to the Institute of Women's Studies in the Arab World.[71] The lack of strong laws and policies that support women in the labour force has led to further discrimination in the workplace.[72] Moreover, women in Lebanon are more likely to opt for wage-employee types of work, rather than be self-employed or entrepreneurs.

Table 5 Participation in the economic sector

Participation in the economic sector	
Economic leadership	
	Value
Law mandates equal pay	No
Advancement of women to leadership roles	0.58 (score 0-1)
Firms with female (co-) owners	0.77 (score 0-1)
Firms with female top managers	0.05 (score 0-1)
Employers	0.44 (score 0-1)
Access to assets	
Women holding accounts at financial institutions	0.53 (score 0-1)
Women's access to financial services	Partial
Inheritance rights for daughters	No
Women's access to land use, control and ownership	Partial
Workforce	
Non-discrimination laws for hiring women	No
Unemployed adults	2.07 (score 0-1)

Source: World Economic Forum, 2018.

When it comes to economic participation, women's participation remains relatively low, despite higher educational attainment. Women tend to occupy lower positions and lower paid jobs, with few reaching senior or top positions. Thus, only 5 per cent reach top management positions, as compared with 95 per cent for men; and only 32.9 per cent hold an account at a financial institution, as compared with 62.4 per cent for men, resulting in a score of 0.53.[73] The unemployment rate is also higher for females, at 10.4 per cent, than it is for males, at 5.0 per cent, resulting in a score of 2.07.[74]

In fact, according to the CAS, the unemployment rate in 2009 was of 6 per cent. In 2012, the World Bank estimated it at 11 per cent, while the Ministry of Labour estimated it to range from 20 to 30 per cent.[75] Overall, unemployment rates are higher for women (18 per cent in 2010) than they are for men (9 per cent in 2010), and are particularly high among the youth (34 per cent).[76]

Informality in businesses and in employment has become a significant feature of the Lebanese labour market, and one that is growing in some sectors more than in others. With the current Syrian crisis, the employment of displaced Syrian workers has occurred entirely in the informal sector, according to the World Bank's estimates, increasing the rate of informality by 10 per cent across all economic sectors.[77]

Table 6 Political participation

Political leadership – power and decision-making	
	Value
Year women received the right to vote	1952
Years since any women received the right to vote	65
Number of female heads of State to date	0
Voluntary political party quotas	0
Highest number of female ministers per Government	4 out of 30
Highest number of female Members of Parliament per term	6 out of 128

Source: World Economic Forum, 2018.

Politics in Lebanon have traditionally been a male-dominated sphere that has fundamentally excluded women, regardless of their qualifications. As a result, Lebanon was ranked 147th out of 149 for political empowerment of both genders by the World Economic Forum in 2018. Women were totally absent from the Council of Ministers until 2004, when the first female minister was appointed.[78] Due to the profoundly patriarchal structure of the Lebanese society, the absence of women from decision-making positions is quite evident. After 65 years of receiving the right to vote, the political participation of women remains almost non-existent. To date, there have been no female governors in Lebanon. However, following the 2018 Lebanese parliamentary elections, 6 female Members of Parliament out of 128 were elected, accounting for 4.7 per cent of Parliament. 4 female Ministers out of 30 were subsequently appointed, accounting for 13.3 per cent of the Cabinet. It is worth mentioning that, for the first time in Lebanon's history, a woman was appointed to head the Ministry of Interior and Municipalities, while another was appointed to head the Ministry of Energy and Water. Nevertheless, the country's religious and political communities remain dominated by the male members of leading families, which makes women's participation difficult.[79]

At 7 per cent, Lebanon has the widest poverty gap of all Arab countries. Meanwhile, according to the CAS, Lebanon has improved sanitation access at 80.7 per cent, as well as access to drinking water sources at 99 per cent, in both urban and rural areas.

Lebanon still presents, within all of its 18 religious confessions, a distinguishable pattern of women having fewer rights when it comes to divorce, custody and inheritance.[80] Gender inequality in Lebanon is not only rooted in the country's patriarchal society, but also encouraged by religion and culture, based on the belief that women are the property of men.[81]

D. National policies aimed at reducing gender inequality

In order to achieve the ultimate goal of gender equality, gender issues should be integrated into national policies, so as to reduce discrimination against women and achieve justice and equality. That is the goal of the gender mainstreaming process: ensuring that men and women have equal access to resources, employment, authority and decision-making. In that sense, gender mainstreaming is a strategy for achieving the goal of gender equality.[82] Since gender equality is a cross-cutting issue, this can be done by focusing on several areas, such as education, health, agriculture, poverty reduction and the labour market.[83]

Table 7 Poverty and living conditions

Poverty and living conditions	
	Value (%)
Poverty gap	7.0
National safely-managed drinking water access	48
National basic service drinking water access	40
National limited service drinking water access	7
National safely-managed sanitation access	22
National basic service sanitation access	77
National limited service sanitation access	1

Source: Joint Monitoring Programme, 2019; ESCWA, 2017.

When it comes to gender mainstreaming, the Government attempted to group together the different conventions and policies focusing on the promotion of women's rights in all financial, economic, political and social areas. It thus had a single entity supervise the implementation of the goals of both the CEDAW and the 1995 Fourth World Conference on Women in Beijing: the National Commission for Lebanese Women (NCLW), established in 1998.[84] The main mission of the NCLW is to ensure gender mainstreaming in public institutions, by assigning gender focal points in each ministry; overseeing the implementation of international conventions and goals; creating a knowledge database for monitoring progress towards human rights and women's rights; and encouraging the exchange of knowledge and best practices in relation to gender advancement, between Lebanese governmental and non-governmental institutions at the local and global levels.

The National Strategy for Women in Lebanon (2011-2020) and the National Action Plan were developed by the NCLW in 2012, in close collaboration with line ministries and feminist organizations, and with the support of UNFPA.

Recently, in a joint project with the German Government through GIZ, six gender auditors were trained, by three members of the NCLW, to carry out gender audits in different institutions, and to ensure that women are at the core of any activity, whether in international organizations or corporations.

Additional efforts were made following the creation of the Office of the Minister of State for Women's Affairs (OMSWA) in 2016, which is mainly responsible for implementing SDG5 ("Achieve gender equality and empower all women and girls") and ensuring gender mainstreaming in SDG17 ("Partnerships" for the goals). In 2019, OMSWA was renamed the Ministry of State for Economic Empowerment of Women and Youth, and began focusing almost entirely on women's economic empowerment, developing a five-year strategy for promoting the economic empowerment of women in Lebanon.

E. Gender Equality in a Rural Context – Key Constraints

While gender inequality remains a main issue, further inequalities and disparities can be found in the rural areas of Lebanon. The income of the rural population relies primarily on agricultural activities. This situation of dependency makes their living conditions and income unstable, in view of their vulnerability to climate and weather events. In addition, numerous constraints, such as insufficient access to basic infrastructure (e.g. electricity, water, sanitation and roads) and lack of access to public and vital services (e.g. education, health, markets, labour markets, and social capital), make their situation even worse, reducing them to extreme poverty.[85] Poverty is indeed closely linked to poor access to basic infrastructure and essential vital services. At the same time, malnourishment affects the future of young generations, and leads to learning difficulties, health problems and lower productivity.

A recent report by the Food and Agriculture Organization of the United Nations (FAO) notes that the rural population in Lebanon accounts for a relatively low proportion of 12 per cent of the total Lebanese population. Agriculture-related activities are their main source of revenue, with 91 per cent of farmers being male and heads of households. Women farmers constitute 9 per cent of the total number of farmers, and are characterized by an increased incidence of poverty.[86]

The situation of women and the division of gender roles in Lebanon varies slightly between urban and rural areas. While there has been some progress in terms of women's employment


© Author

in urban areas, women in rural areas still fulfil their traditional role: bearing responsibility for all aspects of household management and care, such as cleaning, cooking, laundering, keeping food stocks and caring for children. Men on the other hand are responsible for family and health expenses. Women's role in agriculture is most often unrecognized, as it is considered part of their housekeeping activities, and is thus not integrated in formal employment. According to an unpublished study by the National Observatory for Women in Agriculture and Rural Areas (NOWARA), agriculture is the main activity of 48 per cent of rural women, who contribute to the sector at various stages, such as planting, harvesting, post-harvesting and processing. Their role in the sale and marketing of agricultural products is marginal.[87]

Inequalities and discrimination greatly affect women in Lebanese rural areas, where they remain subject to a patriarchal society that limits freedom of choice for women and girls. In fact, the main factors affecting women's empowerment in Lebanon, and especially in rural areas, are connected to the social, economic and legal environment, and in turn lead to increased poverty, poor access to education and health services, and limited access to and control over economic resources.

Lebanese laws are still in need of both reform and enforcement, as they currently tend to reinforce the patriarchal system and prevailing social norms, and to further limit women's access to opportunities. Prominent among the laws that have the most severe impact on women is the personal status law, which covers areas like marriage and inheritance, where discrimination is the most acute. Modifications have been made to the law, especially when it comes to domestic violence and children's custody, but they remain insufficient and subjected to the power of religious authorities. Discriminatory inheritance laws, the inability to grant one's children nationality, and the absence of a minimum age for marriage, affect women's status nationwide, with rural women

being more vulnerable and more negatively affected. Inheritance has the greatest impact on rural women, as it affects their access to assets (such as land), and limits their economic opportunities in terms of access to financing, since obtaining loans is conditional on providing collaterals. Thus, should they wish to start their own business or farming project, they would require guarantees from their husbands or custodians. Currently, rural women suffer from poor access to productive resources, ranging from a lack of sufficient capital to a lack of appropriate technology and job opportunities, outside of the agricultural sector, in addition to the inability to own or inherit land.[88]

The absence of regulations setting a minimum age for marriage greatly affects girls in rural communities, as it deprives them of educational opportunities and of the chance to pursue higher education and professional careers, thus restricting their role to home management and giving birth to children. While regulations alone would not be sufficient to drastically change the current status of women, they represent an important step towards cultural change and challenging social norms, one that should lead to improving women's access to economic opportunities, especially in rural areas.

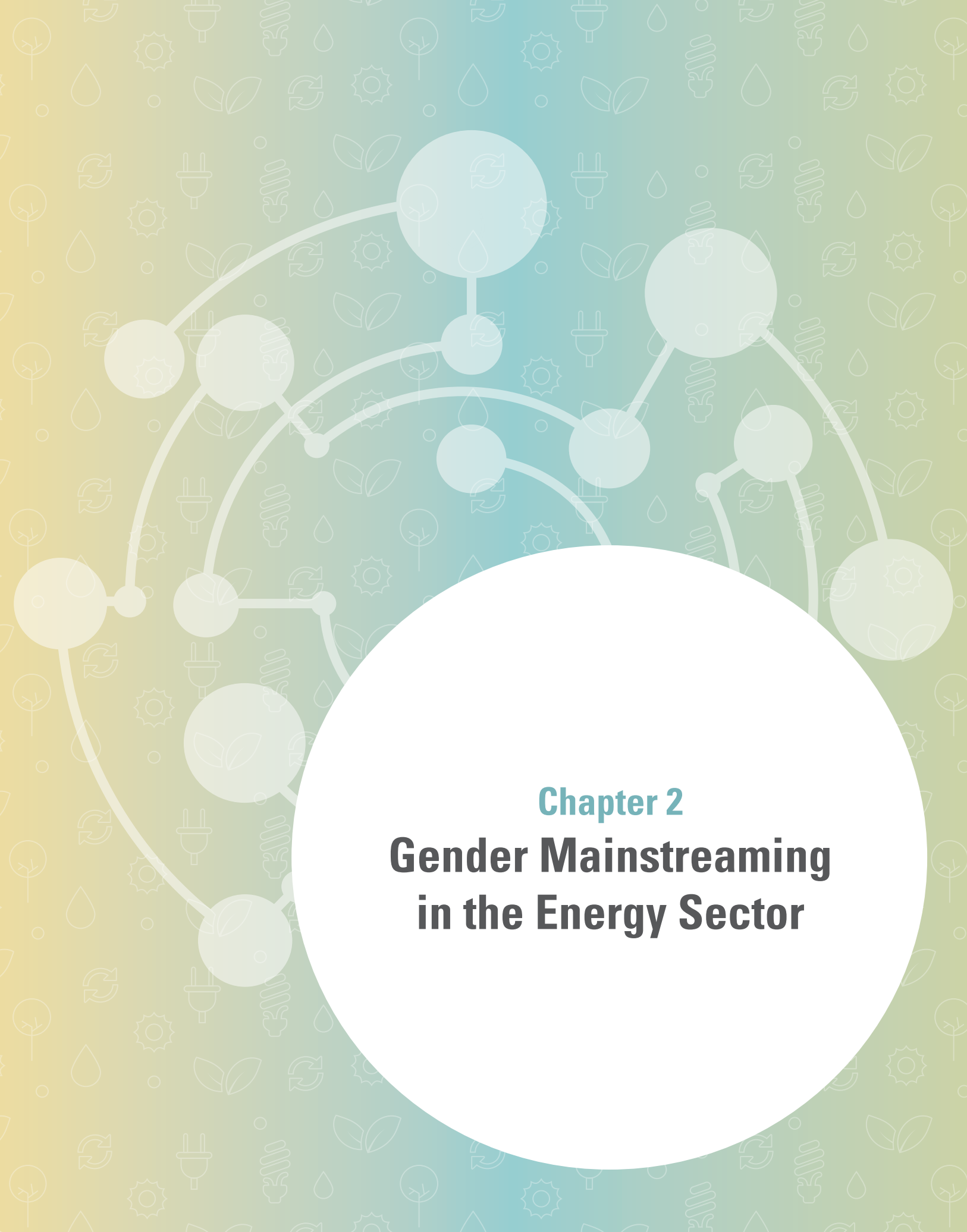
Alongside the personal status law, the Lebanese labour law is also discriminatory against women, and especially rural women working in the agricultural sector, as it prevents them from obtaining basic social protections. While this affects all workers, both men and women, who work in the agricultural sector, women are more affected due to the added vulnerability imposed on them by the country's personal status law.

According to the labour law, agricultural workers can only benefit from the National Social Security Fund if they are employed on a full-time basis, which is rarely the case today. Indeed, almost 75 per cent of women working in agriculture are hired on a seasonal or daily basis, and are thus unable to benefit from such security. Added to that is the previously mentioned lack of recognition for women's role in agriculture. All of this weakens the position of rural women in terms of decision-making, and results in the marginalization of their participation in the economic cycle.

Many laws and regulations remain discriminatory when it comes to women's status in society, but the prevailing cultural and social norms are even more detrimental to women's empowerment, be it in rural or urban areas. Indeed, traditions and stereotypes consider women inferior to men in society, and perceive them as possessing fewer of the skills needed for employment. Furthermore, in rural areas, women are not expected to generate income for their families. It is the man who is the main decision maker, and the one responsible for taking care of the family. Women can only work after completing their household duties, and reassuring the men that they have prioritized their family over their career. Moreover, women often lack awareness of their own civil rights, and taboo culture further prevents them from accessing such rights, as they are often threatened with losing their children's custody, all of which leaves them subjected to the authority of men.

These cultural norms limit women's mobility and their ability to allocate time for work. They prevent them from accessing job opportunities in neighbouring regions, or even starting their own businesses, for fear of not being able to achieve the work-family balance, all of which limits their economic participation and their contribution to rural development.

In that sense, rural women should receive special consideration in current or future interventions, given the constraints they face and their greater vulnerability, as compared with women in urban areas. Such interventions should be designed without the need for mobility in rural areas, and they should require a shared commitment both from society and the political leadership.



Chapter 2

Gender Mainstreaming in the Energy Sector

2. Gender Mainstreaming in the Energy Sector

Gender and energy represent a substantial part of the 2030 Agenda for Sustainable Development. Gender mainstreaming is also considered to improve projects, ranging from energy access to electricity and infrastructure, in a more effective way, and to result in increased benefits for both women and men. Thus, international organizations, such as FAO, have integrated energy access as a main focus in all rural development projects. The following sections provide information on key gender issues associated with energy services in rural areas, existing policies for gender mainstreaming in rural economic development, and the gender data gap as it pertains to Lebanon.

A. Existing policies and strategies for energy sectorial development – gender perspective

In Lebanon, renewable energy is the key to various potential solutions, aimed at overcoming some of the challenges the country faces. Of these, the high dependency of the Lebanese electricity sector on imported fossil fuels for power generation and thermal use can be cited.[89]

Through NEEAP and NREAP, the Lebanese Government has been decisive in setting goals for the improvement of the country's energy efficiency and the growth of its renewable energy capacity. It should also be noted that among the main goals of those action plans is that of providing employment opportunities for Lebanese workers of various backgrounds and levels of qualification.

There are many advantages today to employing clean energy technologies such as: solar PV, solar water heating, wind energy and bioenergy.

a. **Solar PV** is already a well-established sector in Lebanon. To upscale the capabilities of this technology, the Lebanese Government is working towards signing power purchase agreements (PPAs) with the private sector for the construction and operation of utility-scale solar PV farms;
b. **Solar water heating** is by far the most developed renewable energy technology in Lebanon, and the country's target for 2020 is to reach 1 million m^2 of installed collectors;
c. The **wind energy** sector is new to Lebanon, but the Lebanese Government signed PPAs in 2018 with three private developers, to build and operate three wind farms totalling 226 MW in the northern Governorate of Akkar. The wind farms are slated to become operational in 2021;
d. **Bioenergy** represents an additional technology option and another link in the renewable energy chain, one that offers potential synergy with various other sectors, such as water treatment and waste management. However, it remains absent from the Lebanese Government's long-term plans.

Those renewable energy technologies can contribute to the decentralization of the power supply, and foster job creation in the future, as well as provide job opportunities during their development, both for skilled and unskilled workers.

Despite considerable employment opportunities, women, as previously mentioned

in the report, have a very limited presence in the energy sector, and more specifically in the renewable energy sector, being mostly employed in administrative or customer service jobs. Lebanese women are playing almost no role in the renewable energy field, and very few of them are contributing to the design of PV installation systems. In addition, rural women in particular are still stuck in the same old agricultural jobs.

The situation of rural women could be improved in the coming years, by prioritizing the renewable energy sector in the Government's economic growth strategy (which would align it to a certain extent with the prioritized sectors of the Conférence Economique pour le Développement, par les Réformes et avec les Entreprises (CEDRE) donor conference), and by raising awareness about the existence of various financing schemes. Rural women's participation and access to various financial and natural resources could thus be increased, either by exploring employment opportunities or by creating their own SMEs, in the renewable energy sector.

In terms of job creation and business income generation, Lebanon Crisis Response Plan (LCRP) 2017-2020 highlights the need to focus on vulnerable populations, such as rural women, and to increase their self-sufficiency through better access to stable and sustainable job opportunities. The work carried out to date in that respect has focused on improving decent work conditions, and singled out women and youth as priority targets for all such interventions. Women and youth across the country have benefited, in different interventions carried out by various organizations, from skills trainings in different fields, but this has not necessarily led to their integration in the labour market. Areas of training have ranged from food processing, sewing, and beauty care, to specific agricultural trainings, entrepreneurship, and so on. The plan in the coming three years is to increase access to income-generating activities and employment for women and youth, through different schemes, from supporting business start-ups to launching apprenticeship/internship programmes. Furthermore, targeted interventions will focus on providing child-friendly spaces for women, to increase their mobility and help them access income opportunities through home-based activities.

But even with the unwavering commitment of the Lebanese Government to increase the economic, social, financial, and political participation of women, and despite their ability to play leading roles in various fields, women in Lebanon still face discrimination and marginalization at many levels, especially as gender mainstreaming remains unenforced by most ministries and public institutions.

B. Identifying gender-energy related data availability and gap

As women are generally represented as passive users and consumers of renewable energy, policymakers do not recognize the existence of gender needs in energy services. As a result, women's energy needs tend to be marginalized in policy documents, and energy planning tends to be gender-blind as well.[90]

In Lebanon, the focus on gender in the analysis, formulation and development of national policies is not adequately supported by gender statistics, and this represents a major obstacle for projects on gender. Gender statistics are concerned with classifying, generating, publishing and analysing statistics to understand how gender issues affect both individuals and the society.

Major gaps persist not only in gender-related issues, but also in terms of the linkage between renewable energy and gender in Lebanon, particularly in rural areas.

Gender statistics on energy access are unavailable, whether at the policy or local level.

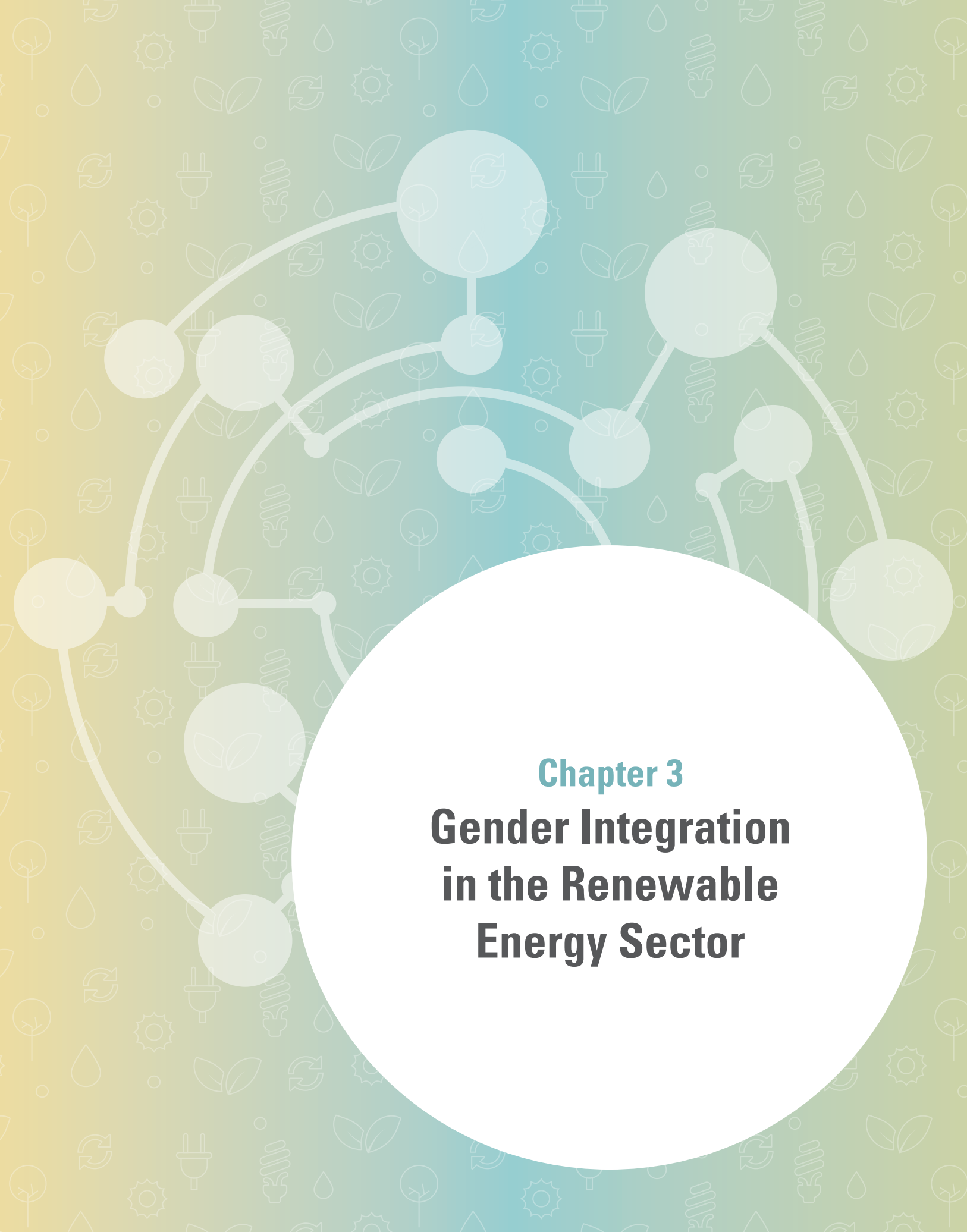
© Author

The only information available is on a global level, with IRENA estimating that women account for 32 per cent of workers in the renewable energy sector, and for less than 25 per cent of workers in the energy sector as a whole.[91] A study conducted by the World Bank in 2018 on female talent in the energy sector indicates that most students pursuing an education in energy studies opt for petroleum and petrochemical programmes, while only 20 per cent enrol in renewable energy or energy efficiency programmes, and 12 per cent in general energy programmes. In terms of gender, there are more women enrolled in renewable energy and general energy educational programmes, amounting to around 47 per cent of students, as compared with 25 per cent in petroleum studies.[92]

Other data pertaining to gender and employment are not available, especially concerning:

a. The participation of rural women in the energy sector, including renewable energy;
b. Occupations and positions available in the renewable energy sector by gender;
c. Potential job creation for women, be it employment-based or entrepreneurial, in the renewable energy sector.

The lack of both quantitative and qualitative gender-disaggregated data further complicates and hinders energy policy planning and implementation. When policy makers are not able to obtain a clear picture of the current status of women in the energy sector, be it in urban or rural areas, they cannot work on gender mainstreaming plans or develop projects connected to women's economic empowerment in the renewable energy sector. Incorporating gender statistics that reflect the current situation can help design policies and implement projects in the energy sector that would benefit both women and men. Improving women's participation and their access to energy sources would contribute to gender equality and women's empowerment. Women should be involved in decision-making roles from which they have traditionally been excluded,[93] and interventions should be planned to promote women's employment and entrepreneurship in the energy sector.



Chapter 3

Gender Integration in the Renewable Energy Sector

3. Gender Integration in the Renewable Energy Sector

Renewable energy accounts for almost 4 per cent of total electricity production in the country, mainly via hydropower and solar PV, while the rest is generated from fossil fuels.[94] The national target of increasing the share of renewable energy to 12 per cent of total power production by 2020 will help create new economic opportunities, and positively impact the livelihoods of people in the country. However, in the action plan and strategies designed to achieve the national target, gender integration in the sector is neither clearly identified nor planned. Gender mainstreaming was recently adopted and has resulted in the assignment of gender focal points in all ministries, including the Ministry of Energy and Water. However, no concrete action has yet been planned or taken to ensure gender mainstreaming in different ministerial functions and projects. Likewise, plans to increase the opportunities and benefits of equal access to renewable energy sources among genders have not yet been fully developed or implemented. Knowledge of the different factors that affect both genders' access to, participation in, and control over renewable energy resources is a pre-requisite for designing strategies aimed at increasing women's participation and control in the renewable energy sector, particularly in rural areas. The following sections present an overview of the key cultural, social, economic, legal, and political factors that affect women's participation and advancement in the sector, as well as the barriers and challenges faced by women, especially in rural areas. They also identify key opportunities or entry points for supporting women and encouraging them to break barriers in the renewable energy sector.

A. Overview of renewable energy development in lebanon

One of the first initiatives undertaken in Lebanon in terms of renewable energy in rural areas was in Ammiq, in the Bekaa, where a 300-kW wind turbine was installed and used for agricultural irrigation. Another initiative was undertaken by the UNDP CEDRO project in 2009, in which 25 small-scale solar PV systems, ranging between 1.125 and 1.8 kilowatt-peak (kWp), were installed in rural villages in the Bekaa, Akkar and the South, with a unique system design enabling dual operation: on-grid and stand-alone off-grid with batteries. The project was mainly focused on providing a reliable and continuous supply of electricity to public sector entities. The MED-Solar project, on the other hand, had as its target the implementation of solar systems in rural areas with a capacity above 100 kWp, attempting for the first time to integrate three power sources: the grid, solar PV, and on-site generators, alongside battery storage for critical loads. Two facilities located in villages and used in the agricultural sector benefited from the project, thereby making solar PV systems the most common renewable energy application in both rural areas and the agricultural sector.

Within the framework of LCRP, international organizations and aid agencies implemented renewable energy systems in rural areas where dense populations of refugees were putting additional pressure on the electricity grid. Those energy models came either in the form of solar PV street lights for municipalities, or residential solar lighting kits for lighting and basic low-power loads. Some programmes provided stoves and briquettes for heating, but as a one-time

delivery, not as part of an overall long-term plan to increase the integration of renewable energy in those areas.

At the national level, by the end of 2017, 35.45 MWp of decentralized small-scale solar PV capacity had been installed and made operational throughout the country. 10 per cent of the latter (3.53 MWp) are installed in the agricultural sector, with the share of individual rural governorates being as follows:

a. 19 per cent (6.77 MWp) in the Bekaa.
b. 6 per cent (2.18 MWp) in Baalbek-Hermel.
c. 1 per cent (0.48 MWp) in Akkar.

This installed capacity is estimated to generate 53,000 megawatt-hours (MWh) per year.[95]

B. Key gender issues and challenges facing women's integration in the renewable energy sector: access, benefits, and control

1. Key gender issues linked to energy access

There are a number of factors specifically connected to gender equality and energy that lead to different access to energy resources for men and women, which in turn results in gender inequalities that limit economic opportunities for women. Without access to modern energy services, rural women in particular have to devote extensive amounts of time and effort to performing basic subsistence tasks, which prevents them from accessing decent wage employment, educational opportunities and livelihood enhancing options.[96] As a result, women today constitute up to 70 per cent of the rural poor; they only earn 10 per cent of the world's income, and only own 1 per cent of the world's property. Moreover, women make up two thirds of the total number of illiterate people in the world. They are therefore the ones most affected by scarcity of access to energy.[97] In addition, women remain marginalized from decision-making processes when it comes to the energy sector.

In developed countries, the proportion of female employees in the energy industry is estimated at only 20 per cent.[98] Moreover, women occupy around 19 per cent of all ministerial posts, but only 7 per cent of these are in energy, environment, and natural resources, and a mere 3 per cent are in science and technology.[99] At the same time, fewer women than men pursue training in science, technology, engineering and mathematics (STEM) fields, which provide the skills necessary to access many green jobs.[100]

In Lebanon, and especially in rural areas, women face several key gender issues associated with energy service needs, ranging from access to energy to participation in the energy sector. Access to energy affects time allocation, health issues, and livelihood for women in general, whether in urban or rural areas. Meanwhile, participation is more closely connected to equal opportunities for livelihood in the sector, the availability of training and capacity-building, the availability of business development services, and women's interest in joining the sector.

2. Access to energy sources

Their lack of access to energy services results in a larger burden shouldered by women and girls. The following factors outline how access to renewable energy sources affects their health, productivity, and efficiency:

Time poverty: due to persistent gender division of labour, particularly in rural areas of Lebanon, women are the ones responsible for managing the household. According to the Living Standards Survey 2007, the number of Lebanese households headed by females is 15.5 per cent, and most of them are characterized by low levels of education or illiteracy.[101] Access to modern and sustainable energy services can alleviate their burden, and allow them to put their time and labour to more productive uses, and thereby close the gender time/work gap.

Health issues: smoke emissions from the use of traditional energy, such as fuel wood or biomass, for basic household activities, like cooking, can cause air pollution in the household. Women in rural areas are the ones most affected by this kind of pollution, since they are the ones who perform these sorts of traditionally gendered activities. While official statistics on diseases connected to environmental factors do not exist, the World Health Organization reports that non-communicable diseases have a high rate of occurrence in Lebanon, and are the main cause of 84.9 per cent of all deaths. Among such diseases, four types are the main contributors to these high figures: cardiovascular diseases (47.1 per cent), cancer (21.7 per cent), respiratory diseases (4.2 per cent) and diabetes (3.7 per cent of all deaths).[102] Access to modern energy services can improve women's health, and thus their productivity in other types of work, without higher risks of non-communicable diseases and with an improved health profile.

Improved productivity: access to modern energy services can increase women's opportunities to engage in productive activities outside the household.[103] With access to modern technologies, women could potentially increase their income, such as by working in food processing from home, sewing or hairdressing, and even starting small businesses, such as processing facilities or bakeries. This also applies for young girls, who, once freed of the burden of labour-intensive chores, would be able to attend school.[104] While no studies have been conducted on the link between productivity and renewable energy for women in Lebanon, a recent assessment conducted by the World Bank in North Lebanon shows that 64 per cent of women are inactive in the labour market, due to their prioritization of children's upbringing and household duties. Inactivity is highest for 40 per cent of women aged 25-34, and for 20 per cent of those aged 35-45.[105]

Increased efficiency: women currently spend considerable amounts of time dealing with various chores connected to energy use at home, as well as outside the home, such as when working in SMEs. Using efficient energy systems may differ between the household level (e.g. special cooking stoves and ovens) and that of SMEs. More efficient types of fuel and equipment would allow women to increase the productivity of these activities, while simultaneously reducing the emissions of greenhouse gases and other air pollutants.[106] Access to energy services can make women's work more efficient, flexible and productive.

3. Participation in the energy sector

The key issues to consider in relation to women's participation in the energy sector are the following:

Equal participation and access: equal participation in the energy sector for women and men can empower women economically, especially when links are established between different sectors, such as energy and agriculture. Renewable energy technologies can be applied in the agricultural sector to improve productivity and energy efficiency, mainly in the development of small-scale food processing facilities requiring the use of energy throughout the process. This kind of linkage can create numerous opportunities for women to play non-traditional roles in both the energy and agricultural sectors, such as forest (biomass exploration) or service provider for follow-up (account management). In addition, unlike their traditional roles, being involved in the energy sector can create opportunities for women to become entrepreneurs, and start local enterprises that could deliver reliable energy services based on renewable energy technologies. A study conducted four years ago in Lebanon found that about 35 per cent of the country's total agricultural labour force is informal, with the work considered part of family labour.[107] Women in agriculture are mostly involved in traditional roles, such as harvesting and processing fresh products, but are much less involved in other aspects, such as access to markets.

Training and capacity building: renewable energy projects can enhance women's economic autonomy and social status, allowing them to earn an income, and giving them the opportunity to take part in and drive the sustainable development of their local communities.

To achieve this, women must receive the right education and training on the technical aspects of renewable energy technologies.[108] Some degree of mentoring in developing business management skills might also be needed, to help women expand their enterprises or start new ones.[109] In addition, and for greater capacity-building, rural women need to have their skills and knowledge enhanced and developed. For example, in the case of Akkar, a rural area in Lebanon, 15 per cent of women are entrepreneurs, and 40.3 per cent of them have voiced the need for training in different aspects of financial management, time management and management skills.[110] As it happens, the country's first wind farms will be located in Akkar, where a significant amount of employment and economic development are expected as a result. In the case of women, should they receive the education and training needed in renewable energy, they would then be well-prepared to access such opportunities and increase their employability. Since the PPAs for the wind farms have a duration of 25 years, this breakthrough could be of the utmost importance and relevance for women's participation in the energy sector, and could serve as a success story and case study on how proper education and training can result in secure long-term careers.

Availability of business development services: this mainly includes access to financing and information to obtain technologies that can provide new economic opportunities for women. Access to financing (such as by providing loans and collaterals to purchase such technologies or services or to start new businesses) would accelerate participation in the sector. Moreover, the availability of information about such technologies can help more women decide on what best matches their needs. In rural areas in Lebanon, women who want to start their own businesses do not find the business management support required. There are no rural incubators that can serve local communities and encourage women to start businesses, with access to financing based on sound business models. As was noted regarding the wind farms in Akkar, the same applies from an economic development perspective, as the wind farms and the personnel working on site will increase the area's demand for food, services, goods, etc. Therefore, if women receive the training needed in entrepreneurial and business creation or to improve their skills, they will be able to start businesses and increase their revenue, based on increased demand and activity in the area.

Currently, looking at women's access to and participation in the sector provides a very different picture. Indeed, the energy sector is still male-dominated, whether in terms of participation or even hiring practices, which restricts women's participation in the sector and further hinders their empowerment. Additionally, the lack of awareness on gender issues among decision makers in the energy sector, and the under-representation of women in decision-making and policymaking bodies, result in gender-blind energy policymaking. Women face various challenges that affect their access to, participation in, and benefit from the renewable energy sector at different levels. The below sections provide an overview of such challenges, specific to access, participation and control.

4. Main challenges affecting the access of women to renewable energy

Legal, cultural, economic and political factors have a considerable impact on women's economic participation in, access to and control over renewable energy resources in Lebanon. While such challenges affect women in general, their impact is amplified in rural areas. As stated earlier, energy access can directly improve women's lives and indirectly improve those of their families. While energy can be a major expenditure in various participation areas, it can also be a barrier to improvements in livelihood, due to various challenges of accessibility, affordability, and the ability to operate new technologies, among other things. These challenges also include some that are more specific to the renewable energy sector in Lebanon, such as access to technology, financing, education and skill level, etc. In this section, some of the main challenges

of the renewable energy sector in rural areas of Lebanon, which keep women lagging behind when it comes to renewable energy technologies and entrepreneurial development, will be examined.

Before going into further detail about the challenges women face in the renewable energy sector, the key challenges discussed can be divided into two main categories:

Legal barriers: the absence of tangible laws and policies that support women in the labour force, the insufficient establishment of legal frameworks to promote a gender-equitable access to energy through the market, and the restrictions connected to gender equality in Lebanese laws, are all creating gender disparity when it comes to access to renewable energy services. With regard to personal status law, article 9 of the Lebanese Constitution grants full power to religious authorities to apply their own laws, whether they are discriminatory or not. In the absence of a common civil law, women will remain subject to inequality, based on a number of religious rules related to personal status matters that also affect their economic and social rights. Under the influence of such religious rules, Lebanese personal status law can thus result in the oppression of women, by placing them under men's authority. Inheritance law in particular affects women's work in the agricultural sector, as well as every linkage between the agriculture and energy sectors. This results in stark variations in access and ownership rights for some women, depending on their religion and its laws. Thus, in some religious communities, women may not have full ownership of land, or may even be denied inheritance and be forced to waive their claims of ownership over properties. To keep the wealth within families, ownership of properties is mainly restricted to men. Women's inability to inherit limits their opportunities to access loans, and therefore their investment capabilities.[111]

In addition, the lack of a fixed minimum age for marriage also affects women, depriving them of their basic rights to education and the pursuit of professional careers. Currently, there are no laws preventing girls from getting married before the age of 18.

Access to financial resources: inequitable access to financial services between genders leads to unequal access to benefits from the renewable energy sector and its technology. Most rural households in Lebanon have little capital to use for acquiring new renewable energy technologies. For Lebanese women, there are additional problems of access to capital due to inheritance law, which can in some cases deny women the right to own land, based on religious rules. Women in Lebanon still face obstacles to secure collaterals or guarantors for loans, especially in rural areas.[112] Faced with legal and financial restrictions, or with the difficulties of taking action without male consent, women are discouraged from engaging in the sector and starting businesses.

5. Main challenges affecting women's participation in and control over renewable energy

Lack of STEM education for women – orientation and counselling: while this is a global challenge, it is amplified in Lebanon, specifically in rural areas, where young women are rarely oriented towards pursuing an education in STEM fields. In fact, both public and private universities are witnessing a drop in female enrolment numbers in STEM majors, compared to overall enrolment numbers. And while the drop is of 10 per cent in public universities, it reaches up to 14 per cent in private universities.[113] In addition, the majority of rural women work in the agricultural sector, which employs 40 per cent of the labour force in rural areas of Lebanon.[114] To access the renewable energy and economic sectors, women need more awareness and orientation on the potential of these sectors. They also need to be oriented to pursue their education in fields that can increase their opportunities to get jobs that are not traditional. With the knowledge they would acquire, women educated in such fields would participate in the development of the renewable energy sector, and ensure that appropriate technologies and policies meet the specific needs of women.

Limited access to technical and capacity-building training: women require technical skills to improve their access to the renewable energy sector. In addition to the lack of STEM education opportunities, women are further hindered by their lack of the kind of technical skills that would improve their access to the renewable energy sector. Such skills can be acquired through capacity-building trainings, or trainings provided by professional centres or organizations, none of which are widely available or accessible to women, especially in rural areas. Incubators provide such opportunities, but are mainly available in urban areas. Some private sector organizations provide trainings, but they are often short-lived and only provided as part of donor-funded programmes. In other words, they are unsustainable.

Lack of awareness off opportunities in the renewable energy sector: there is a prevailing perception that the energy sector is not appropriate for women, which can be traced back to social and cultural norms that suggest that such a sector is a "man's job", and that it may require physical strength, which women are perceived as lacking. Particularly in rural areas, women often lack the self-confidence to be ambitious and break barriers. They tend to be susceptible to cultural barriers that discourage them from running any kind of business, or from being employed in sectors not traditionally perceived as appropriate for women (as opposed to agriculture, food processing or education). Women are expected to stay at home to take care of their families, while men are expected to be the main income-providers. To overcome these prejudices, there is a need to raise awareness and provide psycho-social support in rural communities in Lebanon. Such efforts should enable women to use renewable energy technologies, and encourage them to participate in technical and capacity-building trainings.

The dominance of male figures in the renewable energy sector: this affects not only the access of women, but also their participation in the sector. Indeed, they often perceive it as a barrier that is too difficult to overcome. Interviews with various experts indicate that a very small percentage of women are currently involved in the renewable energy sector, mainly in the solar and PV energy sectors, but even then mostly at the head office, fulfilling administrative or customer service roles. Women are rarely involved in the design or installation of the systems themselves, as this is viewed as a "man's job". Furthermore, promotion in the sector is highly gender-sensitive, favouring men in senior or top-management positions, as they are believed to be more competent and to provide more sustainability for the company.

6. Main challenges affecting women's control over renewable energy

Lack of inspiring role models and success stories for women: role models play a vital role in encouraging rural women and young girls to choose specific career paths. Providing these women with positive images of professional women in the energy sector can therefore be a simple but effective way to encourage them to pursue an education suitable for a career in energy, or even to start a small business connected to the energy sector. Given the currently limited participation of women in the sector, such inspiring stories do not exist, or, when they do, are not easy to get hold of. Women need to feel encouraged that they can do it too, and it boosts their confidence to see someone they can relate to who managed to break barriers and become successful.

Lack of mobility and flexibility: taking on effective roles in this sector requires women to have more flexibility, in terms of the working hours required, and more mobility, to be able to travel to different locations for installation and maintenance. Both factors are challenging for women, as they cannot freely modify their working hours or address pressing issues when they emerge, due to their family engagements. They also cannot easily reach different locations, as the traveling involved would require a driving license, or support from a husband or a father, especially during peak hours when such services are required.

Lack of access to technology: women often have limited access to technology, as they carry out tasks dictated by social norms, such as traditional housekeeping, planting and harvesting, or even processing agriculture produce. When it comes to renewable energy, women are usually end-users, rather than partners in design and installation. Moreover, they are often unaware of the various types of small-scale technologies that might best meet their needs, be it at the household or the commercial level. In rural areas, women's cooperatives have repeatedly cited marketing and access to markets as a main challenge. Yet this has rarely been considered in the context of limited access to technology and energy efficiency –access that could increase their productivity and improve their market access. Women's lives are directly affected by these technologies, which is why their participation in their design, as well as their access to and control over them, is so important. Indeed, they are the ones most likely to have the best understanding of local needs, resources and dynamics.

C. Opportunities and entry points for further promoting women's participation in the renewable energy sector, at the rural level in Lebanon

Despite the various challenges women face in participating in the energy sector, there are some entry points and opportunities that could catalyse women's participation in the renewable energy sector in rural areas in Lebanon.

Some of the main opportunities at the national level are:

The engagement of international organizations in women's economic empowerment: international United Nations and non-United Nations organizations have been increasingly mainstreaming gender in their programmes, and placing the SDGs at the core of their work. UNDP launched a project for women's economic empowerment in different value chains, including renewable energy. FAO recently started a project, targeting women's cooperatives and women-led businesses, to improve operations and achieve sustainable development in rural areas. USAID also launched a five-year project, the Community Service Program, targeting municipalities, institutions, and organizations working on improving service delivery and community development nationwide. Last but not least, the European Union launched a call for proposals from different organizations in Lebanon, to design projects supporting start-up businesses and entrepreneurs in the renewable energy sector. Meanwhile, the American University of Beirut (AUB) is implementing a project on "climate-smart" agricultural production, engaging women in the production and processing of climate-smart products, using climate-friendly technologies. ESCWA also launched the REGEND project, an initiative aimed at improving livelihoods, economic benefits, social inclusion and gender equality in Arab rural communities, by addressing energy poverty, water scarcity and vulnerability to climate change, in three target-countries, including Lebanon. In each country, socioeconomic and gender assessment studies will be conducted, and small-scale renewable energy pilot projects will be implemented. The latter are meant to demonstrate the positive impact of integrating small-scale renewable energy technologies in rural areas, and the benefits of improving the livelihoods of women there.

All of these initiatives provide opportunities for women to participate in the renewable energy sector.

Lebanese ministries, such as the Ministry of Economy and Trade, the Ministry of Social Affairs, the Ministry of Agriculture, the Ministry of State for Economic Empowerment of Women and Youth, and many others, will be implementing projects in the coming four years aimed at the economic empowerment of women and young people. This represents a major opportunity to work on promoting the meaningful participation and representation of women in the renewable energy sector.

The private sector, with the support of incubators such as Berytech, the Diane Foundation, and others, is engaged in start-ups and businesses that are connected to the renewable energy sector, whether in the areas of photovoltaics, biomass or others. Investments are being made, either with private funds offered through such incubators, or with subsidised loans provided by Bank Audi as part of the Lebanon Green Economy Financing Facility (GEFF), a programme supported by the European Bank for Reconstruction and Development (EBRD) and the Lebanese Central Bank (BDL).

At the rural level, there are opportunities that have not been tapped yet, but offer considerable potential for women's participation in the renewable energy sector.

Energy efficiency in processing facilities: some initiatives, carried out by Greenpeace and Mercy Corps, provide windows of opportunity for others to follow in their footsteps. These organizations provided technical and financial support to women's cooperatives working in processing, with the installation and operation of solar PV systems that reduced their reliance on generators, helped them overcome the challenges of chronic power cuts, and increased their productivity, thus improving their access to markets. Women's cooperatives provide a major entry point for projects connected to renewable energy in rural areas, as they can create success stories for other businesses, as well as increase job opportunities and social inclusion.

Opportunities in solar PV: within NREAP, around 100 companies operate in the solar PV sector, and their number is expected to increase, since the Lebanese Government is in the process of evaluating private sector proposals to build utility-scale solar PV farms. Solar PV can contribute to the decentralization of the power supply, which in turn could help people in rural areas in Lebanon find job opportunities closer to home. Women could also have access to such job opportunities, first in customer service departments, and later in the field or in the design of the PV installation systems themselves.

Opportunities in wind energy: the wind energy sector is a newly established sector in Lebanon, and one that is being supported by the Lebanese Government, which signed PPAs with three private developers to build and operate the country's first wind farms in Akkar, totalling 226 MW. Based on Lebanon's Wind Atlas, the Lebanese Government launched a call for proposals to build and operate the second round of wind farms in different parts of Lebanon, mainly in Akkar, the Bekaa, and/or the South. A wind energy sector under development in the rural areas of Lebanon could provide employment opportunities for people of all qualification levels, and especially women, within the framework of the corporate social strategy that developers must subscribe to as a pre-requisite for selection in the bid. Aside from the corporate social strategy, the wind farm project will not only create opportunities for skilled workers in engineering and in operation and maintenance. It will also stimulate job creation in hospitality (accommodation, food and drinks, transportation, etc.) and pave the way for new businesses, such as hotels, restaurants, grocery shops and retail outlets, all of which directly or indirectly involve women.[115]

Opportunities in bioenergy: the bioenergy sector, more commonly known as the biofuel sector, could offer a great deal of potential synergies with other sectors, such as forestry, solid waste management and water treatment. While it is not yet fully developed in Lebanon, it could be a great asset for its rural areas, as well as for women seeking jobs that would more easily become integrated in the renewable energy sector. Rural women, both skilled and unskilled, could thus contribute to this sector in various ways, from processing technologies to marketing end-products, such as other bioenergy carriers, liquid and gaseous biofuels, for power and heat. In fact, the Biomass Wood Briquettes Plant, a pilot project set up in 2016 in Lebanon, is focused on generating energy (or bioenergy) from forest residue of pine, oak, olive, and apple trees. Not only is the plant generating energy from bio-sources, it is also providing income opportunities to rural communities, and especially women, in the collection of forest residue, which also helps to protect forests from fires.[116]

Indirect opportunities for women's participation's in the renewable energy sector can result from improving participation in productive sectors such as rural, tourism, and agro-food processing: as rural areas in Lebanon are becoming a prime destination for international and domestic tourism,[117] rural tourism could become an important means of revenue-generation, especially as it includes many more specific forms of tourism, such as ecotourism, agro-tourism, community-based tourism, etc. Lebanon's Rural Tourism Strategy of 2014 was set to improve economic opportunities in Lebanese rural areas by including rural tourism, as well as another set of agricultural sectors and food products. The strategy also included improving the linkage between tourism and other economic sectors that are already present in rural areas, and specifically including rural women.[118] Agriculture, forestry, and natural sceneries represent the main elements of the natural and cultural heritage of Lebanese rural areas. Income-generation opportunities include accommodation (hotels, guesthouses, camping areas, etc.) and food and beverage-serving establishments, the latter consisting mainly of local restaurants operated by women preparing traditional meals specific to their regions. This is especially important for agro-food processing enterprises and cooperatives headed by women, which provide an important

source of income for women residing in these areas, as well as a window of opportunity for women-led start-ups in a more 'traditionally' favourable sector, such as agriculture. By linking agro-food and tourism, opportunities can be provided for local communities to benefit from their natural resources. This would make the role of renewable energy essential, since it would help build energy capacity and energy autonomy, while reducing energy costs, which in turn would lead to economic growth and a more sustainable tourism sector. In this context, tourism can promote women's participation in the renewable energy sector, and thereby increase their productivity and the diversity of their employment.

Addressing the energy access gap through private investment: the lack of access to energy in Lebanese rural areas has started attracting a large part of the investment linked to renewable energy deployment. Expanding utilization is providing these areas with new sources of revenue, new business opportunities, community empowerment, and especially women's empowerment, by giving them the opportunity to learn skills in new industries and the capacity to innovate. Renewable energy is also providing affordable energy to rural areas. Being able to generate reliable and cheap renewable energy, especially as its costs continue to fall, can trigger economic development and enable women to pursue a variety of job opportunities, or even start their own businesses from home.

Increasing efficiency and productivity in cooperatives: cooperatives are powerful structures that contribute to the economy, create job opportunities, alleviate poverty and mitigate rural exodus.[119] Food-processing cooperatives in particular are generally made up of women. In order to empower women living in rural areas of Lebanon, cooperatives like these have received funds from international donors for the provision of renewable energy equipment, as well as for capacity-building and training on production techniques.[120] This has allowed many women's cooperatives to meet the quality standards required for both the local and export markets. Providing these women with renewable energy equipment for electricity generation has not only helped them reduce their operational costs, but has also improved their competitiveness, by engaging them in market-led efficient production of a range of products in demand. In turn, this has allowed them to reach more consumers through sustainable production methods.

Given the various supply deficits in the power and energy sector in Lebanon, these renewable energy technologies are expected to grow fast. However, support from international organizations, facilitated by the Government, is required to simply provide the population with access to such technologies. Such support is also needed to help women improve their productivity, cut down their production costs, and increase their efficiency, by accessing such technologies and building businesses around them. Taking advantage of such opportunities requires joint efforts and proper support, both on the short and the long term, to prepare women and assist them during the transition, be it through technical, financial or business support.

D. Case study – based on the assessment of a socioeconomic report

An assessment was conducted by ESCWA to select the rural communities where the REGEND project would implement its pilot projects and capacity-building activities. The selection was based on a specific set of criteria, and the detailed assessment was conducted through site visits and interviews with local stakeholders. It resulted in the selection of two neighbouring villages: Akkar El-Atika and Chaqdouf, in the Governorate of Akkar.

Among the main selection criteria were the existence of productive activities with a substantial number of women participating; a relatively fair governance quality; active and credible cooperatives and civil society organizations; and sizable benefits from small-scale renewable energy implementation and capacity-building activities.

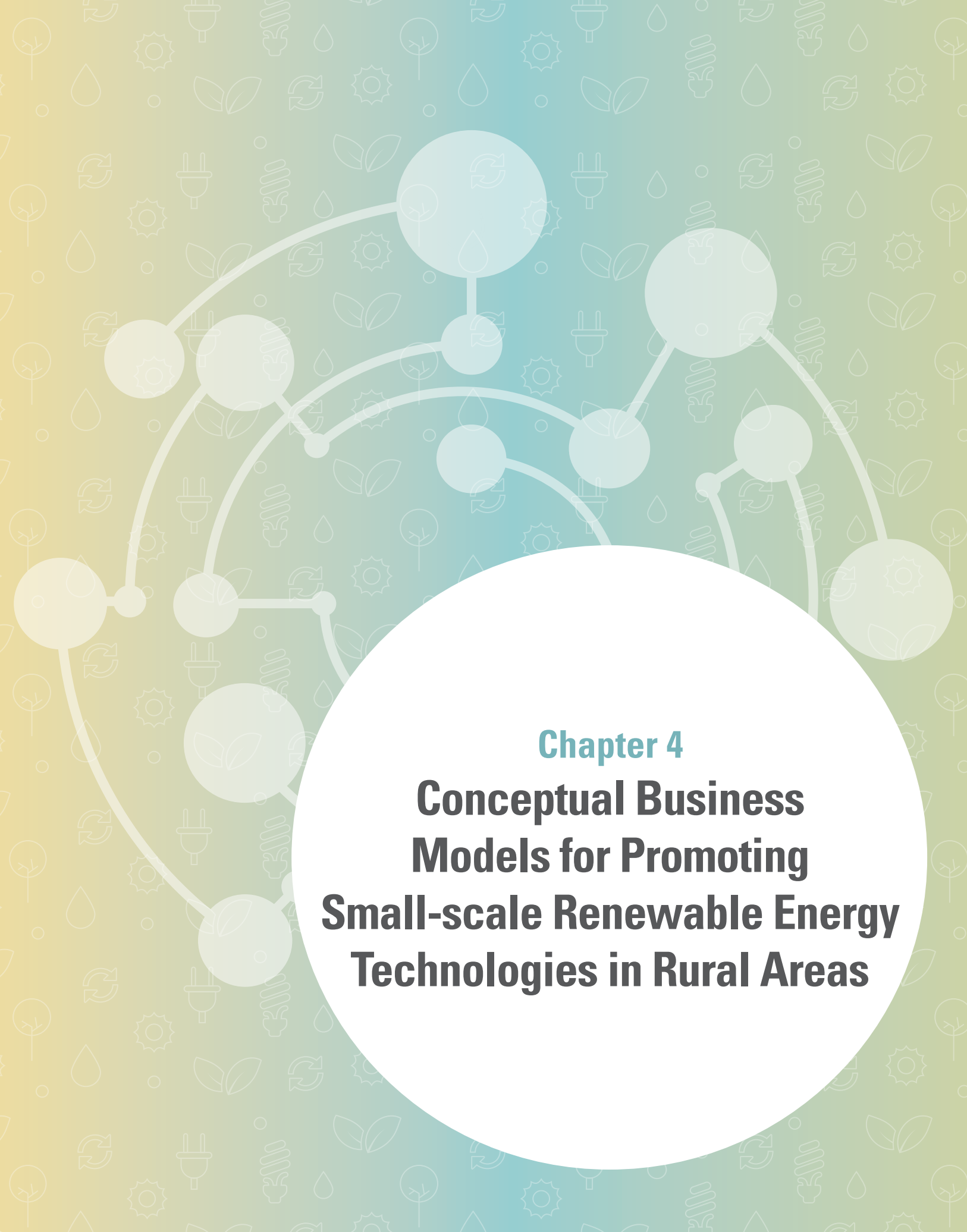
In both villages, women are more involved at the higher end of the various agriculture value chains, mostly at the processing level, through women-led cooperatives. Some are informally involved in livestock production or running home businesses that process dairy products. Currently, there are three main cooperatives in Akkar El-Atika: the Cooperative for Agricultural Production, mainly for apple farmers; the Beekeepers Cooperative; and the Agro-Food Processing Cooperative. The latter is a women-led cooperative, while the beekeeping and agricultural cooperatives are mostly comprised of male farmers and beekeepers.

Specialized in apple-based products (apple cider vinegar, apple juice, jams and jellies), the Agro-Food Processing Cooperative received support from different donors, whether in the form of equipment, or that of marketing (labeling and communication) by financing its participation in market fairs. However, the cooperative is not yet financially autonomous, and lacks the financial means to invest in marketing and participate in regional and national market fairs.

The means of transportation from rural Akkar, as well as their high cost, represent a serious burden for the cooperative, hindering its ability to increase its brand's visibility in other regions and to sell its products in regional market fairs. Additionally, chronic power cuts and weak access to the internet undermine the women's ability to engage in digital marketing and diversify their market channels. The implementation of a small-scale renewable energy system would decrease the high operating costs (one third of which are electricity costs), increase the profit margin, and thus increase the cooperative's ability to invest in marketing and visibility platforms. Additionally, with technical and management support, the women can further sharpen their marketing skills, by using social media and internet advertising to achieve a wider outreach and increase sales, as well as invest in the development of new products, more fruit-based and in greater demand.

While it does not have any women-led cooperatives, Chaqdouf is home to a sewing factory established by the local non-governmental organization (NGO) "Live Akkar", which was itself founded by the village mayor. The sewing factory currently employs six women who work part-time, using seven sewing machines that run on electricity. A small-scale renewable energy system would decrease the factory's operating costs, thereby increasing its ability to invest in new equipment and production lines, and to employ more local women. Aside from the system's implementation, the local community, made up mostly of women, would greatly benefit from improved skills and capacity-building in starting and managing a cooperative, marketing, leading entrepreneurship, and operating and maintaining solar PV systems.

A common feature in both villages is the lack of entrepreneurial spirit among the local women, and their lack of the kind of business skills that would enable them to run their own businesses, or to expand their current operation to grow and diversify their markets.



Chapter 4

Conceptual Business Models for Promoting Small-scale Renewable Energy Technologies in Rural Areas

4. Conceptual Business Models for Promoting Small-scale Renewable Energy Technologies in Rural Areas

Renewable energy provides opportunities for improving livelihoods in rural areas and contributes to overall rural development. For rural women, access to small-scale renewable energy would help overcome challenges and break cultural barriers that hinder their integration in the rural economy. Breaking cultural and social barriers for women requires a combination of different elements. To take advantage of the wave of renewable energy production and promotion, women need to be more active participants in the sector, through various activities and roles. They could become solar energy service providers, which would be especially suitable for households headed by women or for areas not reached by large suppliers. They could take part in the construction of wind farms, and get involved in the various engineering, logistical, administrative and management aspects of such work. They could also invest in start-ups that can better explore opportunities for biomass energy production, using forest wood and non-wood materials.

A. Case studies from around the world – benchmarking

Encouraging women to get involved in the renewable energy sector requires exposing them to role models, or success stories of other women who faced similar challenges and managed to succeed at running their own businesses. This would inspire women to take similar steps, and would help them believe that it is possible, and that they can make it. To try to provide such role models, a number of different case studies of start-ups are described below, along with their business models. Providing an accurate picture of these business models required the careful consideration of three main elements: cost structure, revenue streams, and the means of covering initial costs (financing). The case studies come from different countries, namely Burkina Faso, India, South Korea and Tanzania, in addition to Sub-Saharan Africa and Arab countries.

Before going further into the different case studies, it is important to note that the private sector models used for rural electrification are based on one of three main types:

a. **Fee for service:** similar to how private electric generators function in Lebanon, where the ownership, operation, and maintenance of the system are the sole responsibility of the service provider, who connects users to it on the basis of a flat rate or monthly subscription;

b. **Pay-as-you-go:** the supplier leases the equipment to the end-user, and its maintenance and repair are the responsibility of the supplier. But at the end of the leasing period, ownership is transferred to the end-user. This is the most common business model used by start-ups around the world, also known as lease-to-own;

c. **Private ownership:** this model is mostly used for decentralized power systems, where the end-user buys the whole system from the supplier, and becomes its sole owner, while the supplier takes responsibility for the system's installation and maintenance. This model is different from pay-as-you-go in that the system belongs to the end-user from the start, and the supplier's revenue is generated from sales and maintenance.

1. SELCO, social enterprise, India

The social enterprise SELCO Solar Light Pvt. Ltd. was established in 1995, with a focus on solar PV systems in rural areas in India.
The enterprise offers installation as well as after-sales services to individuals and companies. Its systems are customized to each customer's needs, rather than built in standard sizes. Additionally, it offers linkages or financing schemes to customers who are not able to pay the entire cost up front and need financial support. Financing schemes are provided through micro-credit institutions, commercial banks or cooperatives. To date, the company has sold more than 200,000 solar systems, and built four solar PV mini-grids.

When it comes to its business model, costs are covered by the financing schemes provided to its customers, and by the revenue generated from sales and after-sales services. The enterprise has expanded and opened energy service centres in rural areas to cater to the needs of local communities. These centres employ locally-recruited staff, both men and women, and thus contribute to improving livelihoods and gender equity. Around 20 per cent of the staff is made up of women, and, at the company's headquarters, the percentage of women employed reaches 43 per cent.[121]

2. Kakute Projects, private company, Tanzania

The enterprise was created in 1995 through a venture with Action Aid Tanzania, which is involved in developing value chains and sustainable development. Operating more like an incubator, the enterprise has focused on training people in rural areas, and on further developing biofuels as sources of livelihood, by developing jatropha-related products and technologies, such as lanterns and cook stoves, as well as bio-gas from jatropha seedcakes. The jatropha plant is drought-resistant, has a high oil content (up to 37 per cent), and can be used for medicinal purposes as well as a source of biofuel.[122] The organization has trained various women's groups in Tanzanian villages to set up and manage jatropha nurseries, and provided grants to set up micro-enterprises focused on soap making and oil processing using clean energy cook stoves. The enterprise has worked with more than 17 women's groups and trained over 1,500 people. It has mostly focused on transferring the technology and supporting micro-enterprises to emerge and grow.

3. The Sougrinooma Shea Butter Women's Cooperative, cooperative, Burkina Faso

The women of the 'Sougrinooma Shea Butter Women's Cooperative' in the town of Pâ used to mill shea seeds and other grains manually, and thus had a very limited production of shea butter. After the installation of a modular solar-powered nano-grid (the "Power Hub") in the town, the most labour-intensive aspect of the shea butter manufacturing process became a much simpler task. Using solar-powered milling equipment simplified the women's work and increased their business productivity and efficiency, which allowed them to devote more time to taking care of their families and raising their children.

4. Solar Sister, organization, Sub-Saharan Africa

The organization promotes female entrepreneurship in Africa by providing women with access to training and financing for their start-ups, and, most importantly, technological kits and products that help them operate, sell, and provide maintenance of solar technology. This has helped women generate income, and has helped households reduce their expenses by 30 per cent, by offsetting their need for kerosene. To date, the organization has supported 3,871 entrepreneurs, 83 per cent of whom are women, and impacted 1,589,850 people, as a result of selling around 279,286 technological products and kits.[123]

5. Semi-Materials, company, South Korea

Semi-Materials is a South Korean company that grows vast quantities of food indoors, using only nutrients and water with LED lighting directly linked to solar PV power, thereby avoiding bacteria and viruses. This plant factory is a valuable solution for addressing issues of poverty reduction, the lack of access to energy and energy scarcity, all of which directly affect women, especially in rural areas. In addition, the company helps provide various job opportunities around the world, from research to execution.[124]

6. Crowd Powered, start-up, Lebanon

Established in 2018, the company acts as a one-stop shop for renewable energy solutions, both for companies and individual households. It relies on the "private ownership model", allowing end-users to find the design, financing, installation and maintenance of solar PV systems all in one place.[125] The start-up received seed funding from the local incubator Flat6Labs, and has four members, including a female Chief Marketing Officer. The company helps Lebanese businesses and households save on energy costs by reducing their reliance on private generators to compensate for the country's chronic power cuts.

7. Deir Kanoun Ras El-Ain, cooperative, Lebanon

Deir Kanoun Ras El-Ain is a 23-women cooperative in South Lebanon that produces artisanal food. The cooperative has recently installed a solar power system to heat water and power machines, in a crowd-funding project spearheaded by the NGO Greenpeace.

Solar energy was found to be the solution to chronic electricity shortages in rural areas of South Lebanon, which have had negative impacts on the women's productivity and working hours, and even on their personal lives. The cooperative has taken some energy efficiency measures, by installing 12 solar PV panels connected to solar water heating and thermal insulation systems. As a result of the solar PV installation, the women were able to reduce the cooperative's electricity bills, generate more income, improve their quality of life, and increase their business productivity. It has also allowed them to explore new opportunities, such as expanding their business and setting up new food production outlets.

8. Tagaddod, company, Egypt

This renewable energy and waste management company, established in 2013 in Cairo produces biodiesel from used cooking oil collected from restaurants, hotels and factories. It provides clean energy to businesses and households across Egypt, and plans to expand its feedstock to algae in the near future. Reducing lifecycle carbon emissions by over 50 per cent, as compared with petro-diesel, biodiesel production could create more jobs opportunities, especially in rural areas. With an Egyptian woman as one of its cofounders, encouraging and empowering women from different backgrounds is one of the company's goals.[126]

9. Chanouf Farm-Biofire, company, Tunisia

The company, consisting of a farm that grows pears and olives in Tunisia, set up an agro-forestry waste recycling unit, with the aim of diversifying its income sources. As it promotes biomass waste, the company produces ecological, cheap and high-performance fuel briquettes, as an eco-friendly alternative to firewood, the use of which is one of the major contributors to deforestation. The recycling project has allowed the company to expand its resources into an agricultural and rural artisanal market, which has in turn enabled the company to hire new employees, mainly women, to meet the growing demand and ensure continued productivity during low seasons.[127]

10. The Coopérative Toudarte, cooperative, Morocco

Founded in 2004 by 24 women from the village of Douar Akhsmou in Morocco, the Coopérative Toudarte today includes around 150 Berber women as members. Its goal is to generate income from the production of argan oil, but also to help women pull themselves out of poverty and become independent. In 2007, when the cooperative began an important commercial relationship with L'Oréal, the access to new markets led to an increased supply of argan oil in the domestic market, as well as in international markets. However, this increased access came with increased risk, both in terms of the cooperative's economic sustainability and its ability to expand to meet the new market demand. For this reason, the cooperative started developing new products, such as other seed oils, creams, and honey. It also started relying on solar PV systems to increase its productivity and efficiency, so as to meet new market demands, while combining social and economic goals in a very sustainable way. Today, the Coopérative Toudarte is recognized as a Fair Trade cooperative, and is able to provide secure income for its members. It has improved working conditions by setting up a kindergarten for the children on its premises, provided access to loans at low interest rates, and ensured an overall improvement in health conditions by increasing its technological integration and reducing its reliance on generators.

What is common across all of these case studies is the focus on women: creating income for women, but also, and even more importantly, training women, supporting them, providing them with knowledge transfer and access to financing, and helping them become autonomous, independent, and able to run their own businesses.

B. Identifying key issues for Lebanon in terms of entry points for further access to small-scale renewable energy technologies in rural areas

Women in rural areas are involved in various agro-food value chains, but their involvement differs along the different chains, further hindering efforts to increase their involvement and participation. For example, women are significantly involved in planting and harvesting for agricultural production, and even more so in food processing for improved marketing. Yet there is little involvement of women in post-harvesting or in managing agribusinesses. Enterprises run by women in rural areas, whether cooperatives or small businesses, largely depend for their production on the national power grid and diesel-based electricity generation. Given the previously mentioned challenges, renewable energy can improve productivity, grow enterprises and thus increase profits. In general, women are interested in economic savings, both for their businesses and for their households. Energy efficiency should therefore be of great interest to them and could represent an invaluable entry point for further integrating renewable energy.

However, before achieving such integration, there are key issues to be considered for the country, to further improve access to small-scale renewable energy technologies in rural areas, particularly for women.

Increasing awareness of the uses and benefits of renewable energy in rural areas: there is still significant work to be done at the rural level in terms of raising awareness. While the country has witnessed redoubled growth and expansion in renewable energy technologies such as solar PV, such expansion has not been evenly spread across the country, and rural areas have been lagging behind. The benefits and potential uses of renewable energy should be better

communicated to rural communities, whether in the agricultural or the industrial sector. This goes hand in hand with climate change mitigation and the need to switch to renewable resources, so as to maintain productivity and income. Efforts in this direction should be made at the governmental level, as well as through local organizations, as they represent the key to renewable energy expansion.

Improving energy efficiency: the Ministry of Environment has developed a five-year strategy, along with regulation enforcement for the Environmental Impact Act, ensuring that industries implement environmentally friendly measures to mitigate their negative impact on the environment. Energy efficiency is one measure that is being encouraged, and is also gaining increasing attention from local authorities and industries, as it helps improve productivity while reducing costs. Furthermore, with the new electricity plan approved by the country's Parliament and NEEAP, energy efficiency is now a necessity, and should be further promoted and supported in rural areas, especially given its interlinkages with water and food security through the energy-water-food nexus.

Facilitating access to financing for micro enterprises and start-ups: when it comes to access to financing, NEEREA was launched in 2010, on the basis of BDL Circular 236, and with support from the European Union, as a financing mechanism for green energy project implementation in Lebanon. The loans have low interest rates, 0.6 per cent initially and 2.5 per cent as of 2018, and payback periods of up to 14 years, with a four-year grace period.[128] Another mechanism launched in 2018 is GEFF, supported by Bank Audi, with subsidized interest rates, and loans provided for up to 7 years, with a two-year grace period. To date, 12 projects have been financed through this scheme, three of them run by women, namely: the installation of solar PV systems for households; establishing an eco-village in a rural area; and installing energy efficient solutions in a food enterprise of which the Operations Manager is a woman.

While such financing facilities provide significant opportunities for the private sector, they are not entirely accessible to all individuals and businesses. Thus, for example, GEFF does not finance start-ups in the renewable energy sector. Women may face additional challenges, due to the requirement of providing collaterals, which are not always available to them, and would thus automatically preclude many of them from accessing such facilities. Moreover, people in rural areas, especially those working in the agricultural sector, are not always 'bankable', as the complicated statuses of land assets and the informality of the sector often lead them to be considered 'high-risk' clients by banks. More efforts are therefore needed to diversify financing schemes, through micro-finance institutions, and/or by setting quotas for female loan applicants, so as to facilitate their access to renewable energy resources. Other perspectives and courses of action should also be considered: financing agro-food and rural tourism projects, improving their productivity with energy-efficient solutions, and increasing their export potential at the economic level. This would at the same time contribute to improving the quality of life and achieving the economic empowerment that would allow women to start and/or grow leading businesses in rural areas. Starting such businesses and managing cooperatives also requires support and capacity-building for these women, in the different aspects of starting a business, effectively managing a cooperative, and marketing produce, as well as in operation management and quality control.

C. Indicators for monitoring the gender mainstreaming and human rights strategy in rural areas

Gender mainstreaming cannot be effective unless it is supported by a meticulous monitoring and evaluation process. Such a process would involve consistently gathering statistics and data

pertaining to gender, evaluating such data, and advising on progress or changes that should be made to ensure equal access for both genders. To achieve this, different indicators and tools should be developed, to measure performance and guide ministries and policymakers in the implementation of gender mainstreaming in all of their programmes and activities, including renewable energy gender integration.

The following lists provide a set of potential indicators that could be adopted and tailored to the economic empowerment of women in rural areas, particularly in relation to the renewable energy sector.

At the policy level

1. Number/percentage of women in the decision-making bodies of renewable energy user groups/committees
2. Number/percentage of women accessing financing for renewable energy enterprises
3. Number of projects adopting gender mainstreaming, by sector and by donor
4. Number of projects with equal employment opportunity policies and practices implemented for staff and contractors (core labour standards, equal pay for work of equal value, occupational health and safety, and separate sanitation facilities)
5. Number of women directly employed by firms operating in the renewable energy sector, by region
6. Number of households connected to renewable energy technology, disaggregated by sex of head of household
7. Number/percentage of women-owned renewable energy enterprises with technical assistance
8. Number of organizations/institutions adopting strategies and plans to promote the use of renewable energy technology to improve working environments for women
9. Number of strategies, plans and policies adopted by line ministries to support the empowerment of women in rural areas

At the project/enterprise level

1. Percentage of female energy-users reporting improved change in access to energy services, as compared with men
2. Percentage of women-led start-ups recently established in the renewable energy sector
3. Perceived change by women in access to time-saving renewable energy technologies
4. Number/percentage of participants attending participatory planning and consultation meetings, disaggregated by sex
5. Number of households and businesses receiving financing for renewable energy systems, disaggregated by sex of head of household and by type of renewable energy technology
6. Number of households and businesses reporting increased economic savings, by industry type, by region, and by type of renewable energy technology

D. Stakeholders with potential roles in the promotion of renewable energy in rural areas

Reliance on renewable energy sources in Lebanon would create new economic opportunities and improve livelihoods, but efforts need to be made to ensure equal access to such opportunities across genders. Given the challenges hindering women's participation in the renewable energy sector, there is much to be done – at both the policy and local levels – that cannot be done by one organization alone. Joint efforts, or networking among the different stakeholders, are needed to ensure the effective integration and facilitation of women's access to renewable energy. Everyone has a

role to play, be it ministries, national institutions or international organizations. Highlighted below are some of the potential stakeholders that should be involved, and the role they can play, in such efforts.

The National Commission for Lebanese Women (NCLW): this commission, which answers directly to the Lebanese President, is in charge of ensuring gender mainstreaming in public institutions and implementing international conventions on human rights and women's rights. The NCLW is currently working with various international organizations to achieve those goals. One such organization is GIZ, which is providing support for the implementation of gender mainstreaming at the local level, specifically in municipalities. This represents an important entry point, as municipalities can facilitate access to women in their areas, and encourage them, through awareness-raising and technical support, to take advantage of the opportunities and benefits the renewable energy sector can offer. Local authorities, with support from the NCLW, can even provide the spaces needed to implement pilot projects in rural areas that would promote the adoption of renewable energy. In that respect, the NCLW's role will be to ensure that all actions taken and strategies adopted by municipalities are gender-sensitive and provide equal benefits to women and men. The NCLW can also provide access to a wide network of organizations that support women in different parts of the country. Its regional connections and influence can be used to raise awareness among women on issues of education and integration, as well as to facilitate access to different communities.

The Ministry of Energy and Water, Lebanese Center for Energy Conservation (LCEC): in implementing NREAP, the LCEC needs to work closely with the NCLW to ensure a gender-sensitive implementation of the different elements of the plan, with indicators set to monitor its progress. Moreover, by partnering with different international organizations, the LCEC can ensure that all projects have gender mainstreaming components. It can also work with various organizations and academic institutions to develop knowledge transfer programmes that could accelerate renewable energy sector integration, and to identify skills that academic and vocational institutes should integrate in their curricula.

The Ministry of Environment: the ministry's five-year strategy identified six main priorities to be addressed as part of its implementation, including: reducing pollution, mitigating climate change, improving solid waste management, reducing waste water, and improving the management of protected areas. Since renewable energy is perfectly compatible with these priorities, the ministry can work with various institutions and industries in rural areas to help them integrate clean technologies while complying with regulations. This will not only help reduce emissions and pollution, but will increase the overall integration of renewable energy technologies in rural areas as well. The ministry also has its own gender mainstreaming initiatives, with the assignment of a gender focal point, as well as a Climate Change Unit that ensures the promotion of gender-sensitive initiatives connected to the environment.

International organizations such as UNDP, FAO, and others: international organizations have been increasingly focused on women's economic empowerment and gender mainstreaming across all their programmes. Recently-launched programmes provide opportunities for entry points to promote renewable energy technologies in rural communities. Organizations like FAO and UNDP can help increase women's access through their projects, whether they concern women's cooperatives that could adopt energy efficient solutions, or individuals who could receive support to start their own businesses. These organizations can accelerate the process of integration by raising awareness and training women to integrate the renewable energy sector.

Universities and research institutions: in recent years, focus on providing specialized human resources in energy and energy-related sectors has been increasing in Lebanon, with eight universities offering 15 energy-related degrees as part of their programmes for four-year university diplomas and graduate degrees (including Master's Degrees and PhDs).[129] Fields of study include petroleum and petrochemical studies, general energy, and renewable energy and energy efficiency. However, the majority of these universities and research institutions are concentrated in the Greater Beirut area. As a result, prospective students wishing to pursue such fields have to relocate to Beirut or commute on a daily basis, which tends to demotivate and re-orient them to fields of study that are available in their home regions. Universities can help the process of training and knowledge transfer above all by increasing their presence in rural areas, either setting up initial training centres or affiliating with local institutions, and by designing curricula tailored to the energy education needs of the rural youth. This would not only help build the capacities of local communities in renewable energy, but would also facilitate the participation of more women in energy-related programmes, and thus help overcome the challenges of low female enrolment in STEM education. One important initiative worth highlighting, in discussing the role of universities and research centres, is the Water-Energy-Food-Health Nexus (WEFRAH), recently launched by AUB. The main goals of this initiative are: to increase collaboration among research centres and universities on topics related to primary renewable resources; to improve knowledge of the Water-Energy-Food-Health Nexus system; and to expand such knowledge through regional and international cooperation. Such an initiative should directly contribute to achieving the SDGs by 2030 in the Middle East and North Africa region.[130]

Incubators: operated by different organizations, incubators have an important role to play, as they can help women and individuals turn ideas into businesses, and develop business concepts with coaching to ensure success. While most of these incubators' stated missions revolve around technology (e.g. Flat6Labs, UK Tech Hub, BIAT), Berytech has been shifting towards the agricultural sector, through its Agrytech programme, which helps businesses integrate technology in agriculture. Berytech is also involved in other projects and pipelines centred on clean technology and energy efficiency, and can thus provide support with its expertise. There are currently no incubators or business development services in rural areas that can provide local communities with the support they need to start their own businesses. Incubators can support and promote start-ups in renewable energy by offering coaching, mentoring, and access to financing. By making such support available to women, incubators can help them create successful start-ups. Through their network, women can have access to different types of support and information, depending on their line of business.

Access to financial organizations: access to financing represents a major challenge for women, and one that is preventing them from starting new businesses in some sectors. While some women have already gained access to financing through different programmes and projects, rural women in particular are still lagging behind in that respect, and are less likely to be risk takers. As there is a need for diversification, by tailoring different products to the needs of applicants, there could be a quota for women applicants, providing them with access to loans or micro-loans. Financial organizations could work to promote such loan products. However, they also need more information about the benefits of investing in such sectors, for which they could seek the guidance of international organizations.

E. Capacity-building required – based on the outcome of national meeting discussions

Within the framework of the REGEND project, a national meeting was held on 30 and 31 July 2019

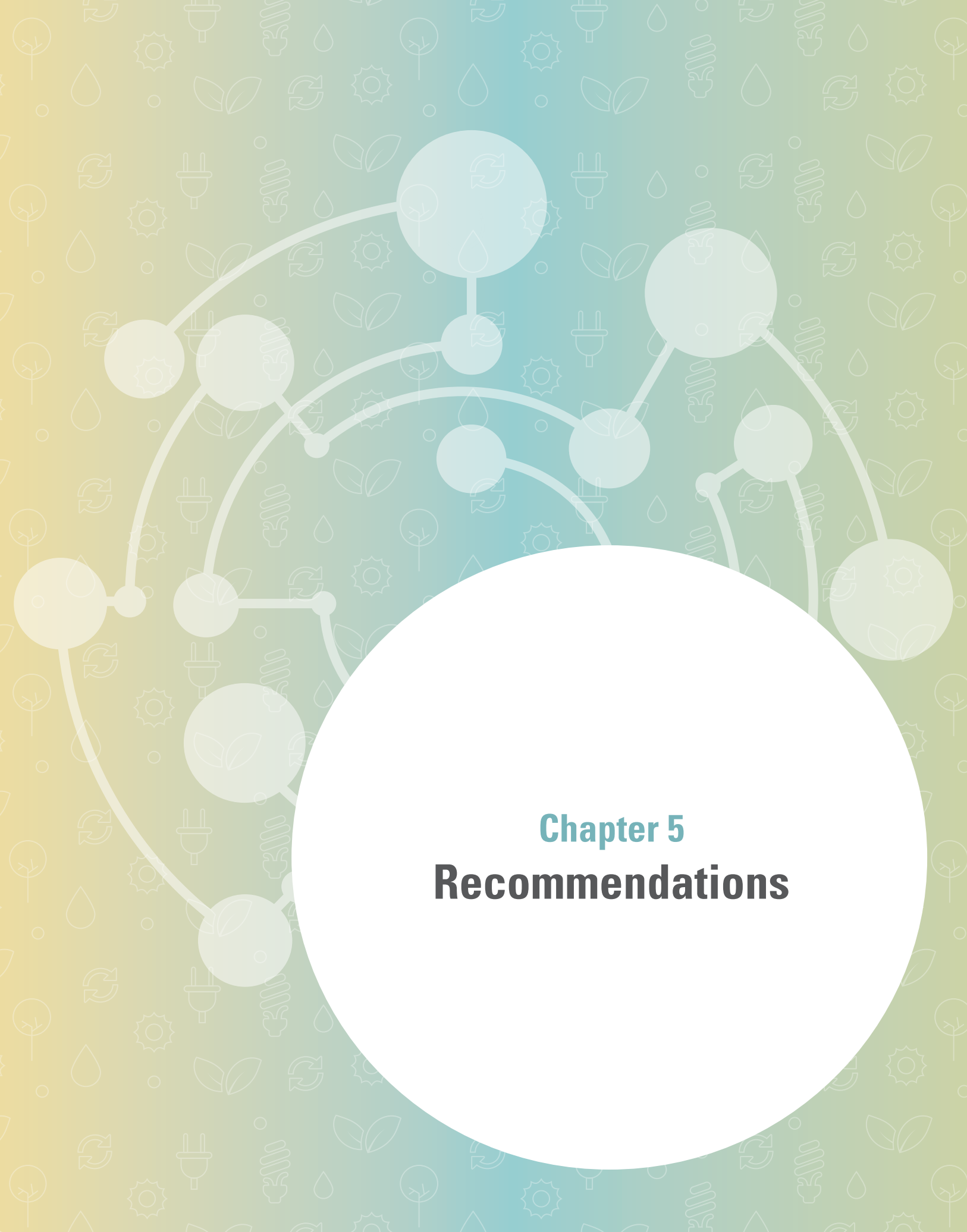
at the United Nations House in Beirut, entitled "Women Empowerment and Entrepreneurial Development in the Rural Context: The Role of Renewable Energy". Organized by ESCWA, in partnership with the International Network on Gender and Sustainable Energy (ENERGIA), the meeting had as its main objective to discuss the principal findings pertaining to gender mainstreaming and human rights in policy planning, capacity-building, and awareness-raising for rural areas, and to come up with actionable recommendations.

Over the course of two days, the different stakeholders, representing organizations working on women's economic empowerment (local and international), financial institutions and regional organizations, shared their experiences of support for women's empowerment initiatives, locally and regionally. They discussed the challenges faced and the lessons learnt, made suggestions and recommended solutions going forward. Different presentations were delivered, including presentations on socioeconomic assessment and gender mainstreaming in the renewable energy sector in Lebanon, which provided insights and findings from submitted reports.

The main challenges discussed with regard to women's empowerment in the energy sector in Lebanon revolved around: (a) gender data collection, availability and analysis; (b) the weakness of cooperation and coordination among stakeholders working on women's empowerment in Lebanon, and the resulting overlap; (c) the large gap between policy formulation and implementation; (d) the lack of education and awareness on renewable energy technologies and entrepreneurship in rural areas, for both men and women; and (e) the absence of low-cost financial instruments that would allow the rural population to take up renewable energy solutions.

That being said, the meeting concluded with seven main actionable recommendations for the way forward, when it comes to promoting women's empowerment in the energy sector:

a. **Capacity-building focused on vocational education:** developing curricula on renewable energy operation and maintenance at the vocational training level, for both genders, while ensuring the fair participation of women;
b. **Capacity-building focused on the exchange of experiences in technological solutions:** developing capacity-building activities inspired by African and Asian experiences in technological solutions for women in rural areas;
c. **Fostering cooperation among different stakeholders:** building partnerships focused on gender data between ESCWA, relevant ministries and their respective gender focal points, where ESCWA can help improve data collection and create indicators;
d. **Promoting networking among practitioners:** building a network with practitioners to bridge the gap between the two rural areas selected by the REGEND project in Lebanon, by sharing best practices on gender empowerment and renewable energy in the rural context. With time and experience, the network can be upgraded to share best practices with other countries and regions as well;
e. **Creating a platform for cooperation among organizations:** building a network comprising all of the organizations and entities working on gender empowerment in Lebanon in the rural context, so as to consolidate and coordinate efforts moving forward;
f. **Creating awareness for behavioural change:** emphasizing the importance of behavioural change with campaigns, success stories and knowledge products that showcase the challenges faced and the sustainability of renewable energy solutions and best practices in rural areas;
g. **Increasing access to financing:** developing low-cost financial instruments that would allow the rural population to take up renewable energy.



Chapter 5
Recommendations

5. Recommendations

Gender and energy represent a substantial part of the 2030 Agenda for Sustainable Development. A number of concerns surround the relationship between 'gender equality' and 'energy', or more specifically the reasons that lead men and women not to have the same access to energy resources, and the resulting gender inequalities that limit economic opportunities for women. In Lebanon, and especially in rural areas, women face several key gender issues associated with energy service needs, ranging from their access to energy to their participation in the energy sector. Access to energy affects time allocation, health issues, and livelihood for women in general, whether in urban or rural areas. Meanwhile, participation is more closely connected to equal opportunities for livelihood in the sector, the availability of training and capacity-building, the availability of business development services, and women's interest in joining the sector.

However, the picture is not entirely gloomy, as there are windows of opportunity that can provide the right environment and, with some support, could spark change and encourage women to break barriers and create success stories in different sectors, including that of energy. This would require a human-based approach, with special consideration for the constraints women face, in all projects and policy formulation initiatives.

Among the recommendations that could spark such change, whether at the policy or local level, and improve women's access to and participation in the renewable energy sector, are the following:

Improved counseling and orientation towards STEM education for young women: one of the main challenges highlighted in the report is the low number of women pursuing STEM education, mainly due to cultural contexts that orient women towards pursuing traditional majors, such as business administration, marketing or education. Change should start at school, with the integration of additional orientation sessions to inform students of the different opportunities in various sectors, and of how to access such opportunities by choosing the right education. Boosting creativity and innovation in schools will kick-start the process of encouraging young women to enrol in STEM education and pursue their ambitions. The integration of these orientation sessions should start at early stages in school, and there should be a special focus on rural communities.

Awareness campaigns on renewable energy sources and technologies: women are often unaware of the various opportunities provided by different economic sectors, mostly due to a lack of interest or the perception that certain sectors are gender-biased and male-dominated, and therefore not appealing. More awareness campaigns should be carried out on the renewable energy sector, the different sub-sectors it comprises, the benefits of integrating energy-efficient solutions, and how women can integrate and contribute to the advancements of this sector. Such campaigns should be carried out at the national level, as well as at the local level through municipalities. Moreover, success stories need to be highlighted, especially ones that women can relate to, so as to motivate them to participate in the sector.

Support for the establishment of rural incubators: rural areas in Lebanon suffer from a limited presence of business development service

providers. Such services are currently provided only within a project context and are discontinued once the project finishes. Rural incubators are required, specifically for renewable energy, as they can be a one-stop shop for rural communities, provide potential entrepreneurs with opportunities to test their ideas and acquire technical support, and coach them to further develop ideas and business models. At the same time, these incubators can facilitate their access to financial resources, be they loans or grants, which would in turn help them start their own businesses and/or scale them up. This is also confirmed by the different case studies presented in this report, which include success stories and examples of start-ups that were created with technical and financial support from international organizations and local institutions acting through rural incubators.

Working closely with financial and micro-finance institutions to improve financial access for women: given the difficulties they face to secure the collaterals and guarantees required by banks, women are not easily able to access the financing they need to run their businesses. Taking into consideration women's protective and risk-averse nature, more work needs to be done with financial institutions to facilitate their access to financing. Quotas for women's participation might be appropriate here, in addition to increasing women's awareness of the various financial schemes they can benefit from to engage in income-generating activities. There is a need to diversify financial products, be they subsidized loans or micro-credits, with less restrictive conditions, for rural women to be able to access them to integrate small-scale renewable energy solutions.

National and transnational dialogue on the need for change in social norms: there is a need for continuous dialogue and exchange of experiences, be it at the national or regional level, to promote change in social and cultural norms, so as to improve the status of women in Lebanon and in the region as a whole. Such dialogue would allow the acquisition of knowledge about what works and what does not, as well as about the lessons learnt from various initiatives. At the national level, there is a need to maintain a close network of stakeholders, not only to exchange information, but also to work together to promote the empowerment of women in the renewable energy sector. Such a network should include representatives from relevant ministries, international organizations, private sector organizations, academic institutions, and financial institutions. Together, they can devise strategies to ensure gender mainstreaming, and highlight both the issues that could facilitate access, and those that could hinder it.

Research and research-based advocacy for gender justice: a platform is required for conducting evidence-based research on gender issues within the renewable energy context, as a basis for developing advocacy campaigns and activities for gender justice. This should be done in collaboration with academic institutions, and with national and international organizations engaged in the economic empowerment of women. Such a platform should work to collect evidence on the implications of current gender justice policies, advocate for change, and increase the impact of such policies on the ground.

Conscious and concerted efforts towards a gender-responsive shift in policy and practice: gender mainstreaming should be ensured across all policies and strategies connected to rural development and renewable energy. While such efforts are currently being made, there is a need to further strengthen them and make them more effective in application, by exploring synergies between the two areas. The Ministries of Agriculture, Energy and Water, and Environment should jointly revise their strategies, or develop new ones, with gender and energy as key components and drivers of rural development. This should be tested further, with pilot projects that would help

explore the different business operating models suitable for local contexts in different parts of the country.

Integration of renewable energy in women-dominated productive sectors: with food and agro-food processing and production being women-dominated and energy-intensive productive sectors in rural areas in Lebanon, the integration of renewable energy into these sectors should prove effective in highlighting and showcasing its positive effects. This can be achieved by raising awareness about the monetary and environmental benefits of using renewable energy to reduce operating costs, and by developing and promoting subsidized financing mechanisms with lower interest rates and longer grace periods. The latter should be tailored specifically to the rural contexts in which they will be utilized, which would facilitate and accelerate the adoption of renewable energy technologies. International donors interested in supporting women-dominated productive sectors in Lebanon could then channel funds through these mechanisms for a more direct and more efficient impact.

Endnotes

1. Nelson and Kuriakose, 2017.
2. Berjawi and others, 2017.
3. World Bank, 2019a.
4. NOWARA, 2011.
5. Robalino and Sayed, 2012.
6. Ibid.
7. Leaders For Sustainable Livelihoods, 2017.
8. IDAL, 2019.
9. Lebanon, Ministry of Agriculture, 2014.
10. World Bank, 2018a.
11. Ibid.
12. World Bank, 2019a.
13. World Bank, 2019b.
14. Ferreras, Carreras and Wakim, 2017.
15. Ibid.
16. ESCWA, 2019a.
17. Nelson and Kuriakose, 2017.
18. World Bank and others, 2019, p.1.
19. Ibid.
20. Electrification rate refers to the percentage of people in a given area that have relatively simple and stable access to electricity (https://energyeducation.ca/encyclopedia/Access_to_electricity).
21. World Bank and others, 2019, p.1.
22. REN21, 2019.
23. Ibid.
24. Ibid.
25. Ibid.
26. https://sustainabledevelopment.un.org/content/documents/2019_Tracking_SDG7_Report.pdfhttps://sustainabledevelopment.un.org/content/documents/2019_Tracking_SDG7_Report.pdf.
27. AUE, 2016, p.4.
28. ESCWA, 2019.
29. Amine and Rizk, 2018.
30. Ibid.
31. Berjawi and others, 2017.
32. Jabbour, 2017.
33. Amine and Rizk, 2018.
34. Ibid.
35. Tsagas, 2018.
36. Baruah, 2017.
37. IRENA, 2019.
38. Ahmed and others, 2001.
39. Warth and Koparanova, 2012.
40. UN Women, 2019.
41. UNESCO, 2003.
42. EIGE, 2019.
43. UNESCO, 2003.
44. World Economic Forum, 2015.
45. UNDP, UNFPA and UN Women, 2018.
46. UNDP, 2016.
47. Latif, 2016.
48. Abla, 2013.
49. United Nations, 2015.
50. UNDP, 2016.
51. UNDP, UNFPA and UN Women, 2018.
52. Avis, 2017.
53. Social Impact, Inc., 2012.
54. Avis, 2017.
55. World Economic Forum, 2018.
56. Ibid.
57. Ibid.
58. Ibid.
59. CIA, 2019.
60. World Economic Forum, 2018.
61. Ibid.
62. ESCWA, 2017.
63. Ibid.
64. USAID, 2018.
65. Ibid.
66. Ibid.
67. Ibid.
68. Latif, 2016; from the 2015 joint MMR report by UNFPA and the Lebanese Ministry of Public Health.
69. Latif, 2016.
70. Avis, 2017; the UNFPA study was conducted in 2002.
71. Latif, 2016.
72. Ibid.
73. World Economic Forum, 2018.
74. Ibid.
75. Beyond Reform & Development (BRD), 2017; Leaders For Sustainable Livelihoods, 2017,p.15.
76. Ibid.
77. Ibid.
78. Social Impact, Inc., 2012.
79. Ibid.
80. UNDP, 2016.
81. Usta, Farver and Hamieh, 2016.
82. OSAGI, 2001.
83. OSAGI, 2001.
84. Latif, 2016.
85. De La O Campos, 2018.
86. FAO, 2019.
87. NOWARA, 2011.
88. Ibid.
89. Vallvé and others, 2019.
90. ENERGIA International Network on Gender and Sustainable Energy, 2011.
91. IRENA, 2019.
92. Ahmad and others, 2019.
93. ENERGIA International Network on Gender and Sustainable Energy, 2011.
94. ESCWA, 2019c.
95. Amine and Rizk, 2018.
96. Danielsen, 2012.
97. ENERGIA International Network on Gender and Sustainable Energy, 2011.
98. ILO, 2007.
99. UNIFEMUNIFEM, 2010; IPU, 2019; World Averages as of December 2011.
100. UNIDO, 2014.
101. Latif, 2016.
102. WHO, 2016.
103. UNIDO, 2011.
104. SELF, 2003.
105. Mousley and others.
106. Karlsson and Rojas, 2013.
107. Information International, 2015.
108. Danielsen, 2012.
109. Karlsson, and Rojas, 2013.
110. NOWARA, 2011.
111. UNDP, UNFPA and UN Women, 2018.
112. Latif, 2016.
113. Ahmad and others, 2019.
114. Ibid.
115. Amine, 2018.
116. Sfeir, 2016.
117. UNWTO and ILO, 2013.
118. Lebanon, Ministry of Tourism, 2014.
119. ILO, 2018.
120. Ibid.
121. Renner, 2017.
122. Kakute Projects, 2019.
123. Solar Sisters, 2018.
124. Vidal, 2011.
125. Schellen, Arbid and Habre, 2018.
126. Tagaddod, 2015.
127. The Switchers, 2016.
128. RCREEE, 2013.
129. Ahmad and others, 2019.
130. Salam, 2019.

Bibliography

Abla, Zeina (2013). Lebanon Millennium Development Goals Report 2013. Beirut: United Nations Development Programme (UNDP), and Council for Development and Reconstruction (CDR). Available at https://www.undp.org/content/dam/undp/library/MDG/english/MDG%20Country%20Reports/Lebanon/MDG%20English%20Final.pdf.

Ahmad, Ali, and others (2019). Shedding light on Female Talent in Lebanon's Energy Sector. Washington D.C.: International Bank for Reconstruction and Development/World Bank. Available at https://openknowledge.worldbank.org/bitstream/handle/10986/31608/Shedding-Light-on-Female-Talent-in-Lebanon-s-Energy-Sector.pdf?sequence=1&isAllowed=y.

Ahmed, Jelaludin, and others (2001). Gender Issues, Population and Development in Ethiopia. In-Depth Studies from the 1994 Population and Housing Census in Ethiopia, Italian Multi-Bi Research Project ETH/92/P01. Addis Ababa: Central Statistical Authority (CSA); Rome: Institute for Population Research – National Research Council (IRP-CNR). Available at https://www.irpps.cnr.it/etiopia/pdf/Gender_Issues_Population_and_Development.PDF.

Amine, Jil (2018). "Wind farms in Lebanon: challenges and opportunities." *Executive Magazine,* 16 April. Available at https://www.executive-magazine.com/economics-policy/wind-farms-in-lebanon.

Amine, Jil, and Sandra Rizk (2018). The 2017 Solar PV Status Report for Lebanon. United Nations Development Programme (UNDP). Available at http://www.lb.undp.org/content/lebanon/en/home/library/environment_energy/The-2017-Solar-PV-Status-Report-for-Lebanon.html.

Arab Union of Electricity (AUE) (2016). Statistical Bulletin 2016 (Arabic). No. 25. Available at http://www.auptde.org/Article_Files/inside%202017.pdf.

Around the World Coop project (2019). "The Cooperative Toudarte: a story of the Amazigh women's life success and empowerment". *Around the World Coop,* 30 January. Available at http://aroundtheworld.coop/morocco/the-cooperative-toudarte-a-story-of-the-amazigh-womens-life-success-and-empowerment/.

Avis, William R. (2017). Gender Equality and Women's Empowerment in Lebanon. Knowledge, Evidence and Learning for Development (K4D) Helpdesk Report 175, Brighton: Institute of Development Studies (IDS). Available at https://reliefweb.int/sites/reliefweb.int/files/resources/175-Gender-Equality-and-Womens-Empowerment-in-Lebanon.pdf.

Baruah, Bipasha (2017). Opportunities and Constraints for Women's Employment and Entrepreneurship in Renewable Energy. McGill University, Institute for the Study of International Development (ISID), GrOW Working Paper Series, Research Contribution Paper. Available at http://grow.research.mcgill.ca/publications/working-papers/gwp-2017-10.pdf.

Berjawi, Ali H., and others (2017). Assessing Solar PV's Potential in Lebanon. Working Paper, No. 43, Issam Fares Institute for Public Policy and International Affairs, American University of Beirut. Available at https://www.aub.edu.lb/ifi/Documents/publications/working_papers/2016-2017/20170808_solar_pvs.pdf.

Beyond Reform & Development (BRD) (2017). Company Website. Available at https://www.beyondrd.com/.

Central Intelligence Agency (CIA) (2019). The World Factbook – Field Listing: Age Structure – Lebanon. Available at https://www.cia.gov/library/publications/the-world-factbook/fields/341.html#LE.

Danielsen, Katrine (2012). Gender Equality, Women's Rights and Access to Energy Services: An Inspiration Paper in the Run-up to Rio+20. Ministry of Foreign Affairs of Denmark. Available at https://www.kit.nl/wp-content/uploads/2018/08/1975_Gender-Rights-and-Energy-Report-final.pdf.

De La O Campos, Ana Paula, and others (2018). Ending Extreme Poverty in Rural Areas – Sustaining Livelihoods to Leave No One Behind. Rome: FAO. Available at http://www.fao.org/3/ca1908en/CA1908EN.pdfhttp://www.fao.org/3/ca1908en/CA1908EN.pdf.

ENERGIA International Network on Gender and Sustainable Energy (2011). Energy and Women Economic Empowerment Nexus. Available at https://sustainabledevelopment.un.org/getWSDoc.php?id=1094.

European Institute for Gender Equality (EIGE) (2019). Gender Mainstreaming – Concepts and Definitions. Available at https://eige.europa.eu/gender-mainstreaming/concepts-and-definitions.

Ferreras Carreras, Elena, and Gulnar Wakim (2017). Gender Analysis in Lebanon. Situation Analysis Report, European Union Delegation to Lebanon. Available at https://eeas.europa.eu/sites/eeas/files/situation_analysis_report.pdf.

Food and Agriculture Organization of the United Nations (FAO) (2019). FAO in Lebanon – Lebanon at a Glance. Available at http://www.fao.org/lebanon/fao-in-lebanon/lebanon-at-a-glance/en/.

Information International (2015). The Women of Lebanon in Statistics. Beirut: Information International. Available at https://monthlymagazine.com/article-desc_1722_.

Inter-Parliamentary Union (IPU) (2019). Women in National Parliaments: Situation as of 1st September 2019. Accessed on 10 January 2020. Available at http://www.ipu.org/wmn-e/world.htm.

International Labour Organization (ILO) (2007). Global Employment Trends for Women. Brief. Available at https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_elm/---trends/documents/publication/wcms_114287.pdf.

_____ (2018). The Cooperative Sector in Lebanon: What Role? What Future? ILO, Regional Office for the Arab States, Beirut: ILO. Available at https://www.ilo.org/wcmsp5/groups/public/---arabstates/---ro-beirut/documents/publication/wcms_644724.pdf.

International Renewable Energy Agency (IRENA) (2019). Renewable Energy: A Gender Perspective. Abu Dhabi: IRENA Available at https://irena.org/-/media/Files/IRENA/Agency/Publication/2019/Jan/IRENA_Gender_perspective_2019.pdf.

Investment Development Authority of Lebanon (IDAL) (2019). Lebanon at a Glance – Lebanon in Figures – Economic Performance. Available at http://investinlebanon.gov.lb/en/lebanon_at_a_glance/economic_profile/economic_performance.

Jabbour, Melda (2017). The NEEREA Momentum: The Yearly Update. Presentation at the International Beirut Energy Forum. Dbayeh, Lebanon, 18 September. Available at http://lcec.org.lb/Content/uploads/Presentation/180226115948055~NEEREA%20Update%20-%20iBEF%202017.pdf.

Jaffery, Rabiya (2017). Women Play Key Role in Solar Energy Projects. Inter Press Service (IPS) News Agency, 31 August. Available at http://www.ipsnews.net/2017/08/women-play-key-role-solar-energy-projects/.

Joint Monitoring Programme (JMP) (2019). JMP Global Database. Available at https://washdata.org/data/household#!/lbn. Accessed on 10 January 2020.

Kakute Projects (2019). Company Website. Available at http://kakute.org/.

Karlsson, Gail, and Ana Rojas (2013). The Benefits of Gender Balance in Climate Change Mitigation Investments and Sustainable Energy Initiatives. Available at https://www.energia.org/cm2/wp-content/uploads/2015/04/07.-ENERGIA_Gender_Balance_CC_Mitigation_Investments_Sustainable_Energy_Initiatives.pdf.

Latif, Nida (2016). Gender Profile – Lebanon. Beirut: Institute for Women's Studies in the Arab World (IWSAW). Available at http://iwsaw.lau.edu.lb/publications/documents/Country%20Gender%20Profile%20Lebanon-Online%20.pdf.

Leaders For Sustainable Livelihoods (2017). Skills Gap Analysis for Improved Livelihood Sustainability in Lebanon: Competency Needs and Skills Gap Analysis of the Private Sector in Mount Lebanon, Tripoli and the Bekaa. Report. Available at https://data2.unhcr.org/en/documents/download/63157.

Lebanon, Ministry of Agriculture (2014). *National Strategy 2015-2019*. Beirut. Available at http://www.agriculture.gov.lb/Arabic/NewsEvents/Documents/MoA%20Strategy%202015-19%20-%20English-for%20printing.pdf

Lebanon, Ministry of Tourism (2014). *Lebanon Rural Tourism Strategy.* Beirut. Available at http://www.mot.gov.lb/Content/uploads/Publication/150225013030192~Rural%20Tourism%20Strategy_English.pdf.

Mousley, Peter, and others (2017). Jobs for North Lebanon. Washington D.C.: World Bank. Available at http://documents.worldbank.org/curated/en/800821506102645484/pdf/119940-WP-PUBLIC-sept-27-3am-v2-Leb-Jobs-for-North-Full-report.pdf.

National Observatory for Women in Agriculture and Rural Areas (NOWARA) (2011). Status of Lebanese Women in Rural Areas: Roles and Perspectives. Executive Summary. Unpublished study implemented by NOWARA in framework of the NOWARA-IAM Bari Project: 'Strengthening women role in Lebanese rural areas'. Available at http://www.nowara.org/assets/infoAndResources/studies/Executive_summary_of_Study_Women_in_rural_areas_2011.pdf.

Nelson, Sibyl, and Anne T. Kuriakose (2017a). Gender and Renewable Energy: Entry Points for Women's Livelihoods and Employment. Washington D.C.: Climate Investment Funds (CIF). Available at https://www.climateinvestmentfunds.org/sites/cif_enc/files/gender_and_re_digital.pdf.

Office of the Special Adviser on Gender Issues and Advancement of Women (OSAGI) (2001a). Facstsheet, No. 4. Available at https://www.un.org/womenwatch/osagi/pdf/factsheet4.pdf.

_____ (2001b). Gender Mainstreaming. Available at https://www.un.org/womenwatch/osagi/gendermainstreaming.htm.

Regional Center for Renewable Energy and Energy Efficiency (RCREEE) (2013). Renewable Energy Country Profile – Lebanon. Available at http://www.rcreee.org/sites/default/files/lebanon_fact_sheet_press.pdf.

Renewable Energy Policy Network for the 21st Century (REN21) (2019). Renewables 2019: Global Status Report. Paris: REN21 Secretariat. Available at https://www.ren21.net/wp-content/uploads/2019/05/gsr_2019_full_report_en.pdf.

Renner, Michael (2017). Rural Renewable Energy Investments and their Impact on Employment. Working Paper, No. 1. Geneva: ILO. Available at https://ideas.repec.org/p/ilo/ilowps/994960192102676.html.

Robalino, David, and Haneed Sayed (2012). Republic of Lebanon – Good Jobs Needed: The Role of Macro, Investment, Education, Labor, and Social Protection Policies ('Miles') – A Multi-Year Technical Cooperation Program. Middle East and North Africa Human Development Group (MNSHD), Washington D.C.: World Bank. Available at http://documents.worldbank.org/curated/en/230521468089355499/Lebanon-Good-jobs-needed-the-role-of-macro-investment-education-labor-and-social-protection-policies-MILES-a-multi-year-technical-cooperation-program.

Salam, Darine (2019). The Water-Energy-Food-Health Nexus Renewable Resources Initiative (WEFRAH). Presentation at the Expert Group Meeting on 'Enhancing capacity building addressing Water and Energy interlinkages for Sustainable Development in the Arab Region'. Beirut, 25 June. Available at https://www.unescwa.org/sites/www.unescwa.org/files/events/files/2.3_water-_energy-_food-_health_nexus_renewable_resources_initiative_darine_salam_0.pdf.

Schellen, Thomas, Jeremy Arbid and Olga Habre (2018). "12 new Lebanese startups: a selection by Executive". *Executive Magazine,* 7 November. Available at https://www.executive-magazine.com/special-report/12-new-lebanese-startups.

Sfeir, Jean-Paul (2016). Biomass Wood Briquettes Plant Pilot Project in Lebanon. Solarnet, PowerPoint Presentation. Available at http://www.cedro-undp.org/content/uploads/event/161130022243282~4-BiomassWoodBriquettesPlant-PilotProjectinLebanon.pdf.

Social Impact, Inc. (2012). Gender Assessment for USAID/Lebanon. Available at http://pdf.usaid.gov/pdf_docs/PA00K9W6.pdf.

Solar Electric Light Fund (SELF) (2003). Renewable Energy Empowered Women. A SELF White Paper. Washington D.C.: SELF. Available at https://www.self.org/SELF%20White%20Paper%20--%20Renewable%20Energy%20Empowered%20Women.pdf.

Solar Sister (2018). Organization Website. Available at https://solarsister.org.

Tagaddod (2015). Company Website. Available at https://www.tagaddod.com/index.html.

The Strongest Oak Foundation (TSO) (2019). Solar Village of the Future. Available at https://www.thestrongestoak.org/solar-energy-projects/solar-village-of-the-future/.

The Switchers (2016). "An agricultural company that produces biomass briquettes". *The Switchers,* 24 February. Available at https://www.theswitchers.eu/en/switchers/an-agricultural-company-that-produces-biomass-briquettes/.

Tsagas, Ilias (2018). "Lebanon aims to source 30% of heat and power from renewables by 2030". *PV Magazine,* 6 November. Available at https://www.pv-magazine.com/2018/11/06/lebanon-aims-to-source-30-of-heat-and-power-from-renewables-by-2030/.

United Nations (2015). Sustainable Development Goals (SDGs) – Goal 5: Achieve Gender Equality and Empower all Women and Girls. Available at https://www.un.org/sustainabledevelopment/gender-equality/.

United Nations Development Fund for Women (UNIFEM) (2010). Gender Justice: Key to Achieving the Millennium Development Goals. New York: UNIFEM. Available at https://www.unwomen.org/en/digital-library/publications/2010/1/gender-justice-key-to-achieving-the-millennium-development-goals

United Nations Development Programme (UNDP) (2016). Gender Strategy – Lebanon. Available at https://www.undp.org/content/dam/lebanon/docs/Operations/LegalFramework/UNDP%20Lebanon%20Gender%20Strategy%20-%20FINAL%202016.pdf.

United Nations Development Programme (UNDP), United Nations Population Fund (UNFPA), and United Nations Gender Equality and Women Empowerment (UN Women) (2018). Gender-Related Laws, Policies and Practices in Lebanon. Available at https://civilsociety-centre.org/sites/default/files/resources/gender_justice_in_lebanon_final_report_eng.pdf.

United Nations Economic and Social Commission for Western Asia (ESCWA) (2017). Arab Society: A Compendium of Social Statistics, Issue No. 13. E/ESCWA/SD/2017/5. Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/arab-society-compendium-social-statistics-issue-no-13-english_0.pdf.

_____ (2019a). Energy Vulnerability in the Arab Region. E/ESCWA/SDPD/2019/1. Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/energy-vulnerability-arab-region-english_0.pdf.

_____ (2019b). Renewable Energy Legislations and Policies in the Arab Region (Arabic). E/ESCWA/SDPD/2019/INF.1. Available at www.unescwa.org/sites/www.unescwa.org/files/publications/files/renewable-energy-legislations-policies-arab-region-arabic_1.pdf.

_____ (2019c). Seminar on Monitoring the Implementation of Energy Related SDG Indicators in the Arab Region. 17-18 April. Available at https://www.unescwa.org/events/seminar-monitoring-energy-sdgs-arab-region.

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2003). Gender Mainstreaming Implementation Framework - Baseline Definitions of Key Concepts and Terms. Available at http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/BSP/GENDER/PDF/1.%20Baseline%20Definitions%20of%20key%20gender-related%20concepts.pdf.

United Nations Gender Equality and Women Empowerment (UN Women) (2019). Office of the Special Adviser on Gender Issues and Advancement of Women (OSAGI) Gender Mainstreaming – Concepts and definitions. Available at https://www.un.org/womenwatch/osagi/conceptsandefinitions.htm.

United Nations Industrial Development Organization (UNIDO) (2011). Industrial Development Report 2011 – Industrial Energy Efficiency for Sustainable Wealth Creation: Capturing Environmental, Economic and Social Dividends. Vienna. Available at https://www.unido.org/sites/default/files/2012-01/UNIDO_FULL_REPORT_EBOOK_0.pdf.

_____ (2014). Guide on Gender Mainstreaming Energy and Climate Change Projects. Vienna: UNIDO. Available at https://www.unido.org/sites/default/files/2015-01/Guide_on_Gender_Mainstreaming_ECC_0.pdf.

United States Agency for International Development (USAID) (2018). Country Profile: Lebanon – Education. Available at https://www.usaid.gov/lebanon/educationhttps://www.usaid.gov/lebanon/education.

Usta, Jinan, JoAnn M. Farver and Christine Sylva Hamieh (2016). "Effects of socialization on gender discrimination and violence against women in Lebanon". *Violence Against Women,* vol. 22, No. 4, pp. 415-431. Available at https://www.ncbi.nlm.nih.gov/pubmed/26385360.

Vallvé, Xavier, and others (2019). Prioritization and Assessment of Value Chains within the Renewable Energy Sector in Lebanon. New York: UNDP. Available at https://reliefweb.int/report/lebanon/prioritization-and-assessment-value-chains-within-renewable-energy-sector-lebanon.

Vidal, John (2011). "Top 10 small-scale renewable energy innovators". *The Guardian,* 19 January. Available at https://www.theguardian.com/environment/blog/2011/jan/19/top-10-renewable-energy-companies.

Warth, Lisa, and Malinka Koparanova (2012). Empowering Women for Sustainable Development. Discussion Paper Series, No. 2012.1. Geneva, Switzerland: United Nations Economic Commission for Europe (UNECE). Available at http://www.unece.org/fileadmin/DAM/Gender/publications_and_papers/UNECE_Discussion_Paper_2012.1.pdf.

World Bank (2018a). Country Profile – Lebanon. World Development Indicators database. Available at https://databank.worldbank.org/data/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=LBN. Accessed on 10 January 2020.

_____ (2018b). Creating Economic Opportunities in Support of the Lebanon National Jobs Program. Appraisal Document, Washington D.C.: World Bank. Available at http://documents.worldbank.org/curated/en/707931530329796565/pdf/Lebanon-PAD-final-06082018.pdf.

_____ (2019a). Infographic: Women in Lebanon, 17 January. Available at https://www.worldbank.org/en/news/infographic/2019/01/17/infographic-women-in-lebanon. Accessed on 10 January 2020.

_____ (2019b). Mashreq Conference on Women's Economic Empowerment, 19 January. Available at https://www.worldbank.org/en/events/2018/12/05/mashreq-conference-on-womens-economic-empowerment.

World Bank, and others (2019). Tracking SDG7: The Energy Progress Report 2019. Washington D.C.: International Bank for Reconstruction and Development/World Bank. Available at https://trackingsdg7.esmap.org/data/files/download-documents/2019-Tracking%20SDG7-Full%20Report.pdf.

World Economic Forum (2015). The Global Gender Gap Index 2015. Available at http://www3.weforum.org/docs/GGGR2015/The%20Global%20Gender%20Gap%20Index%202015.pdf.

_____ (2018).The Global Gender Gap Report 2018. Insight Report, Geneva: World Economic Forum. Available at http://www3.weforum.org/docs/WEF_GGGR_2018.pdf.

World Health Organization (WHO) (2016). Lebanon Health Profile 2015. WHO Regional Office for the Eastern Mediterranean. Available at http://applications.emro.who.int/dsaf/EMROPUB_2016_EN_19274.pdf?ua=1.

World Tourism Organization (UNWTO), and International Labour Organization (ILO) (2013). Economic Crisis, International Tourism Decline and its Impact on the Poor. Madrid: UNWTO. Available at https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_214576.pdf.

19-01064