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 Jordan

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Economic and Social Commission for Western Asia

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

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Preface

This report was developed by the Energy Section in the Climate Change and Natural Resource Sustainability Cluster (CCNRS) at the United Nations Economic and Social Commission for Western Asia (ESCWA) within the context 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).

REGEND, which is being implemented with a view to supporting rural communities across the Arab region, is currently being rolled out in three pilot countries, namely Jordan, Lebanon and Tunisia. It provides for assessments to be conducted in key areas, including access to energy, entrepreneurial development, gender mainstreaming, social inclusion, human rights processes, and building resilience to climate change. The assessments collect existing and relevant qualitative and quantitative information which will help to identify key challenges to be addressed, gender mainstreaming potentials, and recommendation and opportunities for promoting the economic empowerment of women and facilitate the formulation of recommendations to ensure that renewable energy technologies, entrepreneurial development, education, awareness-raising activities and policy formulation can promote gender mainstreaming and the economic empowerment of women.

This report, which reviews the situation in Jordan, was prepared by Ms. Sawsan Gharaibeh, Gender Expert, with substantial contribution and guidance provided by Ms. Radia Sedaoui, Chief of the Energy Section, Climate Change and Natural Resource Sustainability Cluster, ESCWA.

Data sources

The report makes use of data provided by a number of sources, including data key national stakeholders and members of the REGEND national facilitating team, including, in particular, Ms. Lama Shmaylh, Head of Economic Empowerment of Rural Women at the Ministry of Agriculture, Jordan, in addition to Mr. Zeyad Al Saaeda, Director of the Electricity and Rural Electrification Directorate and Mr. Maher Saleh, Karak Area Manager, at the Ministry of Energy and Mineral Resources, Jordan.

The report also draws on the outcomes of the REGEND Baseline Study for Jordan, conducted in early 2019, in addition to the outcomes of related national workshops and focus group discussions, including the "National Meeting on Women Empowerment and Entrepreneurial Development in the Rural Context: The Role of Renewable Energy", held in Beirut on 30 and 31 July 2019.

Executive Summary

Recognizing the significant potential of renewable energy applications in terms of their capacity to enhance productivity, promote entrepreneurship and strengthen gender equity, ESCWA in collaboration with Sida launched REGEND in order to identify opportunities for small-scale renewable energy applications in rural areas across the region. REGEND adopts an integrated rural development approach and focuses on the role played by rural women. It seeks to demonstrate that development-driven approaches that promote entrepreneurship and leverage local expertise are particularly effective in addressing gender inequality, economic disempowerment, political exclusion, challenges related to natural resources and other social vulnerabilities.

This report presents the findings of a detailed review and analysis of gender issues associated with energy services and also fills a gap in existing literature on rural women in Jordan. In the absence of a strategy for enhancing the situation of rural women or platforms for rural women to influence decision-making, this report draws on information collected during field visits to highlight the views of rural women entrepreneurs in Jordan and draws attention to the challenges and barriers impeding their access to renewable energy. These include a number of social, cultural and legal impediments, challenges related to access to finance, education and training, and the lack of advocacy platforms through which women can guide policy development. This report shows that access to small-scale renewable energy sources can lead to sustainable economic gains in rural areas, ultimately enhancing the quality and health standards of rural products, strengthening food security and improving the lives of rural families.

The report concludes by making four key observations, drawing attention to four enabling factors and setting forth ten recommendations. The first observation is that there is a lack of relevant, consistent and reliable data on gender mainstreaming in the area of renewable energy. The second is that women remain underrepresented across the renewable energy value chain. The third is that the current policy framework on renewable energy fails to adopt a transformative gender equality approach. The fourth observation is that although schools and universities are natural platforms for raising awareness of renewable energy, those platforms remain underutilized.

The enabling factors include the Government's commitment to, and implementation of, an open source data policy - a substantial catalyst for establishing data baselines on gender and renewable energy. The second enabling factor is the support of relevant stakeholders for policy changes supporting gender mainstreaming in renewable energy policies. The third enabling factor is the fact that increasing numbers of women are assuming leadership positions in the energy and renewable energy sectors. The fourth factor is that university science clubs and youth organizations are keen to raise awareness and build capacity among young people. Against that backdrop, the report concludes that efforts should be made to:

Raise awareness of renewable energy as an enabler for economic activity in general, and for women entrepreneurs in rural areas and young people in particular. Relevant stakeholders should formulate a three-tier awareness-raising programme on renewable energy that provides for: (a) a top-down

approach in which the Ministry of Energy and Mineral Resources communicates with individuals; (b) a bottom-up approach in which individuals communicate relevant information to policymakers, and; (c) building on good practices identified within the context of the REGEND process. In that connection, key messages could be communicated effectively by community radio stations and on social media platforms.

Align relevant policies to ensure that common gender-specific indicators are taken into account in renewable energy policies. Relevant policies must be aligned, inter alia, by conducting a baseline study to assess the impact of individual policies and strategies. Indicator reference sheets should be drafted in a collaborative manner so as to ensure that all ministries adopt a harmonized set of indicators.

Revisit financing models to offer incentives for microfinance institutions. Since most women in Jordan are effectively un-bankable, the Ministry of Energy and Mineral Resources should offer incentives to microfinance lending institutions to facilitate women's access to finance. Microfinance institutions are often keen to support renewable energy initiatives and such incentives would encourage them to do so.

Enhance the role and negotiating position of rural women entrepreneurs by strengthening community-based organizations, municipal councils and other forums and networks. Collective action is needed to support continuous advocacy and third-party monitoring of renewable energy and gender mainstreaming strategies. A platform that links rural women entrepreneurs with female academics in the field of renewable energy, women working in the renewable energy industry, and women leaders in the vocational training and continuing education sphere could have a significant impact. Ensuring that women speak with one voice will facilitate efforts to change prevailing social and cultural norms in ways that enhance the status of women. Networking, coaching and mentoring have already proven effective in other disciplines and are likely to have a positive impact in the field of renewable energy.

Design an integrated capacity-building programme that focuses on financial literacy, including pricing, cost calculation and investment, health and safety, packaging and marketing using social media and information technology. That programme should complement renewable energy pilot initiatives targeting selected rural areas. Ministries, international organizations, service providers and non-governmental organizations should coordinate their activities to ensure the programme's success.

Design vocational training courses in renewable energy. Although many Jordanian women are educated in science, technology, engineering and mathematics (STEM), few take up employment in those areas once they have completed their studies. This is due to a number of factors, including, first and foremost, the fact that they are often required to look after their families. Rural women are often doubly disadvantaged. Firstly, because few female teachers in rural schools teach maths or science, those schools rarely offer high quality STEM education to girls or encourage them to pursue STEM education at university. Secondly, many women chose to stop working in order to look after their families and their re-entry into the labour market at a later date can be a daunting task. Vocational training in renewable energy could enable many women to learn employable skills.

Establish partnerships among university departments and among universities and vocational training institutes. There is considerable potential for the establishment of such partnerships and for student-led efforts to promote the renewable energy sector. Universities could also design inter-disciplinary studies and integrated courses that address

energy, renewable energy, agriculture, water and the water-energy-food nexus. Students could also be encouraged to carry out project work on sustainable energy consumption and land use, and on ways to boost agricultural productivity while also reducing water consumption and the use of pesticides. Furthermore, establishing partnerships between universities and vocational training institutes would allow students to put their academic knowledge into practice in real-world situations and further develop their skills. That would enhance their chances of finding employment in an increasingly competitive job market. Universities could also organize renewable energy days to raise awareness on that issue and establish and strengthen links with private sector stakeholders and relevant non-governmental organizations.

Promote effective data collection and management. Investments should be made to expand data collection by the Department of Statistics, the Ministry of Energy and Mineral Resources, the Ministry of Agriculture, and other relevant partners so as to consolidate data collection and management and facilitate research to inform policy decisions. All data should be disaggregated by gender, as well as by locality and governorate. The Ministry of Energy and Mineral Resources should establish a data observatory to compile and publish relevant data in an open source format, in line with the country's commitment to open source data provision. ESCWA is well-positioned to foster and/or build partnerships with ministries and their respective gender focal points in order to strengthen the collection, management and use of data to inform relevant indicators.

Ensure that ministerial budgets are linked to relevant indicators on gender. Following the establishment of a set of harmonized indicators, ministerial budgets should be drafted with a view to improving those indicators. Any improvements achieved in the area of gender are unlikely to be quantified until ministerial budgets are linked in that manner.

Implement robust monitoring and evaluation mechanisms. A robust monitoring framework should be established to facilitate the successful implementation of policies, track progress and/or setbacks, and build on any lessons learned. An open source database should be established to track policy implementation in collaboration with community-based organizations and relevant research institutions.

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Abbreviations and Explanatory Notes

CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CCNRS	Climate Change and Natural Resource Sustainability Cluster
EDAMA	EDAMA Association for Energy, Water and Environment
ENERGIA	International Network on Gender and Sustainable Energy
IRENA	International Renewable Energy Agency
JD	Jordanian dinar
MW	megawatt
PV	photovoltaic
REGEND	Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region
Sida	Swedish International Development Corporation Agency
STEM	Science, technology, engineering and mathematics
SWOT	strengths, weaknesses, opportunities and threats
ESCWA	Economic and Social Commission for Western Asia
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
USAID	United States Agency for International Development

Introduction

Jordan imports some 97 per cent of its biomass and fossil fuel needs, primarily from Iraq and Saudi Arabia, in order to generate electricity and sustain its transport sector.[1] As is the case for other net energy-importing countries, Jordan's heavy reliance on Iraqi, Saudi, and other foreign resources (in 2012, for example the Government of Jordan spent 17.6 per cent of gross domestic product on energy alone)[2] has placed an increasing strain on the country's finances, exacerbated its already high external debt burden, undermined its economy and impeded sustainable development. This has had a disproportionate impact on Jordan's most vulnerable populations, including rural communities and, most notably, rural women.

Within the context of the 2030 Agenda for Sustainable Development, the Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region (REGEND) was launched by the United Nations Economic and Social Commission for Western Asia (ESCWA) in partnership with the Swedish International Development Cooperation Agency (Sida) to identify opportunities for small-scale renewable energy applications in rural areas across the Arab region, with a view to strengthening energy security, addressing water scarcity, bolstering climate change resilience, improving livelihoods, and promoting social inclusion and gender equality in rural communities.

REGEND focuses on rural communities, with a particular emphasis on rural women and other vulnerable sectors of society, and has been launched to foster synergies among national and regional stakeholders, including the Government of Jordan, relevant ministries and agencies, non-governmental organizations and associations working to support rural women and farmer's collectives. REGEND supports renewable energy initiatives that stimulate private sector investment, entrepreneurial development, women's empowerment, job creation, and the development of robust value chains that support sustainable economic development.

The broader aim of the present study is to provide policymakers and local institutional stakeholders with a gender perspective on the socioeconomic, political and environmental challenges faced by rural communities in Jordan and to foster an enabling environment that supports private sector investment and the involvement of women in income-generating activities that make use of small-scale renewable energy technologies.

An overview of indicators on gender in Jordan is provided in chapter 1, which underscores that, although the Department of Statistics compiles relevant World Economic Forum science, technology, engineering and mathematics (STEM) and employment data, it does not at present compile data specifically on rural women and on renewable energy and gender.

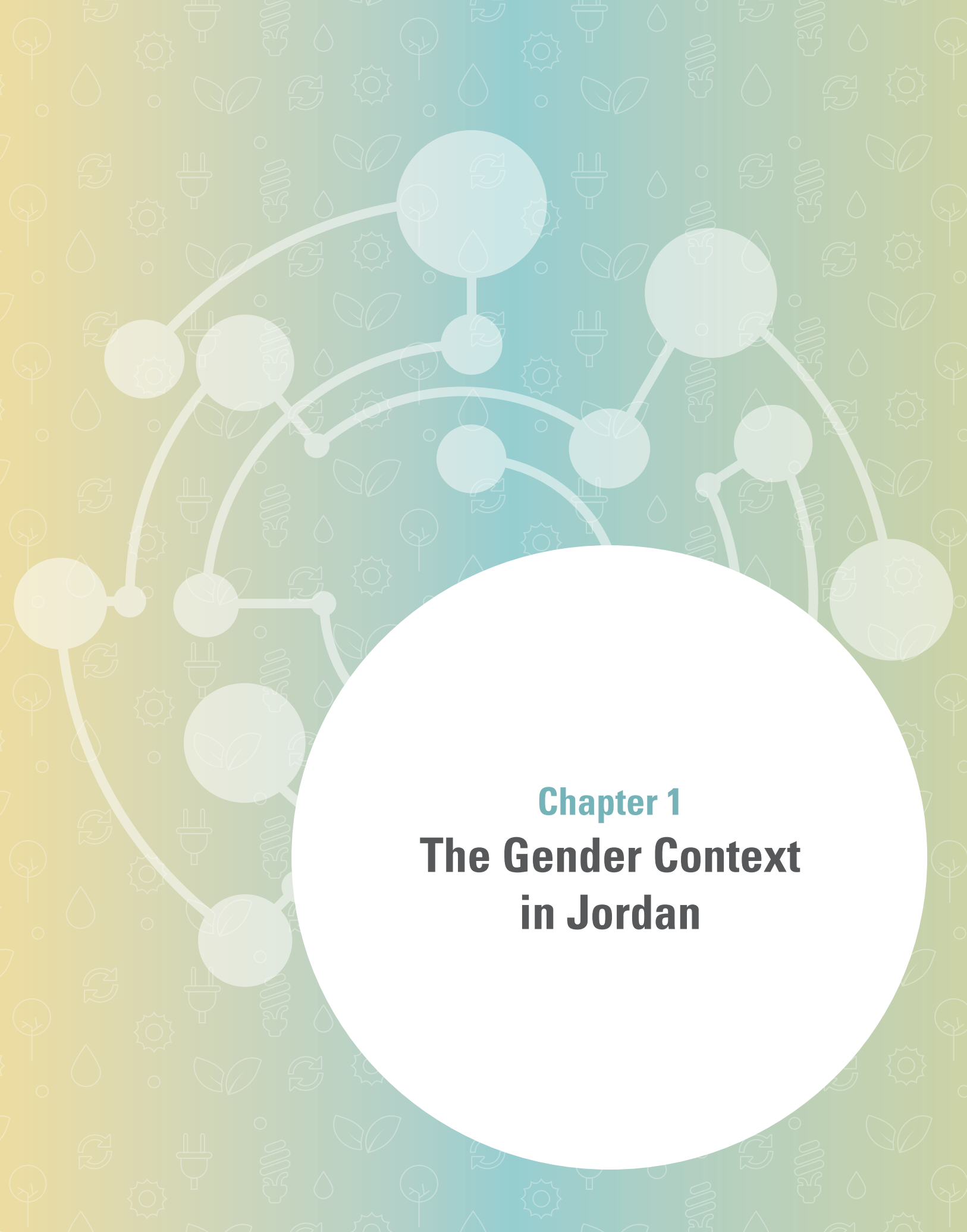
Chapter 2 provides an overview of the reasons for gender gaps within the energy sector and draws attention to previous initiatives to strengthen women's participation in that sector.

Chapter 3 provides an overview of the renewable energy sector in Jordan and gender mainstreaming in renewable energy policies and strategies. Based on data obtained in field studies conducted in the villages of Al-Asha'ary, Batir and Rakin, the chapter also highlights common challenges faced by rural women entrepreneurs.

Drawing on global best practices, chapter 4 reviews potential entry points, makes a number of recommendations of relevance to Jordan, and sets forth four possible strategies for promoting the use of renewable energy technologies in rural Jordan.

Chapter 5 sets forth four key observations, draws attention to four enabling factors and presents ten recommendations.

The present report makes use of both primary and secondary data. Primary data was collected in interviews with key stakeholders and through field interviews in four localities. Drawing on the data obtained, the report provides a holistic understanding of gaps and challenges faced by women in rural areas in Jordan, particularly within the energy and renewable energy sectors. Given the lack of in-depth research on rural women in Jordan, the field interviews also deepened understanding of the particular situation and needs of rural women. Secondary data was obtained from governmental sources, donor reports, and other gender-related documents.



Chapter 1
The Gender Context in Jordan

1. The Gender Context in Jordan

The Global Gender Gap Report, published by the World Economic Forum on an annual basis, underscores that efforts to achieve gender equality in Jordan are affected by a number of conflicting factors.[3] Since 2006, the Forum has used the Global Gender Gap Index to measure gender-based gaps across four key dimensions, namely economic participation and opportunity, educational attainment, health and survival, and political empowerment.[4] In 2018, Jordan was ranked 138th out of 149 countries; however, the country's rankings for each dimension are more complicated than its overall ranking would suggest. For example, Jordan was ranked 45th and 102nd in 2018 in terms of education attainment and health and survival, respectively. However, it was also ranked 129th for political empowerment and 144th for economic participation and opportunity.[5] Given the significantly different rankings for the four key dimensions, a multidimensional approach must be adopted in order to fully assess and understand gender equality in Jordan.

This paradox is particularly evident if we look at STEM education enrolment rates. According to data provided by the Department of Statistics, women's enrolment rates in STEM programmes are broadly similar across all Jordanian universities and colleges. The only notable exceptions are for engineering and computer science courses (table 1).

A. Overview of national gender indicators

An increasing number of national and local studies of issues relating to gender parity have been conducted since 2005, the year in which the Government of Jordan established the Gender Statistics Division within the Department of Statistics. The division was created within the context of the country's efforts to achieve the Sustainable Development

Table 1 STEM education enrolment rates for men and women, 2015 (percentage)

		Female (%)	Male (%)	Gender gap (%)
Higher education enrolment	Universities	51.8	48.2	-3.6
	Science colleges	47.9	52.1	4.1
	Arts colleges	55.3	44.7	-10.6
	Graduates	55.1	44.9	-10.3
Science college enrolment	Medicine, medical, rehabilitation colleges	61.4	38.6	-22.8
	Pharmacy colleges	71.1	28.9	-42.2
	Engineering colleges	32.3	67.7	35.4
	Computer science colleges	41.7	58.3	16.6
	Agriculture colleges	59	41	-18
	Natural science colleges	64.7	35.3	-29.4

Source: World Economic Forum, 2018.

Goals, and led to the more extensive collection of gender-disaggregated data, such as data on the numbers of girls and boys in primary, secondary and tertiary education. The Gender Statistics Division is the foremost government agency collecting data on women and girls, and it reports directly to the Directorate of Population and Social Statistics within the Department of Statistics.

Table 3 provides an overview of the indicators informed by data compiled on a regular basis by the Gender Statistics Division. Most data are updated annually. These include data on the marital status of women, their educational level, the marital status of women as compared to their educational level, the economic activity of women (i.e. whether they perform paid and/or unpaid labour), the economic activity of women as compared to their educational level, the economic activity of women as compared to their marital status, and the economic activity status of women (namely are they employed, unemployed or in education).

The data collected by the division is disaggregated by both gender and locale. This facilitates efforts by relevant stakeholders to understand the relationship between renewable energy and gender-related issues within particular rural contexts throughout the country. In addition to the Department of Statistics, several ministries publish gender-disaggregated data on a regular basis, including the Ministry of Education, the Ministry of Health, and the Ministry of Labor. Details are provided in table 3.[6]

B. The Jordanian gender paradox

A factor that continues to cause concern to both the Government of Jordan and international stakeholders is the high educational attainment levels of women in Jordan vis-à-vis their very low labour force participation rates. The Global Gender Gap rankings highlight the fact that, as is the case in other countries across the region, very few women are in paid employment, despite the fact that a very high proportion of Jordanian women are well-educated. Indeed, while women in Jordan are more likely to enter higher education than men, they are almost absent from the workforce. Furthermore, girls tend to outperform boys at school and, according to a study conducted by the Brookings Institution, the literacy, numeracy, and general learning levels of Jordanian boys were 25 per cent lower than those of Jordanian girls at the secondary education level.[7] Similar statistics were also observed at the primary education level. The study revealed that, even though 92 per cent of Jordanian women plan to work after graduation, with 76 per cent of those women expecting to work full-time, women continue to face significant marginalization in the job market. Indeed, while some 9.1 per cent of males with bachelor's degrees are unemployed, 26.5 per cent and 31.2 per cent of females with equivalent levels of education were unemployed in 2017 and 2019, respectively.[8]

Compared with the challenges it faces in terms of increasing women's workforce participation rates, including within the civil service, Jordan does not appear to face significant challenges in terms of addressing gender gaps in the provision of public services. Such a discrepancy would suggest that, while Jordanian women have overcome a series of challenges impeding their access to quality education and healthcare, prevailing social norms regarding the responsibilities and roles of a woman at home and in the private sphere continue to cause significant gender disparities in the world of work.

Worse still, Jordan's employment gender gap is widening and increased from 9.4 per cent in 2014 to 11.7 per cent in 2015.[9] The paradox is striking and has been a central focus of several government policies, including Jordan 2025, which provides:

"Distribution by gender shows that 65 per cent of males are economically active compared to only 15 per cent of females. … Our single biggest challenge over the next decade is addressing this workforce participation challenge. ... This is a multi-dimensional problem that requires an equally multi-dimensional set of policy and program responses. In particular, the low female participation rate is a significant lost opportunity for Jordan."[10]

While the employment gender gap is a matter of serious concern for the Government of Jordan and is a central focus of its visions, plans and strategies, one issue looms large: the Government has so far been unable to narrow that gap, despite the considerable efforts that it has exerted. Addressing this challenge will therefore require further in-depth analysis of relevant indicators and disaggregated data.

Although the gender gap is widening, a number of trends are apparent if we look at women's marital status. As shown in table 2, which is based on a survey of the employed and unemployed population by marital status between 2008 and 2016, the widest (and widening) employment gender gap is found among single women who have never been married. Women in that category are usually under the guardianship of their fathers or brothers and are frequently discouraged from working in environments in which they are likely to come into contact with men, due to concerns that they will encounter gender-based harassment.[11] The gender gap for married women and widows is also increasing, while it has decreased significantly for divorced women.

Table 2 Female employment gap by marital status 2014-2015

Women's marital status	2014	2015	Trend
Single	10	11.7	Gap increase
Married	8.5	9	Gap increase
Divorced	4.7	-0.4	Significant decrease
Widowed	3.2	1.8	Gap decrease

Source: Department of Statistics, 2018.

Furthermore, according to the 2018 Status of the Country Report, published by the Jordanian Economic and Social Council, the employment gender gap increases in tandem with educational achievement, with the gap becoming wider at the tertiary education level and beyond.[12] This means that women find it increasingly hard to compete for jobs on an equitable basis as the job salary increases. That trend is particularly apparent in senior governmental and private sector positions, where salaries and benefit packages are especially high.

Women are more likely than men to be employed in low-paid jobs. In that connection, a recent World Bank study concluded that, the key driver for women's employment in Jordan the was financial need. This may explain why many Jordanian women are prepared to work for less than the legal minimum wage. In some low-paid jobs, the gender pay gap may be as high as 67 per cent.[13] However, for many women in low-paid jobs, the suitability of their working hours is more important than their pay, and ultimately it is male family members who often decide whether or not a woman should take up employment.[14]

C. Policy and data gaps on rural women

In 2006, the Jordanian National Commission for Women noted that the country's socioeconomic development plan for 1999-2003 had not included a section devoted exclusively to rural women.[15] That omission was to have significant repercussions. The National Commission also underscored that, although rural women had been involved in the process to formulate the 1999-2003 socioeconomic development plan, it was fair to describe their contribution as "largely symbolic".[16]

Table 3 Government of Jordan national gender indicators

#	Indicator	Compiling entity	Data disaggregated by governorate	Frequency	Latest year
1	Maternal mortality rate	Ministry of Health	No	Yearly	2008
2	Fertility rate	Ministry of Health	No	Yearly	2018
3	Literacy rate	Ministry of Health	No	Yearly	2018
4	Employment rate	Ministry of Labor	No	Monthly	2019
5	Employment seeking rate	Ministry of Labor	No	Monthly	2019
6	Economic participation rate	Ministry of Labor	No	Yearly	2018
7	Gender gaps in economic empowerment	Ministry of Labor	No	Yearly	2018
8	Distribution of students	Ministry of Education	Yes	Yearly	2017/2018
9	Distribution of teachers	Ministry of Education	Yes	Yearly	2017/2018
10	Education enrolment rate	Ministry of Education	Yes	Yearly	2017/2018
11	Marital status	Department of Statistics	Yes	Yearly	2018
12	Marital status and educational level	Department of Statistics	Yes	Yearly	2018
13	Educational level	Department of Statistics	Yes	Yearly	2018
14	Economic activity	Department of Statistics	Yes	Yearly	2018
15	Occupation	Department of Statistics	Yes	Yearly	2018
16	Economic activity status	Department of Statistics	Yes	Yearly	2018
17	Economic activity versus educational level	Department of Statistics	Yes	Yearly	2018
18	Economic activity versus marital status	Department of Statistics	Yes	Yearly	2018
19	Distribution of Internet usage	Department of Statistics	No	Yearly, 2010-2015	2015
20	Gender balance among politicians and government officials	Department of Statistics	Yes	Yearly, 2010-2015	2015
21	Distribution of lawyers	Department of Statistics	Yes	Yearly	2018
22	Distribution of judges	Department of Statistics	Yes	Yearly	2018
23	Average annual household income	Department of Statistics	Yes	N/A	2013
24	Average annual household expenditure	Department of Statistics	Yes	N/A	2013
25	STEM education enrolment rate	Department of Statistics	Yes	Yearly, 2009-2015	2015
26	Higher education enrolment rate	Department of Statistics	Yes	Yearly, 2008-2015	2015
27	Secondary school enrolment rate	Department of Statistics	Yes	Yearly, 2009-2015	2015
28	Distribution of engineering, communication and computer science graduates	Department of Statistics	Yes	Yearly, 2009-2015	2015
29	Life expectancy	Department of Statistics	Yes	Yearly, 2008-2015	2015

#	Indicator	Compiling Entity	Data disaggregated by governorate	Frequency	Latest Year
30	Distribution of health professionals	Department of Statistics	Yes	Yearly, 2008-2015	2015
31	Education	Department of Statistics	Yes	Yearly	2018
32	Economic indicators	Department of Statistics	Yes	Yearly	2017
33	Employment by sector	Department of Statistics	Yes	Yearly	2017
34	Economic empowerment	Department of Statistics	Yes	Yearly	2017
35	Civil servants/other employees	All ministries and departments	N/A	Yearly	2018

Sources: Jordan Department of Statistics and Ministries of Labor, Health and Education.

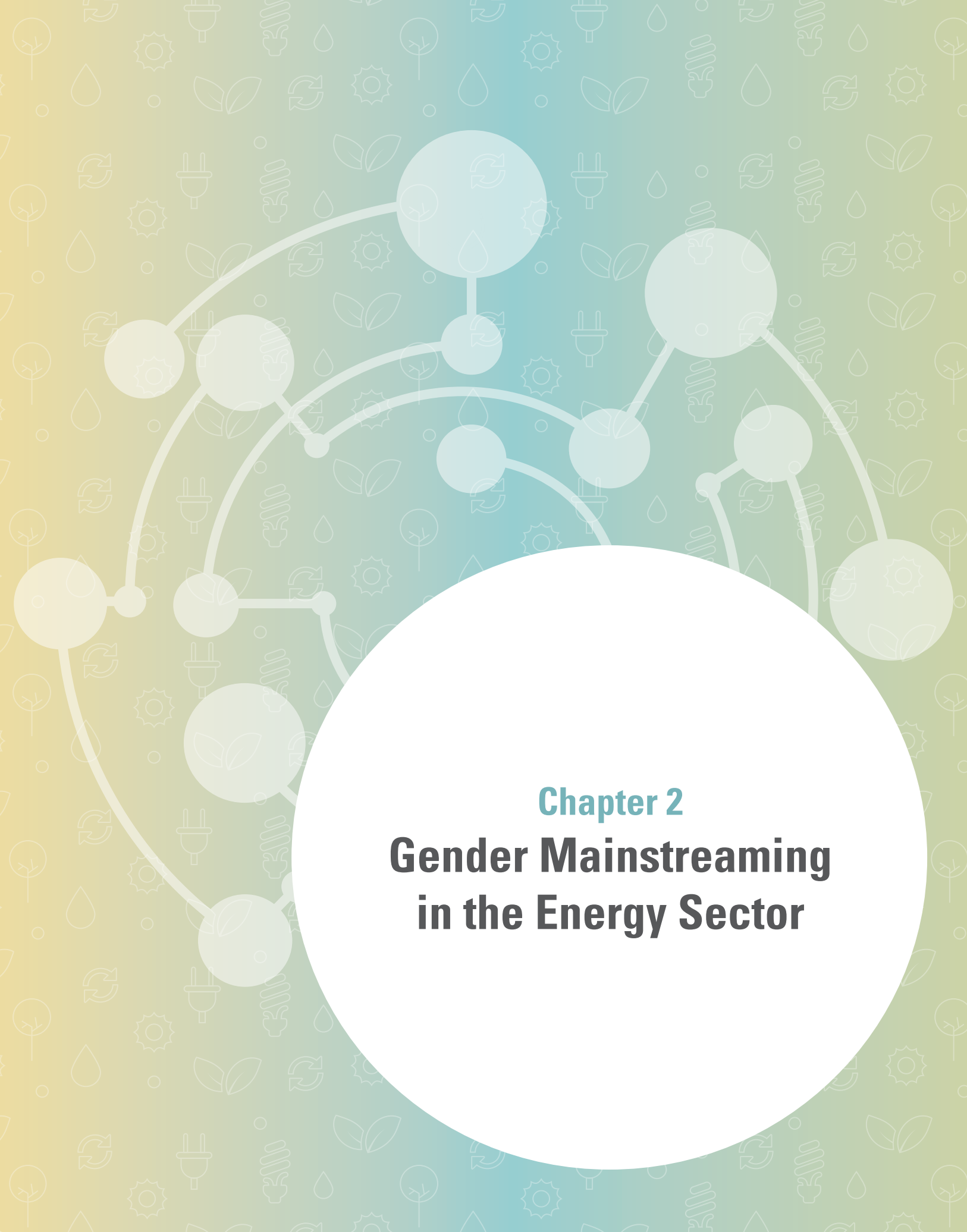
Unemployment continues to be an issue for rural women, 21.8 per cent of whom were unemployed in 2004, compared to the rates of 15.2 per cent for men in rural areas and 15.4 per cent for women living in urban areas.[17] To address that challenge, the Ministry of Agriculture established a new gender unit, which encouraged agricultural credit institutions to make loans available to women and, by March 2006, 816 women had been able to obtain loans, out of a total of 4,166 rural borrowers.[18]

Rural women remain extremely marginalized, particularly in terms of their access to health and social services and their participation in decision-making processes.[19] Other discriminatory practices include depriving women of their inheritance and preventing women from owning property.[20] By 2015, women in rural areas owned only 3 per cent of agricultural land because of their inability to raise the financial resources necessary to purchase such land, while certain legal provisions mean that women often forfeit their inheritance rights to their relatives.[21] On average, women own only 12 per cent of livestock, 8 per cent of poultry and 5 per cent of agricultural machinery.[22]

The Jordanian National Commission for Women formulates the country's national strategies for the advancement of women. A number of challenges have impeded progress in that area, however, for example, although the strategy for 2008-2010 placed particular emphasis on rural women, it was inadequately funded and lacked an effective monitoring and evaluation framework, while the 2013-2017 strategy, although much better funded, mentioned rural women only once and provided no indicators or targets of particular relevance to the situation of those women.

In short, Jordan has in recent years failed to maintain a clear focus on improving the lives of rural women. Without a specific and clear vision, ministries and other relevant entities have been unable to operate in a coherent manner and have often launched financially unsustainable or mutually incompatible programmes. It is therefore imperative for relevant stakeholders to adopt a clear national vision for the advancement of rural women, particularly in the light of the ongoing efforts of the Government of Jordan to decentralize its planning and budgeting processes.

Although very few studies have been conducted on the situation of rural women in Jordan, increasing numbers of donors and international organizations are now focusing on that long-overlooked area.



Chapter 2

Gender Mainstreaming in the Energy Sector

2. Gender Mainstreaming in the Energy Sector

Research suggests that the energy needs and priorities of men and women differ because of their different gender roles within society.[23] As family caretakers, women are usually the main users of energy within the household and most affected by energy scarcity.[24] Women are rarely involved in decision-making with regard to energy usage and energy efficiency.[25] A 2010 gender study in Jordan found that men were more aware of electricity prices and methods of saving energy, such as the use of energy-efficient light bulbs.[26] Overall, women are less involved than men in the energy industry,[27] energy saving initiatives and energy tariff policies and structuring, and they are less likely to invest in relatively expensive but energy-efficient appliances.[28] This chapter looks at gender gaps and achievements within the energy sector.

A. Gender gaps within the energy sector in Jordan

A 2013 baseline assessment on the role of women in the energy sector in Jordan revealed that women's workforce participation rates were very low,[29] and attributed this to a number of factors, including:

- The country's overall low female workforce participation rate;
- Perceptions that energy careers require a great deal of field work and manual labour and are therefore unsuitable for women;
- Gender differences in the choice of bachelor's degrees (between 90 and 95 per cent of mechanical and electrical engineering students are male);[30]
- A general lack of understanding of non-engineering related work in the energy sector;
- Discrimination against women in terms of training and advancement opportunities;[31]
- Private sector reluctance to hire women or invest in their advancement due to the perception that they will at some point require maternity leave and/or leave the workforce altogether.

Another critical factor is the gender wage gap in the sector, which can be as high as 33 per cent.[32]

A 2014 survey found that only 16 per cent of energy service providers are women.[33] Furthermore, only 14 per cent of managerial positions and 10 per cent of technical engineering positions are held by women.[34] The majority of women in the sector work in non-technical positions such as sales, marketing and office administration.

A number of companies acknowledged that the marital status of women could negatively affect recruitment decisions. Only one energy service provider has put in place a sexual harassment policy. None of the companies have established a child day-care centre.[35] There is, moreover, a lack of current data in this area: the most recent statistics are from 2014 and no surveys have been conducted since that date.

A number of initiatives have been launched to address the challenges highlighted in the aforementioned 2013 baseline assessment and 2014 survey. The following sections of the report provide an overview of the most important of those initiatives.

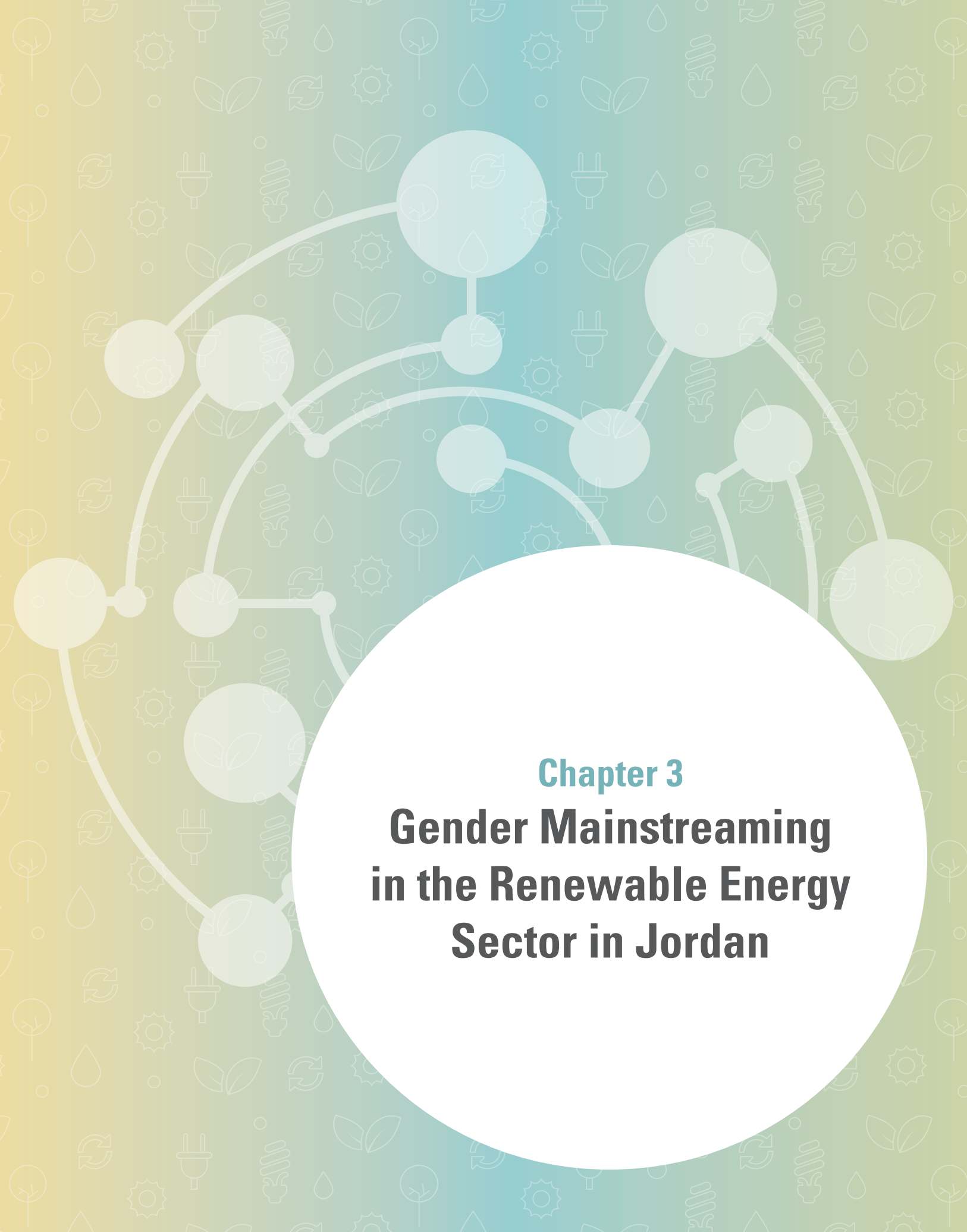
B. Initiatives supporting women's employment in the energy sector

A number of initiatives to support women's employment in the energy sector in Jordan were launched between 2015 and 2017. Most of those initiatives were supported and funded by the United States Agency for International Development (USAID). Table 4 provides an overview of some of those initiatives. These include ongoing projects and initiatives that have been discontinued following the withdrawal of donor support.

Table 4 Key initiatives to promote women's employment in the energy sector in Jordan

Initiative	Description
Women's Leadership Committee	The purpose of this committee, which meets quarterly, is to provide a networking platform among women from Government, the private sector and civil society.
Pilot mentorship programmes	The first mentorship programme was not particularly successful as neither mentors nor those being mentored were fully aware of the challenges impeding mentorship in the energy sector. Another programme, launched within the context of the German Agency for International Cooperation-sponsored Ana Huna project, was more successful. A novel aspect of the mentorship programme was that it brought together female and male mentors, who were thus able to offer each other support in areas such as leadership, management and public speaking. Key informant interviews confirmed that the programme had successfully eroded traditional gender barriers.
Hashtag: #WomENERGYJO	Sharing success stories among women encourages other women to choose career paths within the energy sector. A multi-tooled media campaign was launched to draw attention to and support women in the sector using multiple online platforms, including Facebook, Twitter, LinkedIn, Flickr, and YouTube. For example, a short animated video (available at www.youtube.com/watch?v=A1xGdL6zR24) was produced by the USAID Energy Sector Capacity Building Project to draw attention to the challenges that women face in the energy sector in Jordan. On Women Engineering Day, many women working in the field of engineering posted pictures of themselves under the hashtag #WomENERGYJO with the aim of changing traditional gender perceptions and attitudes.
Mainstreaming gender into Jordan Renewable Energy and Energy Efficiency Fund business and communication plans, beneficiary selection criteria and ongoing activities	In 2016, the Jordan Renewable Energy and Energy Efficiency Fund made a commitment to promoting women's involvement in renewable energy projects, and launched several schemes to encourage women to start solar energy businesses. The fund has also provided numerous women-led community-based organizations with solar water heaters.[a]
Access to public lighting in refugee camps (2013)[b]	Women's mobility depends on their having access to safe spaces with adequate lighting. Dark streets impede women's ability to access cooking facilities or sanitation services for themselves and for their children. Solar-powered lighting was installed near cooking facilities, toilets and common spaces in refugee camps. Implementation of the project resulted in a noticeable reduction in the number of sexual assaults on women.
Turning waste into energy at Za'atari refugee camp, Jordan (2017)[c]	Solar C^{3}ITIES and the Clinton Initiative installed biogas hubs to turn waste food and animal waste into safe fuel and fertilizer. The unique business model provided for an intensive capacity-building programme to educate a pool of 50 biogas technicians. The biogas facility relies on recycling activities performed by men and women in the Za'atari refugee camp. Thirty per cent of those working at the facility are women.[d]

Sources: Various governmental, non-governmental and international bodies active in Jordan.
[a] For more information, see www.memr.gov.jo/Pages/viewpage.aspx?pageID=319.
[b] World Access to Modern Energy.
[c] Clinton Global Initiative, 2017.
[d] OXFAM, 2017.



Chapter 3

Gender Mainstreaming in the Renewable Energy Sector in Jordan

3. Gender Mainstreaming in the Renewable Energy Sector in Jordan

A. Overview of the renewable energy sector in Jordan

In January 2007, King Abdullah II called on the Royal Energy Committee to review and update the National Energy Strategy.[36] The Royal Energy Committee identified a number of challenges related to renewable energy in Jordan:[37]

First: the investment costs associated with renewable energy systems are relatively high compared with the costs of traditional generation systems and, as a result, the costs associated with electricity generation from renewable energy sources are higher than expected.

Second: renewable energy projects tend to require large areas of land, which are often difficult to obtain in Jordan.

Third: Jordan has yet to adopt robust legislation regulating renewable energy projects, including renewable energy facilities, customs exemptions, and tax regimes.

Fourth: the Government has authorized electricity generation projects by private sector stakeholders adopting a build-own-operate rather than an engineering-procurement-construction approach; as a result the cost of those projects is likely to increase due to higher associated risk factors and financing costs.

Fifth: a technical committee bringing together stakeholders from a range of electricity sector institutions should be established to study a preliminary offer from Naanovo, a clean energy company, to determine the capacity of a proposed solar electricity generation plant and establish an appropriate framework for the project's implementation phase[38].

To address those challenges, the Royal Committee drafted the National Energy Strategy (2007-2020). One of the main targets of the strategy was to diversify the country's energy sources and enhance its reliance on locally-generated energy. The strategy stipulated that renewable energy sources should account for 7 per cent of the country's energy mix by 2015, and 10 per cent by 2020.

The following recommendations were formulated for the renewable energy sector:

1. Proceed with the adoption of a renewable energy law to encourage the private sector to increase its investments in this domain.

2. Proceed with the implementation of wind energy projects for electricity generation, adopting a build-own-operate approach, with the goal of generating 600 megawatt (MW) by the end of 2020 as follows:
   a. Proposed wind project in Al-Kamsha (30-40 MW), to be built between 2007 and 2009;
   b. Proposed wind project in Al-Fujaij (grant awarded by the Global Environment Facility; 60-70 MW), to be built between 2007 and 2010;
   c. Proposed wind project in Al-Harir (100-200 MW), to be built in phases between 2008 and 2012;
   d. Proposed wind project in Wadi Araba (40-50 MW), to be built between 2009 and 2013;
   e. Other wind projects (300 MW), to be built in other locations by 2020, in line with the outcomes of relevant feasibility studies.

3. Complete the studies necessary for the implementation of thermal solar energy projects (300-600 MW).

4. Expand the use of solar cell systems to light remote areas and in domestic, industrial and commercial applications and electricity generation.

5. Implement a project to generate electricity from municipal waste, in coordination with the Greater Amman Municipality and other relevant bodies.

6. Focus research efforts on biogas energy generation (on the basis of best practices established by Brazil) to support industry and the transport sectors.

7. Establish a fund to support renewable energy projects and energy rationalization, to be financed, inter alia, through Treasury allocations, the Environment Fund Clean Development Mechanism, the Jordan country project fund, assistance provided by French, German and Japanese development agencies and other development partners and a Global Environment Facility provided by the World Bank.

To support the achievement of those goals, Jordan adopted the Renewable Energy and Energy Efficiency Law, which empowered the Ministry of Energy and Mineral Resources to issue requests for proposals for the first time in its history. This allowed investors to submit bids to the Ministry or other relevant stakeholders and encouraged the submission of competitive offers for the construction of power generation infrastructure.

Shortly thereafter, supplementary regulations were issued for wheeling and net metering systems. That legislation established the foundations for an enabling environment for investing in renewable energy in Jordan. In 2014, article 11 of the Renewable Energy and Energy Efficiency Law was amended to offer customs and sales tax exemptions for renewable energy products and inputs.[39]

The first series of initiatives in Jordan utilizing renewable energy technologies began in late 2013.[40] These involved the construction of large-scale renewable energy power plants. Those plants were built entirely by the private sector and no costs related to their construction were borne by the Government.[41]

The National Energy Strategy was updated in 2015 to cover the period 2015-2025 and established the goal of generating some 9 per cent of the country's energy from renewable energy sources by 2025.[42] That was followed by a series of sector-level development initiatives: requests for direct proposals were announced for round II in 2013 and round III in 2016, and the country's first requests for proposals for energy storage projects were issued by the Ministry of Energy and Mineral Resources in late 2017.

B. Support provided by the Ministry of Energy and Mineral Resources for small-scale renewable energy projects in rural communities

The Ministry of Energy and Mineral Resources has provided numerous grants to help cover the costs of small-scale renewable energy applications in rural communities with a view to promoting energy security, reducing carbon emissions and fostering economic development. By the end of 2018, The Jordan Renewable Energy and Energy Efficiency Fund had supported the installation of more than 800 photovoltaic (PV) units in local communities,[43] providing for a total generation capacity of 360 megawatts.[44] These included units installed in hospitals, schools, community-based organizations and small businesses.[45] Key success stories included the following:

1. The installation of solar PV systems in communities in Jerash and Irbid, funded by a grant provided by the Norwegian Agency for Development Cooperation.[46]

2. The installation of solar PV systems in four rural communities in collaboration with the Higher Council for Science and Technology.[47]

3. The installation of solar water heating systems in localities in the Southern Desert.[48]

4. The installation of a solar electricity generator near the airport in Aqaba by the Sahara Forest Project.[49]

5. The installation of solar PV systems at the Islamic Hospital.[50]

6. The establishment of a biogas lab at the German Jordanian University.[51]

7. The signing of an agreement with the National Agriculture Research Center to explore how renewable energy could benefit agriculture in six key areas.[52]

C. Gender mainstreaming in renewable energy strategies

As is the case for research in the renewable energy sector in Jordan, very little research on the global renewable energy sector has adopted a gender perspective. According to a 2019 report published by the International Renewable Energy Agency (IRENA), it is estimated that the number of jobs worldwide in the renewable energy sector will grow from 10.30 million in 2018 to 29 million by 2050.[53] A relatively young sector, particularly in developing countries like Jordan, the renewable energy sector provides a unique nexus of opportunities that can simultaneously promote cost-effective energy solutions, counter climate change and mainstream gender. In fact, women currently hold more positions worldwide in the renewable energy sector than in traditional energy sectors such as the oil and gas industry. IRENA reports that women currently make up 32 per cent of full-time employees across the world in renewable energy; whereas they comprise only 22 per cent of full-time employees in the global oil and gas industry.[54]

There is considerable potential for the creation of more jobs for both women and men in the renewable energy sector. Currently, there are 543 renewable energy licensed companies in Jordan, which together employ almost 8,000 people.[55] Studies suggest that Jordan can create approximately 19,000 more jobs in the renewable energy sector and, at the same time, could reduce government spending on energy by $366 million.[56] Studies have shown that when companies hire women, they improve their performance and staff retention rates. Other studies have demonstrated that women are often more committed to their jobs than men and can provide a broader perspective to the design and implementation of sustainable energy projects.[57]

There are challenges as well as opportunities for women in the renewable energy sector. As a relatively new sector, there are certainly more opportunities for women than in other sectors, and recently established companies and renewable energy public and private sector actors have broader scope to adopt forward-looking policies, recruitment protocols and programmes that reflect gender-mainstreaming objectives. It is also important to recognize the attractiveness of the renewable energy sector to women. This is perhaps even more the case for rural women in Jordan, who often have a clearer insight into the impact of climate change on their communities, and consequently a deeper understanding of the potential benefits of power generation from renewable energy sources.

This was a major point of discussion in a USAID-sponsored conference held in 2016 under the slogan "Climate Change from a Gender Perspective", at which 78 female experts on gender in Jordan were asked to identify the sector of the economy relevant to climate change that they believed had greatest

Table 5 Results of a 2016 survey of women experts on gender: which climate change-relevant sector has greatest potential for gender mainstreaming?

Sector	Percentage of experts	Number of experts
Water	29	23
Health	31	24
Agriculture	15	12
Energy	8	6
Construction/urban planning	17	13
Total	100	78

Source: USAID.

potential for gender mainstreaming. The results of that survey are shown in table 5.

D. Challenges impeding women's participation in the renewable energy sector

1. Traditional gender roles and established cultural and social norms are among the most significant barriers

The majority of renewable energy sector actors believe traditional gender roles and established cultural and social norms are the main factors impeding women's participation in the renewable energy sector. The 2019 study by IRENA confirmed that a broad hierarchy of barriers prevent women's participation in the sector, and that one of the main reasons why so few women work in the renewable energy sector is that they are expected to stay home to look after their children.[58] The biggest barrier, however, is disapproval by men of their wives or female relatives taking up employment. Indeed, 60 per cent of men who took part in the study disapproved of any work environment where men and women could interact, or working hours that extended beyond 5 pm.[59] Other barriers to women's participation in the renewable energy sector include the gender pay gap, the fact that working environments in the sector are rarely supportive of women's needs, the absence of anti-harassment laws, the lack of adequate and affordable transportation, and discriminatory hiring practices. Those factors were also listed in the 2016 survey of women experts. Women often have to give up their jobs to take care of their children, due to a lack of flexible working hours and/or a lack of safe transportation.

2. Renewable energy companies avoid hiring women

There is the widespread misconception that some jobs within the renewable energy sector can only be done by men. This is especially true of positions that require technical skills. For instance, positions that include responsibilities for the installation of renewable energy equipment like solar panels are conceived as being "too arduous" for women employees, considering the alleged need of physical strength. Those misconceptions are based on traditional gender stereotypes and have no factual basis. Furthermore, many participants in key informant interviews have stated that owners of renewable energy companies avoid hiring women because they believe their work will be adversely affected by their commitments towards their families.

For example, the EDAMA Association for Energy, Water and Environment, a Jordanian business association that focuses on innovative

solutions for energy and water independence, conducted a study alongside a USAID-funded renewable energy project in 2015 that originally reported an interest in recruiting women. However, when interviewed by USAID project staff throughout the course of the study, company managers admitted that they had no genuine desire to hire women. They explained that they were reluctant to hire women out of fear that they would be unable to continue work when they got married or had children.[60] Such misconceptions about women reflect traditional social norms that limit women to traditional roles within society. It should be noted, however, that the participants in the key informant interviews did not approve of Government policies that entrenched those misconceptions.

3. Legal barriers

Current labour laws do not support women's involvement in the renewable energy sector. Equal pay for men and women is not enforced by law and in the private sector women often receive much lower pay than men performing the same jobs. Protection from harassment is not guaranteed either. Typical policies such as the lack of paternal leave (very common in the Arab region) and companies' fear that their female employees may take maternity leave are also huge factors. Legal barriers and social norms prevent women from inheriting property, and women are often forced to forfeit their inherited share of land through a process known as "*takharuj*". Without owning land, women often have no collateral for loans and thus find it extremely difficult to access credit.

4. Cultural barriers

For women in Jordan, and particularly for women living in rural communities with typically more restricted mobility, security may also be a major concern. In several discussions during field visits, women expressed their interest in being trained, provided that the training took place in a safe and trusted area. A number of community-based organizations, including Al-Jawhara in Ma'an, have provided such safe areas on their premises. In very conservative localities, education for girls is only allowed in all-female contexts. Therefore, many women who complete high school fail to pursue a university education.

5. Many aspects of the National Energy Strategy are gender blind, including financial incentives

Energy strategies are technical documents that speak of numbers and percentages. While some might claim that men who draft energy strategies can have little understanding of gender issues, the need for gender mainstreaming in energy has recently been recognized by very experienced gender experts in Jordan.

The Ministry of Energy and Mineral Resources offers a number of incentives for financing through traditional banks. However, a gender-specific challenge is that most women in Jordan can offer little collateral and are therefore effectively un-bankable. In Jordan, women therefore tend to access funding through microfinance institutions, which fund small and medium-sized enterprises, or through revolving loans via community-based organizations. Other social arrangements may also be available in small communities. Microfinance institutions claim that small and medium-sized enterprises and women entrepreneurs are still not fully aware of how renewable energy solutions could be used to enhance and scale up their business operations.

Indeed, in the implementation phase of the solar water heater project, the Ministry of Energy and Mineral Resources was obliged to reach out to several women's community-based organizations to ensure that they received solar water heaters.[61]

E. Opportunities or entry points for promoting women's participation in the renewable energy sector in rural communities

1. Gender roles and mobility

While traditional gender roles constitute a challenge nationally, those gender roles and women's limited mobility can also offer opportunities in rural areas, where women have few options for leaving their rural communities to seek employment elsewhere, while rural men often seek working opportunities in the capital or even in the States in the Arabian Gulf.[62] Renewable energy opportunities in rural areas are thus more likely to attract women employees. Moreover, in rural areas, cultural norms necessitate the presence of a male family member in the home when another man who is not a member of the family performs tasks within that home. This means, in theory, that women may sometimes find it easier to access homes to perform energy system maintenance activities.

However, the biggest challenge facing women and men alike in rural areas is transportation. Although challenges related to transportation and mobility affect girls and women disproportionately more than they affect boys and men, it should be noted that transportation remains a significant challenge for most members of rural communities across Jordan. This can impede the success of renewable energy sector interventions, including the installation, maintenance and monitoring of renewable energy technologies, which often require regular field visits.

A participant in a key informant interview explained that there are a number of women engineers in rural Jordan, and an even greater number of female graduates in various STEM disciplines. The interviewee recalled the situation of a female engineer working at an electricity company in rural Karak. When that woman first began her job at the company, she had been one of only a handful of female employees and there had been no bathroom for women. However, she was eventually able to convince the company of the need for a separate women's bathroom, and she has inspired a number of girls and women within her community to pursue an education in STEM.

Another participant in the key informant interviews was convinced that greater emphasis needed to be placed on STEM education in primary schools in order to encourage more girls to pursue an education in the STEM field. She explained that through her work on renewable energy projects in rural communities in Jordan, she had encountered many girls and young women who had never considered pursuing STEM in their future education. She explained that it was crucial to expose girls to STEM very early in their education to ensure that more girls considered following an academic or professional career in that area. To achieve that objective, however, it will prove vital to ensure that school STEM curriculums are gender-neutral and that girls are provided with transport to ensure that they are able to get to and from school.

2. Networking opportunities and mentoring

Networking helps women better understand potential career paths and, at the same time, helps men and women realize the value of women's involvement in the renewable energy sector. In 2015 and 2016, a number of networking activities on energy and gender in Jordan helped to promote acceptance of the ideal of women working in the energy field.[63]

3. Rural and adventure tourism offer indirect opportunities for women's engagement in the renewable energy sector

While recent years have witnessed a proliferation in local tourism, heritage tourism

and other recreational activities, cultural and social norms that prevent women from working in environments in which they may come into contact with men means that women rarely benefit directly from those activities.[64] However, indirect opportunities may arise and benefit women entrepreneurs, including women entrepreneurs providing food and beverage services. Marketing local economic activities as tourist attractions and promoting local heritage on online platforms and social media may also provide new economic opportunities for women. For example, the online platform Souq-Fann,[65] helps more than 100 rural women sell their products and crafts. The website is managed by a woman entrepreneur who also aims to foster linkages among women entrepreneurs themselves. Another expanding initiative is a project to promote herb farming as a tourist experience alongside the 650 kilometre-long Jordan Trail,[66] which runs from the north to the south of Jordan. The Trail is unique because of its sustainability, autonomy and linkages with local communities and the private sector. Although women-led community-based organizations in Jordan have been focusing on herbs growing for decades, they could benefit from an integration with renewable energy and enhanced value chain sustainability. Greater benefits can also be achieved through re-thinking the nature of agricultural products towards the planting of low-water-use crops such as mulberry and moringa, a plant for which there is growing global demand.

F. Interventions to promote gender mainstreaming in Al-Asha'ary, Batir, and Rakin villages on the basis of an ESCWA socioeconomic assessment report

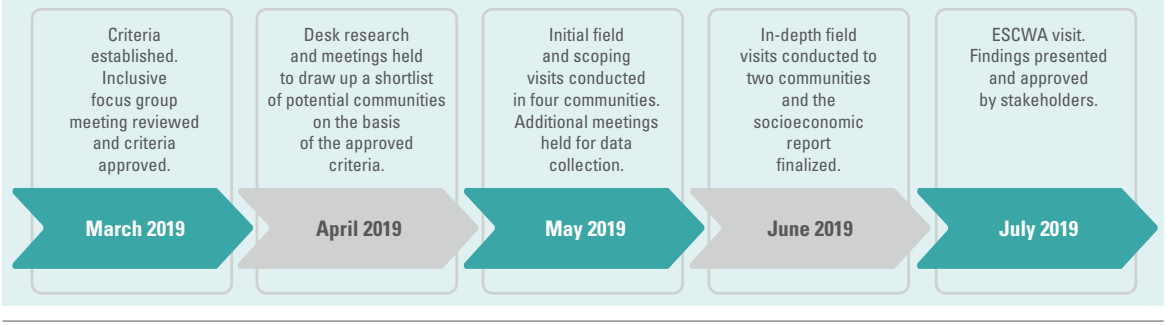
1. Relevant findings from the ESCWA socioeconomic assessment report

REGEND provided for a socioeconomic assessment, on the basis of which three rural communities were selected for the project implementation. The process of selection was transparent, participatory and inclusive. Figure 1 provides an overview of the process used to select the rural communities.

The criteria selected were the following: (a) a relatively marginalized rural community; (b) the availability of natural resources; (c) the availability of relevant infrastructure and ease of access; (d) the availability of human resources and an active population; (e) the presence of productive activities with growth potential; (f) the active participation of women in the labour force; (g) the presence of strong local governance mechanisms; (h) the presence of active non-governmental organizations, and (i) a low-risk security situation.

The assessment included three field visits. The first was a general scoping visit to four main areas, two in the north and two in the south of Jordan. The second field visit was

Figure 1 REGEND process for the selection of rural communities



conducted to two localities and was carried out in collaboration with a representative from the Ministry of Agriculture. The second field assessment aimed at mapping the relevant players and stakeholders and carrying out a strengths, weaknesses, opportunities and threats (SWOT) analysis. The third and final visit was conducted with the REGEND project team and representatives from the Ministries of Agriculture and Energy and Mineral Resources. During the third visit, further information was provided to women entrepreneurs after trust had been established. The REGEND project team visited the homes of women entrepreneurs and was able to assess first-hand their situation and accurately assess their needs.

On the basis of the field visits, the villages of Al-Asha'ary, Batir and Rakin were selected for project implementation.

2. Gender observations for Batir and Rakin villages

Batir and Rakin are adjacent villages in the Governorate of Karak. In terms of population size, Rakin is more than double that of Batir. There are two women community-based organizations in the villages, namely Jam'iat Shabbat Batir Al-Khayriah and Jam'iat Sayyidat Rakin Al-Khayriah. The Rakin community-based organization is slightly larger. It has rented premises as it is contracted by a very large non-governmental organization to distribute food assistance to the poor because of its proximity to a major bus terminal.[67] The community-based organizations offer revolving loans to women entrepreneurs of up to 500 Jordanian dinars (JD) (approximately $700) to help them start their own businesses. Interestingly, almost all homes and businesses in the two villages have made use of those loans, which are underwritten thanks to a grant provided by the Global Environment Facility, to purchase and install solar water heaters.[68]

In Batir and Rakin, women are involved in dairy production, vegetable pickling, soap making and very basic recycling crafts. Women produce the dairy products at home. Seasonality of production is common, as in many other home-based industries and the types and quantities of products vary throughout the year, depending on the availability of milk and of certain fruits and vegetables. Dairy products tend to be produced in the spring and summer, fruits harvested in the summer, and olives pickled in the autumn and winter. Energy consumption and household energy bills also vary throughout the year according to the types of productive activities that are being carried out. For example, electricity consumption increases during the dairy production season due to the use of milk shakers and refrigeration equipment and electricity bills can be as high as $80 per month at that time – a quarter of the minimum wage in Jordan. Most households visited during the field visits had accumulated several unpaid bills due to their inability to pay those bills in full.

Table 6 Population of Rakin, Batir and Al-Asha'ary villages, 2019

Locality	Population	Male	Female
Karak Governorate[a]	350 000	182 900	167 100
Rakin village, Karak Governorate[b]	4 796	2 482	2 314
Batir village, Karak Governorate	1 920	946	974
Quada' Athroh, Ma'an Governorate[c]	9 270	4 790	4 480
Al-Asha'ary village, Ma'an Governorate	195	83	112

Source: REGEND Baseline Study of Jordan (2019).
[a] Jordan, Department of Statistics, 2018.
[b] Ibid.
[c] Jordan, Department of Statistics, 2019.

The seasonality of production must be taken into consideration when scheduling capacity-building programmes in those villages, and every effort should be made to avoid holding training courses during the dairy production season.

It was apparent that few women entrepreneurs in the villages fully understood the costs associated with production, and were thus unable to price their products appropriately. Crucially, the women did not recognize that their own time should be seen as a resource. Indeed, in a 2018 survey by the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) women reported that they spent an average of 21 days per month working during dairy season.[69] However, they did not take that time into consideration when determining the price at which to market and sell their products.

Most of the women have built a shed outside their homes for their productive activities. Those sheds are unlicensed and fail to meet basic standards for health and safety, including those related to ventilation and lighting. Some sheds have flaky roofs that are peeling, others have metal roofs that heat up in the summer, making working conditions almost unbearable. There is therefore considerable scope for improving the women's working conditions through extensive health and safety training and improving operating procedures.

Women's production is limited to the lower levels of the value chain, namely production and some very basic packaging and labelling. They face high transportation costs and have weak marketing and negotiation skills. Another important observation in Batir and Rakin is that women sell their products to local markets or to vendors who collect the produce for their homes. One woman entrepreneur who manufactured soap was able to produce the quantities and sizes of soap needed by the nearby hospital. However, the hospital was able to secure soap from a cheaper source and she discontinued her soap production activities.

Figure 2 Soap production in Batir

Another entrepreneur who makes 200 loaves of bread a day choses to sell each loaf for 0.08 JD to the local grocery store, rather than sell her loaves to individual customers for 0.1 JD each. As a result, her income is 20 per cent lower than it could be. Furthermore, the entrepreneur does not take into account the number of hours she spends producing bread, despite the fact that she spends six hours a day, five days a week, kneading and making bread by hand without any equipment. Although she could save considerable time by using a simple dough making machine, she does not have the financial resources required to purchase one.

Of all the women met during the field visits, only "Um-Ahmad" had effective bookkeeping skills and kept records in a bookkeeping ledger. She had learned that she could increase profits by scaling up production and had built up her capacity to the point that she could process between 8,000 and 10,000 kilograms of goat milk per season. She often outsourced production to her sister when she needed help. Women entrepreneurs in both Rakin and Batir would benefit greatly if they had the opportunity to learn basic bookkeeping skills.

During the field visits, it became clear that gender roles are changing, particularly with regard to access to financial resources and decisions regarding how those resources should be spent. All the women entrepreneurs interviewed during the field visits affirmed that any income they earned was spent on their households and to ensure the well-being of their families. For example, the women used their incomes to pay university tuition fees, especially for girls, buy school supplies for children, and help their children financially so that they could get engaged or married.

The Municipality of Karak recognizes the need to support home-based food production. In its 2020 draft budget and needs analysis, item 13 of the updated needs list focuses on supporting women's home-based production. This offers an ideal opportunity for aligning and scaling up interventions. The two community-based organizations should appeal to the Municipality to provide the financial resources needed for training activities. They could also request the Municipality to earmark funds in its 2021 budget for the construction of a cold storage facility in Karak that women entrepreneurs could use to ensure that their products stay fresh for longer periods.

3. Gender observations for Al-Asha'ary village

Al-Asha'ary is located in Quada' Athroh, which was classified as a very poor area in the most recent Department of Statistics Household Expenditures and Income Survey.[70] Poverty rates in Al-Asha'ary are extremely high and, according to the local development unit, may be as high as 26 per cent, compared to the national average of 14.4 per cent. The unemployment rate among women is 35 per cent, whereas it is 45 per cent among men.[71] The educational attainment profile is considered to be positive, however, with 65 per cent of college-age individuals obtaining bachelor's degrees, and 33 per cent of individuals holding post-secondary education diplomas.[72]

Al-Asha'ary provides an innovative example of women empowerment, with the community-based organization Al-Jawhara playing an instrumental role in supporting women's entrepreneurial efforts. Chaired by Ms. Jamileh Al-Jazy, Al-Jawhara has helped to empower women by trying in numerous ways to overcome gender stereotypes. The story of Al-Jawhara offers interesting insights. Beginning with the occupation of a building, the community-based organization successfully obtained the deeds to the building it had occupied and to the surrounding land and began loaning out chairs and tents for weddings and funerals. Al-Jawhara used the income generated to start its first revolving loan programme, which kick-started numerous entrepreneurial activities by women. The women entrepreneurs produce four main types of product: (a) dairy products, (b) fruits, vegetables and herbs, (c) woven woolen goods, and (d) pickles, jellies, and cider vinegars.

(a) Dairy products

Most of the women entrepreneurs work in dairy production, and most, if not all, raise their own goats at home. According to Ministry of Agriculture records, there are 7,200 sheep, 3,000 goats and 45 camels within the boundaries of Al Asha'ary.[73] Because of the density of animals and the fact that it is difficult to dispose of manure, which is often piled in heaps in the vicinity of homes, the number of flies is extremely high. An appropriate and sustainable mode of manure disposal would undoubtedly improve the health of the inhabitants of Al-Asha'ary. The prevalence of flies, especially during the spring and summer could also undermine the safety of home-produced products. Women in Al-Asha'ary requested the construction of a central facility at the premises of Al-Jawhara to facilitate their efforts to comply with health and safety standards. Ms. Jamileh Al-Jazy has been able to secure funding for the construction of a fully-equipped kitchen facility and has initiated the construction process. The electrical wiring of the building will now need to be upgraded so that it can withstand the anticipated increase in power requirements.

Milking and dairy production is particularly labour intensive for women. While 45 per cent of women reported that they helped provide forage for cows, only 15 per cent carried out marketing activities. This means that men are overwhelmingly in charge of marketing and ensuring that there is a financial return on investment. Women-led marketing initiatives are led by the head of the community-based

Figure 3 Al-Jawhara kitchen extension, May 2019

Figure 4 Al-Jawhara kitchen extension, July 2019

organization, who visits bazaars in Amman and Aqaba. Despite the fact that Bedouin communities have no tradition of producing white cheese, women entrepreneurs are experimenting in its production since there is ample potential for selling it to nearby hotels in Petra.

(b) Fruits, vegetables and herbs

Al-Jawhara rents 300 dunums of land from Al-Jadwa cooperative, where they grow herbs (sage and mint), fruit and vegetables. Water for irrigation is obtained from a pond using two electrical pumps, one for pumping and the other for distribution. The electricity bill incurred by Al-Jadwa cooperative is 5,000 JD a month (around $7,000). The high electricity bill, the fact that land is available for renewable energy projects and the plentiful sunshine makes the location ideal for renewable energy solutions, which could have a significant positive impact on people's lives.

At the time of the first field visit, a promising crop of watermelon had started growing. However, prior to the second visit, which took place in July, the crop has been damaged due to the improper use of pesticides. The losses incurred were estimated at around 9,000 JD ($12,700). It is therefore clear that capacity-building activities focusing on smart and sustainable agricultural practices would be of great use to farmers.

Figure 5 Watermelon crop at Al-Jawhara farm, May 2019

Figure 6 Watermelon crop damaged by the improper use of pesticides, 23 July 2019

Bedouin herbs are in high demand and there is ample opportunity to grow herbs including sheeh (mugwort) and qaisoum (yarrow). Women tend to be more involved than men in the process of growing herbs: they oversee planting, harvesting, washing and drying, packing and more than 75 per cent of marketing. Incomes could be increased by enhancing the cultivation process, upgrading packaging, improving marketing and transforming the herbs into herbal oils. Social media could also be used to strengthen outreach activities and increase the sale of herb products.

Figure 7 Sage crop growing at rented farm

Figure 8 Sage stored at Al-Jawhara

(c) Woven woollen goods

One woman entrepreneur in Al-Asha'ary weaves wool into bags. She manufactures the bags on a patio outside her house and, on average, spends between four and five hours a day on the activity. She does not have easy access to woollen yarn, despite the abundance of sheep wool in the area. Shearing of sheep is costly, but the wool is under-utilized. When interviewed, she said that she obtained woollen yarn by recycling old sweaters that she buys in the local area or in Amman. As was found in Batir and Rakin, she is unable to understand how much it costs her to manufacture her bags and she therefore sells them without being sure that she is making a profit. It might be possible to draw up a simple memorandum of

Figure 9 Packaged herbs at Al-Jawhara

understanding to link wool shearing in Al-Asha'ary with a United Nations Development Programme thread plant.

(d) Pickles, jellies and cider vinegars.

Basic production of pickles, jellies and cider vinegar is performed, but with varying degrees of success. Pickles are often not preserved effectively and therefore tend to decay quickly. Jellies are of varying quality, and are thus unreliable. Apple cider vinegar was, in the past, a signature production of Al-Jawhara, but this activity was discontinued when the cost of production became too high compared to the sale price.

The above analysis of gender roles, resources, energy consumption and needs, and the general observations regarding value chains make clear that there are various challenges and opportunities for women in Al-Asha'ary, Batir, and Rakin. Interventions in those localities will have to be holistic in nature in order to ensure sustainability.

Figure 10 Wool weaving at a house in Al-Asha'ary

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

The National Meeting on Women Empowerment and Entrepreneurial Development in the Rural Context: The Role of Renewable Energy, held at ESCWA Headquarters, Beirut, on July 30 and 31 2019, offered valuable insights into the potential of renewable energy to enhance livelihoods in rural areas, empower women and promote overall development. The main conclusion of the meeting was that women must be actively involved in renewable energy value chains in their local areas. To achieve that objective, barriers that impede women's participation in those value chains need to be identified, together with strategies for surmounting them so that women can be fully engaged in efforts to advance the adoption of clean energy technologies.[74]

A. Ensuring women's leadership in renewable energy entrepreneurship and across the energy value chain

1. Case studies from around the world - benchmarking.

Lessons from around the world reveal that it is possible to break legal, policy and cultural barriers so as to allow for rural women to access, invest in, implement, maintain, monitor and evaluate the renewable energy sector. Small-scale renewable energy solutions would ultimately result in an improvement in livelihoods and enhance the competitiveness of rural products. Conventional wisdom suggests that global success stories can encourage women's involvement in the renewable energy sector. Fortunately, there are numerous cases from around the world offering inspiring narratives for start-ups. Some of these cases are outlined below.

(a) SELCO Solar Light Pvt. Ltd., India.

For more than 20 years, SELCO Solar Light Pvt. Ltd, a for-profit social enterprise, has been installing PV systems in rural India. The company has striven to debunk certain myths, including the myth that the poor cannot benefit from small-scale renewable energy technologies. The company has adopted an innovative three-pronged approach that provides for:

1. Customized installation. The company does not have one standard size, but rather custom designs installations to address the needs of particular households or communities. SELCO offers a number of solar products to households, including solar home lighting, solar water heating, solar inverter systems, and DC home appliances such as nut and peanut butter grinders. SELCO also offers products such as milking machines, sewing machines and pottery wheels.

2. Doorstep services, including marketing, installation, maintenance and financing schemes, which are supported by a number of financial institutions and banks. The company caters to the financial needs and status of its clients and allows them to pay in installments if they are unable to pay the full cost of the services provided up front. In extremely poor areas, SELCO works with Grameen Bank, a microfinance institution to establish schemes whereby several poor families offer financial guarantees for each other.[75]

3. Cost recovery/revenue: costs are covered through financing schemes for clients as well as revenues generated from sales and after-sales services. The main results so far include:

   - 200,000 solar systems installed;
   - Four solar PV mini-grids established;
   - More than 20 per cent of service centre employees are female;
   - Forty-three per cent of employees at headquarters are female.[76]

(b) Kakute Ltd., Tanzania

Kakute, established in 1995, offers a unique approach as it acts as an incubator to facilitate market improvements aimed at increasing demand and improving supply.[77] The company focused on value chains and the design and implementation of integrated solutions. In its efforts to examine and explore ways to reduce dependency on fossil fuels, Kakute explored the use of Jatropha as a source of energy. Some parts of the Jatropha tree (such as the wood and fruit shells) can be used for energy production, while the seeds of the tree contain oil that can be used to produce lubricants and soaps or to generate electricity for lighting. Kakute has also helped local communities produce biodiesel that complies with established biodiesel standards.

The services offered by the company include:

- Advocacy;
- Market access;
- Input supply chain management;
- Training, including for entrepreneurs;
- Technology development.

Kakute has established financing mechanisms in collaboration with a number of donors and funding agencies and also provides grants for the establishment of micro-enterprises for the production of soap and oils. The company has trained 1,500 people and supports five projects, one of which focuses on addressing the needs of aged persons.

(c) Biogas projects, Jordan

Solar heated biogas systems have been installed in collaboration with a number of donors in Jordan.

For example, the Global Environment Facility provided support for the installation of a biogas digester at a poultry farm in Kofer-Abeel village in the north of Jordan.[78] The digester produces biogas from poultry manure that is used on the farm for cooking and heating.

Furthermore, Al-Bayt University in Mafraq has installed a biogas digester that generates biogas from food waste from the university cafeteria,[79] while the Hashemite University in eastern Jordan has planted more than 8,000 Jatropha trees in the campus tree nursery to generate income for the university and produce fuel. The plants are watered using the university's water harvesting project. The importance of Jatropha is that it tolerates high temperatures and can be grown in salty soils.[80] The Hashemite University will begin harvesting Jatropha oil in 2020.

(d) Solar Sister, Sub-Saharan Africa

Solar Sister is a network of women in Africa that provides affordable and clean energy for women and their communities.[81] Solar kits support women's businesses by reducing operational costs, thereby freeing up resources that can be reinvested into women's business enterprises. Solar Sister provides training and access to finance to help increase the profitability and sustainability of start-ups by women. The offered services are:

- Training;
- Mentoring and coaching;
- Financial support;
- Technological support.

Solar Sister provides training to women so that they can offer maintenance and after-sale services. It also runs a year-long training programme that provides women with the key skills they will need to kick-start and grow a renewable energy business. Various repayment options make it easier for women to take advantage of the services offered. To date, Solar Sister has sold more than 270,000 solar kits and products and supported more than 2,500 women.[82] It is estimated that initiatives by Solar Sister have had a positive impact on the lives of more than 1.5 million people in Africa.

(e) Solar Mamas, Jordan

Through a scholarship from Barefoot College in India, Rafi'a Inad, an illiterate 32-year-old woman was able to take a four-month training course to learn how to install solar PV systems in homes to generate electricity and provide lighting. During her training in India, Ms. Inad learned the skills she needed through mimes and sign language.[83] In recognition of her efforts, the Indian Government provided Ms. Inad with the equipment she needed to start her own business enterprise, which started operations in the area of Manshieh in the Jordanian desert in 2018. To date, her business has installed solar PV systems providing electricity and lighting to more than 80 homes.[84] Ms. Inad has also trained other illiterate women in her locality.[85] The women who receive training assemble the solar panels, market them and are paid a fee for installation.[86] Women whose homes are now lit have been able to work longer hours on income-generating activities, such as making embroidered goods and wool products, and are no longer obliged to stop working when night falls.

(f) KarmSolar, Egypt

KarmSolar is a solar technology and integration company that delivers innovative solar solutions to the agricultural, industrial, tourism and business sectors.[87] It is the biggest solar pumping company in Egypt and converts existing pumps running on diesel generators to run on solar energy. At present, this enables companies to save a total of 1.7 million litres of diesel fuel every day. KarmSolar therefore helps businesses to enhance their operations while also protecting the environment. The company has had a particularly significant impact on agricultural businesses in rural areas and in 2015 it started marketing innovative hybrid pumping and irrigation solutions for farmers who do not need to store water, ultimately leading to improved efficiency and profitability.

(g) Chanouf Farm Biofire, Tunisia

The Chanouf Farm Biofire Company manufactures a number of products from agro-forestry waste, including bio-charcoal (also called biochar), which is made entirely from discarded organic products and wood waste. The company, which was established in 2015 in Manouba, north-eastern Tunisia, had concluded arrangements with a number of waste collectors, who provide the farm with agroforestry waste in exchange for a salary. The company has thus been able to create jobs, collect waste and increase the scope of its business operations simultaneously.[88] Sales rose from 80,000 Tunisian dinars (D) in 2015 (approximately $32,000), to 120,000 D in 2018.[89] As a result, the company has been able to hire an additional 12 employees, most of whom are women.[90]

(h) Fellah Pro, Morocco

Fellah Pro, established in 2016, provides renewable energy solutions and consulting services for the agricultural sector, including irrigation solutions that make use of innovative floating solar water pumps. The company also

provides training to farmers, particularly on how they can use innovative technology to enhance their productivity. Revenues are based on the sale of services and solutions.[91]

2. Lessons for Jordan: entry points for enhancing access to small-scale renewable energy technologies in rural areas

On the basis of lessons learned from global best practices, it is clear that stakeholders in Jordan should focus on both the demand and supply sides of renewable energy, including on the policy and legislative environment, the availability of raw materials and innovative technologies, access to storage and distribution networks, traditional energy use patterns and pricing mechanisms. To ensure sustainability, stakeholders should endeavour to follow the six steps outlined in table 7.

Step 1: awareness. It is crucial to raise awareness of the potential of renewable energy in rural areas. Almost every household visited in rural areas in Jordan had installed a solar water heater. Rural women tend to be firmly convinced of the environmental and financial benefits of using solar water heaters, while households that were early adopters of solar heaters have helped convince other households of their benefits. Furthermore, the provision of revolving loans and facilitated financing schemes by the Ministry of Energy and Mineral Resources has encouraged households to adopt solar technology. In small rural communities, such support is usually sufficient. Efforts should now be made to raise awareness of how the extension of PV systems could further support economic and productive activities. However, initial awareness-raising activities should not only be carried out through the adoption of bottom-up approaches. Instead awareness-raising messages from the Ministry of Energy and Mineral Resources must also be communicated to Ministry field offices, governorate councils and municipalities.

Once a pilot study has been launched, the Ministries of Agriculture and of Energy and Mineral Resources can highlight the results of that study in awareness-raising campaigns. Community radio stations are a powerful tool in rural areas, where radio penetration is wide. Social media can also be a very efficient medium for raising public awareness.

Step 2: accessibility. Legal frameworks need to be strengthened. The Ministry of Energy and Mineral Resources' renewable energy policy must be further supported by regulations designed for rural areas. Jordan has already established numerous mechanisms that could be enhanced so as to facilitate rural women's

Table 7 Six steps to support sustainability

Step 1: awareness	Women entrepreneurs in rural areas must be made aware of alternatives and opportunities across the value chain.
Step 2: accessibility	Legal and cultural barriers must be identified and addressed.
Step 3: affordability	Products must be affordable and appropriate financing options made available to rural women.
Step 4: advocacy	Stakeholders must advocate for change or design policies to promote women's participation across the value chain.
Step 5: collective action	Networks of women across the value chain must be created and strengthened.
Step 6: monitoring and evaluation	A robust monitoring and evaluation framework that focuses on case studies must be established to address traditional cultural and social barriers.

access to renewable energy, including the country's rural electricity fund, which could be updated to foster further investment in renewable energy technologies in rural communities. Together with established tax incentives, the country has already established a foundation for further renewable energy investments in rural areas. Legislative barriers impeding girls' education in rural areas must also be addressed. For example, legislation on vocational centres could be amended to facilitate the provision of distance learning for rural women.

Step 3: affordability. Although the Ministry of Energy and Mineral Resources currently provides a 30 per cent financial subsidy for renewable energy projects through commercial banks, most women farmers cannot apply for that assistance due to their inability to offer collateral. Women in rural communities are subject to social and legal barriers that prevent them from owning land or other assets or even opening bank accounts. An alternative approach for reaching rural women is to channel assistance through microfinance institutions, which are already regulated by the Central Bank of Jordan and have the potential to reach large numbers of rural women. Other Government funds, such as the national climate change adaptation and mitigation fund, could also be encouraged to use a proportion of their financial assets to support small-scale renewable energy technologies. Grants from donors could also be used to support renewable energy projects.

Step 4: advocacy. Advocacy emerges as a key lesson from benchmarking. Advocacy activities aim to influence polices and positions in order to promote the use of small-scale renewable energy technologies. It should be noted that Jordan is currently in the process of revising the National Strategy for the Advancement of Women. Stakeholders should also appeal to donors in Jordan to strengthen their commitment to the use of renewable energy technologies in rural areas. Committees of farmers and farmers associations should also advocate for the adoption of a policy on farmers and rural women by Jordan. Another opportunity is presented by the fact that, currently, both the Minister and Secretary General of the Ministry of Energy and Mineral Resources are women with proven track records in the area of women's empowerment. They could provide significant momentum in the process to mainstream and improve the Ministry of Energy and Mineral Resources indicators, particularly those that are directly affected by budgetary indicators.

Step 5: collective action. Women networks in the areas of technology and energy must be reactivated and expanded to include rural women. The group on tech-women and women business associations could include subcommittees to address challenges and articulate options to facilitate the process. Collective action could, moreover, influence decisions relating to educational opportunities for rural women in the area of renewable energy. Collective action could also support sustainability and has proven capable of positively changing the attitudes of private sector stakeholders. Sadaqa, a non-profit organization striving to create a supportive environment for working women in Jordan, has convinced many companies to offer day care centres for employees' children, while the association Qum ma' Al-muallem has striven to ensure respect for the labour rights of private sector teachers. Collective action could therefore encourage renewable energy companies to uphold their corporate social responsibilities by hiring more female employees and providing financing schemes to help rural women entrepreneurs.

Step 6: monitoring and evaluation. A robust monitoring and evaluation framework is crucial to ensure that projects remain on track and can play a key role in changing entrenched attitudes, as highlighted in the following section of the present report.

B. Indicators for monitoring gender mainstreaming and human rights in rural areas

To ensure that renewable energy policies and projects successfully promote the interests of rural women, indicators must be streamlined and disaggregated by gender whenever possible. Indicator reference sheets must be formulated for all monitoring and evaluation frameworks, the data compiled to inform relevant indicators must be easily understandable, and the frequency with which data is collected and data sources must be indicated. The following indicators, shown in tables 8 and 9, are just indicative and the list is not exhaustive.

Table 8 Level 1: policy level

Policy	Indicator	Entity responsible for data collection	Frequency of data collection
Renewable energy policy	Number of women in decision-making positions on renewable energy committees	Ministry of Energy and Mineral Resources	Yearly
	Existence of a policy to promote the hiring of women in the renewable energy sector (Yes/No)	Ministry of Energy and Mineral Resources	Yearly
	Number of renewable energy companies employing women	Ministry of Energy and Mineral Resources; EDAMA	Yearly
	Number of legislative instruments that promote women's empowerment in rural areas	Ministry of Energy and Mineral Resources	Yearly
	Percentage of the budget of the Ministry of Energy and Mineral Resources allocated to initiatives to empower women in the renewable energy sector	Ministry of Energy and Mineral Resources, Budget Department	Yearly
	Number of vocational training institutions offering courses in renewable energy	Ministry of Energy and Mineral Resources; vocational training centres	Yearly
	Number of households connected to renewable energy technology, disaggregated by gender of head of household	Ministry of Energy and Mineral Resources; Department of Statistics	Yearly
National Strategy for the Advancement of Women	Number of policies addressing rural women	Jordanian National Commission for Women	Yearly
	Number of women graduating in STEM disciplines, disaggregated by locality	Jordanian National Commission for Women; Department of Statistics	Yearly
	Number of strategies, plans and policies adopted by line ministries to support women's empowerment in rural areas	Jordanian National Commission for Women; Inter-Ministerial Committee for Women's Empowerment	Yearly
	Number of platforms established for women working in the field of technology	Jordanian National Commission for Women	Yearly
Ministry of Agriculture Productivity Strategy	Number of women entrepreneurs benefiting from renewable energy technologies	Ministry of Agriculture	Yearly

Policy	Indicator	Entity responsible for data collection	Frequency of data collection
Municipal plans	Number of renewable energy projects receiving financial support from municipalities	Ministry of Municipal Affairs	Yearly
	Number and percentage of women attending participatory planning and consultation meetings	Municipalities; Ministry of Municipal Affairs	Yearly
Donor coordination policy	Number of donor projects funding renewable energy technology, training and solutions	Ministry of Planning and International Cooperation	Yearly
National data collection policy	Use of renewable energy at the household level	Department of Statistics	Every 10 years, within the context of the national census

Table 9 Level 2: project/enterprise level

Indicator	Entity responsible for data collection	Frequency of data collection
Number of women trained in renewable energy technologies, disaggregated by age and locality (identified by means of Geographic Information System technology)	Ministry of Energy and Mineral Resources	Quarterly
Number of households and businesses receiving financial assistance for the installation of renewable energy systems, disaggregated by gender of head of household and type of renewable energy technology adopted	Ministry of Energy and Mineral Resources	Quarterly
Number of renewable energy systems installed, disaggregated by locality (identified by means of Geographic Information System technology)	Ministry of Energy and Mineral Resources	Quarterly
Percentage of start-ups recently established by women in the renewable energy sector	Ministry of Energy and Mineral Resources	Yearly
Dollar amount spent on women's empowerment	Jordanian National Commission for Women	Yearly
Percentage of women energy users reporting improved access to energy services	Ministry of Energy and Mineral Resources	Yearly

C. Potential actions by relevant stakeholders that could promote the use of renewable energy in rural areas

Complementarity and coherence of efforts are vital to ensure the sustainability of women's participation in renewable energy initiatives, and especially the participation of rural women. A joint action plan involving all relevant stakeholders should be formulated and a steering committee established to ensure the smooth implementation of that action plan.

Jordanian National Commission for Women. This national body oversees implementation of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). It is currently updating the National Strategy for the Advancement of Women and must ensure that the revised Strategy addresses the needs of rural women in the field of renewable energy. The National Commission also encourages ministries to gender mainstream their indicators and disaggregate data by gender. To date, the National Commission has focused on how

indicators are reflected in ministerial strategies. Introducing a new focus on budget indicators would strengthen current efforts and ensure that gender mainstreaming is linked to spending. Furthermore, the National Commission is responsible for formulating the periodic reports submitted by Jordan to the Committee on the Elimination of All Forms of Discrimination against Women. The country's upcoming reports should include sections that discuss renewable energy in rural areas. The National Commission usually forms committees to draft the country's periodic reports to the Committee and it must ensure that the committees formed to draft all future reports bring together a wide range of actors, including women farmers and representatives from the Ministry of Agriculture and the Ministry of Energy and Mineral Resources.

Arab Organization for Agricultural Development. This organization has established a network of rural women who could be empowered through the provision of training on energy-related topics, in collaboration with the Ministry of Agriculture and relevant community-based organizations.

Ministry of Energy and Mineral Resources. The Ministry should review its strategy indicators and make further efforts to promote gender mainstreaming. It could also review its renewable energy incentive framework to strengthen access by women to financial loans. The Ministry could also establish a renewable energy and gender observatory to collect data from the field and its regional offices could conduct activities to raise awareness of renewable energy in rural areas. Lastly, the Ministry should establish a fast track process to facilitate the installation of renewable energy infrastructure in rural areas with funding allocated from the rural electricity fund.

International organizations, donors and the Ministry of Planning and International Cooperation. The donor-lender group in Jordan could re-activate its economic and social empowerment and gender committee to map interventions in the areas of renewable energy and rural development. The Ministry of Planning and International Cooperation holds regular thematic meetings with donors to ensure the harmonization of their interventions. A very successful initiative by the Ministry in that regard has been the establishment of an online donor coordination platform, which is used to coordinate actions in response to the Jordan-Syria crisis: all plans, projects and indicators are outlined on that platform, with all localities identified using Geographic Information System technology. It would be relatively easy to establish a similar platform in the area of renewable energy.

Education and vocational training centres. Vocational training centres across Jordan are now offering courses in renewable energy-related subjects. Those centres could collaborate with private sector stakeholders to provide more focused training, especially in cleaning and maintenance, which would give women the skills they need to find employment in the renewable energy sector. Recent experience has shown that there is considerable demand for female cleaning and maintenance personnel, including plumbers and electricians, as cultural norms mean that only female personnel can enter homes if the women of the household are at home without a male family member present. As observed during the field visits, rural women often choose not to take training courses because of the long distances they need to travel to reach vocational training centres. Online training in addition to hands-on training locally should therefore be considered in rural areas. Furthermore, a database of women who have completed vocational training courses in each governorate should be established, as this would help to ensure the sustainability of renewable energy projects in rural communities. Community-based organizations could offer alternative venues for courses that are normally held at vocational training centres.

Business incubators. A number of business incubators in Jordan, including OASIS500 and Endeavor Jordan, specialize in promoting women-run businesses. Furthermore, a new business incubator, INJAZ Al-Arab, is now focusing on businesses in the field of green technologies.

As there are no incubators specifically targeting rural areas, those business incubators could consider establishing satellite offices in the north and south of Jordan. Al-Hussein Bin Talal University in Ma'an could also create safe spaces for business incubators at its clean energy centre.

Microfinance institutions. By supporting the renewable energy sector, microfinance institutions can facilitate the development and marketing of renewable energy products. A number of microfinance institutions, including Vitas Jordan and Microfund for Women, are already exploring potential opportunities in that area.[92] However, growing customer demand is a prerequisite for further engagement by those institutions. Microfinance institutions have the potential to reach marginalized local communities and can help raise awareness of renewable energy technologies and of how these can support women entrepreneurs. Microfinance institutions have also developed robust financial literacy curriculums and mobile funding mechanisms that could be used by women in rural areas with no access to traditional banking mechanisms.

D. Conclusions drawn at national and regional workshops with regard to capacity-building

A number of national and regional meetings and workshops have been held within the context of the REGEND project to formulate actionable recommendations for mainstreaming gender and human rights in policy development and in capacity-building and awareness-raising activities in rural areas. This section of the report looks at the key conclusions drawn with regard to capacity-building by the following meetings and workshops:

1. National Meeting on Women Empowerment and Entrepreneurial Development in the Rural Context: The Role of Renewable Energy, held in Beirut, on 30 and 31 July 2019.[93]
2. Workshop on Sustainable Energy and Gender Empowerment, held in Bangkok, on 8 October 2019.
3. National Workshop on Gender Empowerment and Entrepreneurial Development in the Rural Context: The Role of Renewable Energy, held in Amman, on 20 and 21 November 2019.[94]

First: capacity-building is an integral component of interventions. Participants at the National Meeting that was held in Lebanon concluded, inter alia, that capacity-building activities often proved to be more effective than the supply of equipment.[95]

Second: capacity-building programmes should be institutionalized to ensure that they are sustainable and accessible to all men and women, particularly in rural areas. The National Workshop in Jordan recommended that curriculums should be taught at existing centres and institutions, including vocational centres. This is particularly important for women in rural areas, whose mobility to attend capacity-building programmes at locations that are far from their homes is often limited because of a lack of affordable transportation options.

Third: capacity-building programmes should support women entrepreneurship and women's economic empowerment across the entire value chain.[96] Participants at the workshops and meetings agreed that capacity-building in the area of renewable energy should focus, inter alia, on energy efficiency, climate change mitigation, entrepreneurship and equal opportunities. They also agreed that training courses in bookkeeping could be particularly useful for women entrepreneurs. Furthermore, participants at the National Workshop in Jordan underlined the importance of training in health and safety, environmentally-friendly agriculture, labelling and packaging.

Fourth: participants underlined the importance of sharing relevant success stories and best practices from African and Asian countries. Although there are no organizations in the Arab region offering the types of support

provided by the International Network on Gender and Sustainable Energy (ENERGIA) in African countries, it is possible to address that capacity-building gap during the implementation of renewable energy projects.[97]

Fifth: capacity-building activities targeting stakeholders that support women entrepreneurs' are also important. Participants at the National Workshop held in Jordan emphasized the need to engage with financing institutions to deepen their understanding of how investments in renewable energy technologies can strengthen businesses and increase profit margins for entrepreneurs.

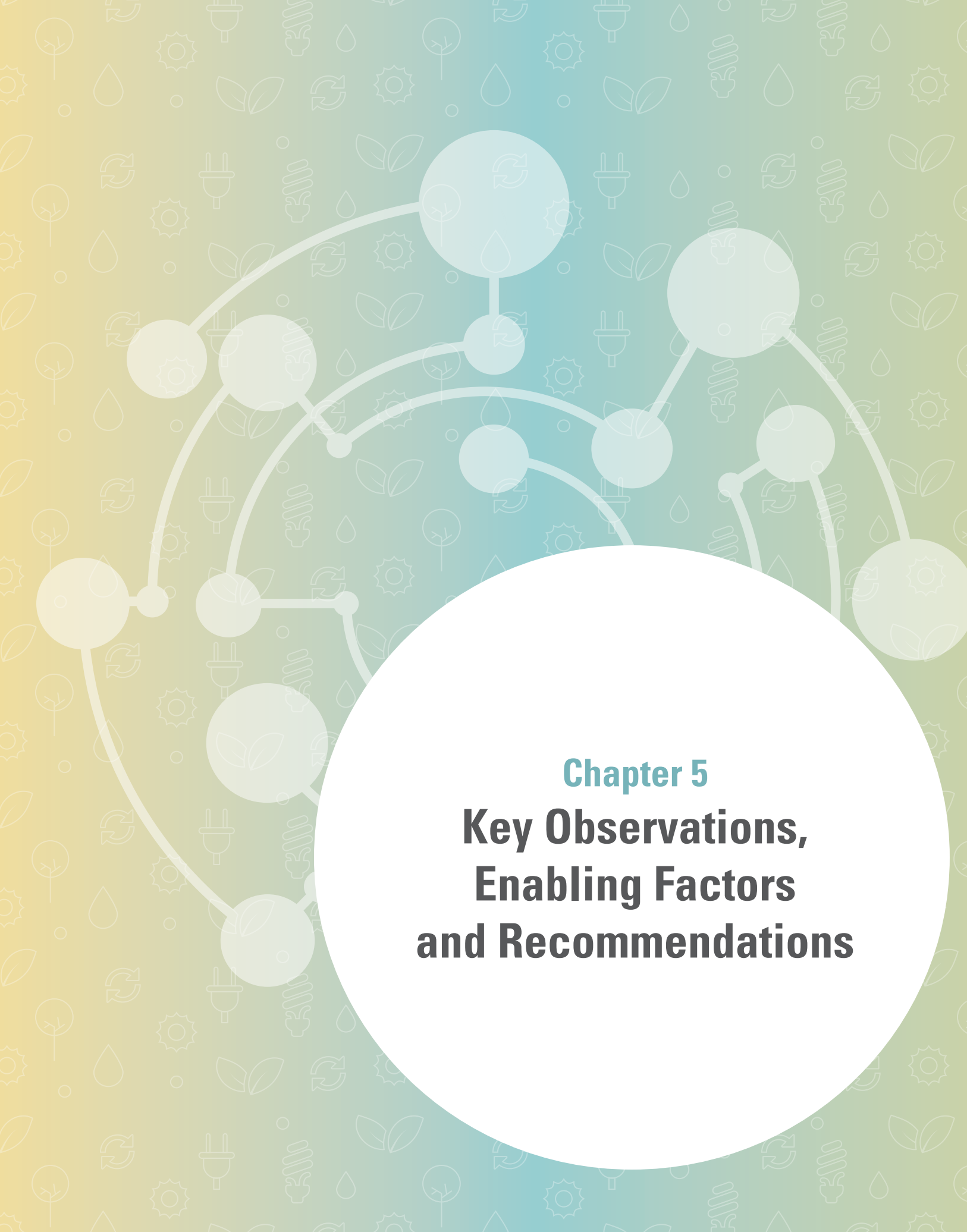
Sixth: capacity-building programmes should not only target engineers and other graduates. Indeed, participants at the workshops and meetings agreed that programmes in rural areas must also be accessible to non-university graduates and even to school dropouts. Participants discussed the fact that even illiterate women had received training in renewable energy technologies at Barefoot College in India, in marked contrast to a number of training programmes in Africa, which were perceived as exclusionary.

Seventh: private-sector stakeholders should be encouraged to support capacity-building. In that regard, participants at the Workshop on Sustainable Energy and Gender Empowerment, held in Bangkok, reviewed lessons learned from a project in which Royal Dutch Shell provided support to capacity-building programmes in Kazakhstan.

Eighth: stakeholders should design interactive and hands-on curriculums that can be taught in Arabic. The discussions held tended to focus on the disadvantages of classroom learning-based capacity-building programmes and the importance of practical hands-on learning.[98] In that regard, attention was drawn to a number of hands-on training manuals that have been developed by ongoing capacity-building programmes.

Ninth: capacity-building activities in the area of renewable energy should be accompanied by strong messaging on steps that can be taken to enhance energy efficiency. Participants in the meetings and workshops underscored the importance of reaching out to men, who tend to make decisions within households regarding the purchase of electrical appliances.

Tenth: every effort should be made to preserve the specialized knowledge and expertise learned and ensure that relevant stakeholders can access that knowledge easily whenever necessary. To achieve that objective, certain training components and courses could be made available online, for example. Universities and university energy clubs could play a key role in that regard.



Chapter 5
Key Observations, Enabling Factors and Recommendations

5. Key Observations, Enabling Factors and Recommendation

With a view to improving access by rural women in Jordan to small-scale renewable energy infrastructure and their participation in sustainable renewable energy projects, the present report concludes by making four key observations, drawing attention to four enabling factors and setting forth ten recommendations.

A. Four key observations

Observation 1: there is a lack of relevant, consistent and reliable data on gender mainstreaming in the area of renewable energy.

While conducting research for this report, the author noted that, although considerable gender-disaggregated data has been compiled in many educational and professional fields, there is very little gender-disaggregated data on renewable energy. This is perhaps due to the fact that renewable energy is perceived as a very technical field. It is not therefore possible to establish gender baselines in renewable energy, or even in the broader energy sector. Participants at the workshop in Jordan agreed that a lack of relevant data constitutes a key challenge impeding gender empowerment and entrepreneurial development.[99] It is also not clear which stakeholders are responsible for data collection and what form the data should take.

Observation 2: women remain underrepresented across the renewable energy value chain.

Although women are employed in the energy sector and, to a lesser extent, in the renewable energy sector in Jordan, the renewable energy sector remains overwhelmingly a male-dominated environment. As a result, the views of women do not always carry the weight that they should and their interests may be overlooked, particularly as men overwhelmingly make decisions in the process to draw up renewable energy strategies. Very few women are employed by private sector companies that install, clean and maintain solar PV equipment, while EDAMA, a Jordanian business association that promotes the interests of renewable energy companies, has been male dominated since its formation in 2009.

Observation 3: the current policy framework on renewable energy fails to adopt a transformative gender equality approach.

Addressing gender inequalities in the renewable energy sector requires a transformative approach that acknowledges the roles of men, women and the power balance between the sexes. A transformative approach also implies a change of mindset not only on gender issues but also on renewable energy issues. There is a risk that, by adopting an overwhelmingly technical approach to renewable energy projects, relevant stakeholders may fail to give sufficient attention to key social, cultural and gender aspects of small-scale renewable energy solutions, thereby impeding broader efforts to promote the economic empowerment of rural women.

Further efforts to promote gender mainstreaming in energy projects, and particularly in renewable energy projects, are therefore needed, as are efforts to change entrenched views regarding the roles of men and women in those projects.

Observation 4: while schools and universities are natural platforms for raising awareness of renewable energy, those platforms remain underutilized.

This eye-opening observation was made during the workshop in Jordan, when it became clear that the Jordanian university students attending the workshop were largely unaware of the opportunities offered by the country's renewable energy sector.

B. Four enabling factors

Enabler 1: there is now an enabling environment for mainstreaming gender in renewable energy policies.

The Ministry of Energy and Mineral Resources, the key authority in Jordan overseeing the implementation of the REGEND, underscored its commitment to ensuring inclusiveness in the renewable energy field in discussions that took place in the early stages of the Initiative. In the most recent focus group meeting, held at the Ministry on 25 July 2019, there was a general consensus in support of the underlying concept of REGEND and the approach and modalities for implementation that have been adopted. All ministries represented at that meeting underscored their commitment to aligning their activities with the Initiative.

With the expiry of the National Energy Strategy in 2020, Jordan has an opportunity to adopt a revised strategy that provides for the monitoring of gender-sensitive indicators and interventions that will promote achievement of the goals outlined in REGEND.

Enabler 2: since 2018, there has been an increase in the number of women appointed to leadership positions in the energy and renewable energy sectors.

Significant progress in terms of gender mainstreaming has recently been achieved in the renewable energy sector. Both the Energy and Mineral Resources Minister and the Secretary General of the Ministry are women with proven track records in the area of women's empowerment, while the EDAMA has recently appointed two women to its board of directors. Furthermore, EDAMA has recently established a training section to provide women with the skills they need to take up positions across the entire renewable energy value chain. A woman has also been appointed to head Jordan's first and only green business incubator.

Enabler 3: university science clubs and youth organizations are keen to raise awareness and build capacity among young people by holding meetings and awareness days and leading student initiatives on renewable energy.

Young people are effective ambassadors in efforts to promote interest in renewable energy, and could help lead vocational training on renewable energy and raise awareness of potential renewable energy applications in business and industry in Jordan.

Enabler 4: the Government of Jordan has approved and is implementing an open data policy.

On 1 September 2018, the Government of Jordan took legislative steps to enhance the dissemination of governmental data in Jordan; authorities are required to publish their datasets and make them publicly available and must also develop tools to measure the quality of the data they produce. Starting in 2020, the accuracy of data published by Jordanian ministries and their efforts to make that data available to the public will be monitored. The Government's commitment to open data is a significant enabler.[100]

C. Ten recommendations

Raise awareness of renewable energy as an enabler for economic activity in general, and for women entrepreneurs in rural areas and young people in particular. Relevant stakeholders should formulate a three-tier awareness-raising programme on renewable energy that provides for (a) a top-down approach in which the Ministry of Energy and Mineral Resources communicates with individuals; (b) a bottom-up approach in which individuals communicate relevant information to policymakers, and; (c) building on good practices identified within the context of the REGEND process. In that connection, key messages could be communicated effectively by community radio stations and on social media platforms.

Align relevant policies to ensure that common gender-specific indicators are addressed in renewable energy policies. Relevant policies must be aligned, inter alia, by conducting a baseline study to assess the impact of individual policies and strategies. Indicator reference sheets should be drafted in a collaborative manner so as to ensure that all ministries adopt a harmonized set of indicators and harmonize the definitions, as well as clarify how data is collected and stored.

Revisit financing models to offer incentives for microfinance institutions. Since most women in Jordan are effectively un-bankable, the Ministry of Energy and Mineral Resources should offer incentives to microfinance lending institutions to facilitate women's access to finance. Microfinance institutions are often keen to support renewable energy initiatives and such incentives would encourage them to do so.

Enhance the role and negotiating position of rural women entrepreneurs by strengthening community-based organizations, municipal councils, and other forums and networks. Collective action is needed to support continuous advocacy and third-party monitoring of renewable energy and gender mainstreaming strategies. A platform that links rural women entrepreneurs with female academics in the field of renewable energy, women working in the renewable energy industry, and women leaders in the vocational training and continuing education sphere could have a significant impact. Ensuring that women speak with one voice will facilitate efforts to change prevailing social and cultural norms in ways that enhance the status of women. Networking, coaching and mentoring has already proven effective in other disciplines and is likely to have a positive impact in the field of renewable energy.

Design an integrated capacity-building programme that focuses on financial literacy, including pricing, cost calculation and investment, health and safety, packaging and marketing using social media and information technology. That programme should complement renewable energy pilot initiatives targeting selected rural areas. Ministries, international organizations, service providers and non-governmental organizations should coordinate their activities to ensure the programme's success.

Design vocational training courses in renewable energy. Although many Jordanian women are educated in science, technology, engineering and mathematics (STEM), few take up employment in those areas once they have completed their studies. This is due to a number of factors, including, first and foremost, the fact that they are often required to look after their families. Rural women are often doubly disadvantaged. Firstly, because few female teachers in rural schools teach math or science, those schools rarely offer high quality STEM education to girls or encourage them to pursue STEM education at university. Secondly, many women chose to stop working in order to look after their families and re-entry into the labour market at a later date can be a daunting task. Vocational training in renewable energy could enable many women to learn employable skills.

Establish partnerships among university departments and among universities and vocational training institutes. There is considerable potential for the establishment of such partnerships and for student-led efforts to promote the renewable energy sector. Universities could also design inter-disciplinary studies and integrated courses that address energy, renewable energy, agriculture, water and the water-energy-food nexus. Students could also be encouraged to carry out project work on sustainable energy consumption and land use, and on ways to boost agricultural productivity while reducing water consumption and the use of pesticides. Furthermore, establishing partnerships between universities and vocational training institutes would allow students to put their academic knowledge into practice in real-world situations and further develop their skills. That would enhance their chances of finding employment in an increasingly competitive job market. Universities could also organize renewable energy days to raise awareness on that issue and establish and strengthen links with private sector stakeholders and relevant non-governmental organizations.

Promote effective data collection and management. Investments should be made to expand data collection by the Department of Statistics, the Ministry of Energy and Mineral Resources, the Ministry of Agriculture and other relevant partners so as to consolidate data collection and management and facilitate research to inform policy decisions. All data should be disaggregated by gender, as well as by locality and governorate. The Ministry of Energy and Mineral Resources should establish a data observatory to compile and publish relevant data in an open source format, in line with the country's commitment to open source data provision. ESCWA is well positioned to foster and/or build partnerships with ministries and their respective gender focal points in order to strengthen the collection, management and use of data to inform relevant indicators.

Ensure that ministerial budgets are linked to relevant indicators on gender. Following the establishment of a set of harmonized indicators, ministerial budgets should be drafted with a view to improving those indicators. Any improvements achieved in the area of gender are unlikely to be quantified until ministerial budgets are linked in that manner.

Implement robust monitoring and evaluation mechanisms. A robust monitoring framework should be established to facilitate the successful implementation of policies, track progress and/or setbacks and build on any lessons learned. An open source database should be established to track policy implementation, in collaboration with community-based organizations and relevant research institutions.

To facilitate implementation of those recommendations, a national multi-stakeholder workshop should be organized to address the policy and financial issues that the recommendations raise.[101] To ensure the workshop's success, Jordan should build on its successful track record in organizing similar workshops in other sectors.

Endnotes

1. Jordan, Ministry of Energy and Mineral Resources, 2007.
2. The World Bank, 2012.
3. World Economic Forum, 2018.
4. Ibid.
5. Ibid.
6. It should be noted that almost all government agencies publish some form of gender-disaggregated data, in line with the Civil Service Bylaws, which provide for a regular allowance to be paid to male heads of household. Ministries and government agencies must therefore maintain a record of the numbers of male and female civil service employees to facilitate ministerial and agency budgeting. See chapter 6 of Civil Service Bylaw No. 3 of 2007 and the relevant amendment, which stipulate that head of households (i.e., male employees) are entitled to a family allowance. As such, in order to calculate accurate budgets, each ministry and agency maintains gender-disaggregated data on their employees.
7. Steer, Ghanem and Jalbout, 2014.
8. World Bank, 2010; Jordan, Department of Statistics, 2017b.
9. Jordan, Ministry of Planning and International Cooperation, 2015 p. 27.
10. Ibid.
11. World Bank, 2018.
12. Jordan, Economic and Social Council, 2018.
13. World Bank, 2018.
14. Ibid. p. 38.
15. Jordan, CEDAW, 2006.
16. Ibid.
17. Ibid., p. 83.
18. Ibid., p. 86.
19. United Nations Human Rights Office of the High Commissioner, 2012.
20. Ibid.
21. Solidarity is Global Institute, 2018.
22. Ibid.
23. Cecelski and Dutta, 2011.
24. Ibid., p. 27.
25. Kemp, Jaradat and Bakir, 2017; see also, United Nations Industrial Development Organization, 2014.
26. Jaradat, 2014.
27. Eftimie, Heller and Strongman, 2009.
28. Kemp, Jaradat and Bakir, 2017, p. 6; See also, Jaradat, 2014, p. 9.
29. Kemp, Jaradat and Bakir, 2017.
30. Jaradat, 2014.
31. Ibid. Most of the surveyed renewable energy sector companies stated that they found that female engineers required more training than their male colleagues in certain fields. Most attributed this to less technical field experience among woman engineers and the fact that female engineers are offered fewer training opportunities than their male counterparts.
32. See also International Labour Organization, 2010.
33. Jaradat, 2014, p. 7.
34. Ibid.
35. Ibid.
36. For more information, see: https://bit.ly/2SL0MFp.
37. Jordan, Ministry of Energy and Mineral Resources, 2007, p. 4.
38. Ibid.
39. Jordan, Official Gazette, 2014.
40. Interview with Ruba Al-Zu'bi, Jordan University of Science and Technology.
41. EDAMA, 2019b.
42. Jordan, Ministry of Energy and Mineral Resources, 2015.
43. Jordan, Energy and Minerals Regulatory Commission, 2018, p. 13.
44. Ibid., p. 50.
45. Ibid.
46. Jordan, Energy and Minerals Regulatory Commission, Annual Report, 2017, p. 44.
47. Ibid.
48. Ibid.
49. Ibid.
50. Ibid., p. 45.
51. Ibid.
52. Ibid.
53. IRENA, 2019.
54. Ibid., p. 10.
55. EDAMA, 2019a.
56. Lahn, Grafham and Sparr, 2016, p. 23.
57. Kemp, Jaradat and Bakir, 2017; International Labour Organization, 2019.
58. World Bank, 2018, p.4.
59. Ibid. p. 5.
60. Interview with Ruba Al-Zu'bi, Jordan University of Science and Technology.
61. Jordan Ministry of Energy and Mineral Resources , n.d.
62. Kemp, Jaradat and Bakir, 2017.
63. Ibid., p. 20.
64. Monther Jamhawi and others, 2015, p. 232.
65. For more information, see https://souqfann.com/en/
66. For more information, see https://jordantrail.org/
67. ESCWA, 2019, pp.12-15.
68. This information was verified by the former director of Global Environment Facility small grants programme.
69. UN Women, 2018, p. 38.
70. Jordan, Department of Statistics, 2017a.
71. ESCWA, 2019, pp. 16-18.
72. Ibid.
73. Ibid.
74. For more information, see: https://www.unescwa.org/events/women-empowerment-entrepreneurial-development-rural-renewable-energy.
75. SELCO, n.d.
76. Renner, 2017.
77. For more information, see the Kakute website, available at www.kakute.org/.
78. Jordan, National Energy Research Center, n.d. b.
79. Jordan, National Energy Research Center, n.d. a.
80. Hashemite University News Centre, 2019.
81. For more information, see the Solar Sister website, available at https://solarsister.org/.
82. Ibid.

83. BBC, 2013.
84. Alrai Newspaper, 2018.
85. Ibid.
86. Ibid.
87. For more information, see http://karmsolar.com/.
88. For more information, see The Switchers, “An agricultural company that produces biomass briquettes”, 24 February 2016. Available at www.theswitchers.eu/en/switchers/an-agricultural-company-that-produces-biomass-briquettes/.
89. Ibid.
90. Ibid.
91. For more information, see The Switchers, “Morocco is reviving the agricultural system floating solar panels”, 10 July 2017. Available at https://www.theswitchers.eu/en/switchers/morocco-is-reviving-the-agricultural-system-floating-solar-panels/.
92. Key informant interviews with Vitas Jordan and Microfund for Women.
93. ESCWA, 2019a.
94. ESCWA, 2019b.
95. ESCWA, 2019a, p. 5.
96. Wallgren, October 2019.
97. Ibid., p.4.
98. Ibid.
99. ESCWA, 2019b.
100. Jordan, Ministry of Planning and International Cooperation, 2018.
101. ESCWA, 2019b.

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