



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

Assessment Report of Prevailing Situations in Rural Areas in Jordan



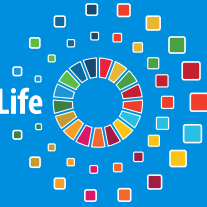
Shared Prosperity Dignified Life



السويد  
Sverige



Shared Prosperity **Dignified Life**



## **VISION**

ESCWA, an innovative catalyst for a stable, just and flourishing Arab region

## **MISSION**

Committed to the 2030 Agenda, ESCWA's passionate team produces innovative knowledge, fosters regional consensus and delivers transformational policy advice. Together, we work for a sustainable future for all.



Economic and Social Commission for Western Asia

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

Assessment Report of Prevailing Situations  
in Rural Areas in Jordan

© 2020 United Nations  
All rights reserved worldwide

Photocopies and reproductions of excerpts are allowed with proper credits.

All queries on rights and licenses, including subsidiary rights, should be addressed to the United Nations Economic and Social Commission for Western Asia (ESCWA),  
e-mail: [publications-escwa@un.org](mailto:publications-escwa@un.org).

The findings, interpretations and conclusions expressed in this publication are those of the authors and do not necessarily reflect the views of the United Nations or its officials or Member States.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Links contained in this publication are provided for the convenience of the reader and are correct at the time of issue. The United Nations takes no responsibility for the continued accuracy of that information or for the content of any external website.

References have, wherever possible, been verified.

Mention of commercial names and products does not imply the endorsement of the United Nations.

References to dollars (\$) are to United States dollars, unless otherwise stated.

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

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

Website: [www.unescwa.org](http://www.unescwa.org).

Photo credit:

Cover: © iStock.com

# Preface

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

The project focuses on three pilot countries, Jordan, Lebanon and Tunisia. It includes baseline studies in each as a preliminary assessment of the prevailing situation in rural areas. Studies collect qualitative and quantitative information regarding energy and rural development needs. These will serve as a basis for identifying the key issues, the opportunities and potential for safe and sustainable use of renewable energy and the possible intervention strategies (information and awareness campaigns, training, research, projects, and policies). The assessments also serve to select the communities where project activities will be undertaken, especially pilot projects.

This report covers the assesment study for Jordan. It was prepared by Mr. Bashar Zeitoon, Sustainable Development Expert, with substantive contribution and under the supervision of Ms. Radia Sedaoui, Chief of the Energy Section, CCNRS, ESCWA. Valuable inputs and substantive contribution were provided by Ms. Lama Shmaylh, Head of Economic Empowerment of Rural Women, Ministry of Agriculture, Jordan, and Mr. Jil Amine, Sustainable Development Officer, CCNRS, ESCWA.

---

## Data sources

The report uses data collected from a combination of sources, and that collected in the field and provided by key national stakeholders and members of REGEND's Local Facilitating Team, which includes Mr. Zeyad Al Saaeda, Director of Rural Electrification, and Mr. Maher Saleh, Al-Karak Manager, Ministry of Energy and Mineral Resources, Jordan, and Ms. Lama Shmaylh, (Head of Economic Empowerment of Rural Women, Ministry of Agriculture, Jordan). Stakeholder interviews and the outcomes of focus group discussion are also included.





# Executive Summary

Recognizing the potential of renewable energy (RE) to enhance productivity, promote entrepreneurship and generate new business models, the United Nations Economic and Social Commission for Western Asia (ESCWA), with support from the Swedish International Development Cooperation Agency (Sida), has commenced an initiative to accelerate progress in identifying opportunities for introducing small-scale RE applications in rural areas of the Arab region. The Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab Region, (REGEND) adopts an integrated rural development approach with a focus on enabling rural women to act for themselves. It seeks to demonstrate that development-driven approaches attuned to entrepreneurship and local knowledge are more sustainable in addressing gender inequality, economic disempowerment, political exclusion, natural resource challenges and other social vulnerabilities.

The report, which includes a national baseline study and rural assessment account, will inform the activities of the initiative in Jordan. The baseline study presents an assessment of the country's socioeconomic performance, while highlighting the risks and challenges facing the economy. An account of conditions in rural areas is presented to underline the political dynamics, social context and environmental considerations affecting women's productive activities, the role of civil society organizations, and current government interventions and those of international agencies. The rural assessment account presents the findings of site evaluation visits to four selected rural communities, conducted to collect qualitative and quantitative information regarding energy and rural development needs, identify the potential for safe and sustainable use of RE as a catalyst for rural development and ascertain possible intervention strategies.

Jordan is an upper-middle-income country with a high human development rate, ranked 95 among 189 countries. Jordanians made up 70 per cent of the population of 10.3 million, with Syrian refugees accounting for 1.3 million. The population is predominantly urban and young, with more than half of Jordanians (54.2 per cent) under the age of 25. This age structure foretells shifts in the working-age population over the coming decades as more young people reach working age.

Despite mixed but overall favourable progress in meeting the Millennium Development Goals in education and health, the country's development trajectory over the past decade was derailed by a succession of external events. Jordan has weathered a series of shocks, notably the 2008 global financial crisis, the Arab Spring and the Syrian and Iraqi crises, all of which exposed its political, economic and social vulnerabilities. In spite of this, Jordan has developed a national road map to mainstream the 2030 Agenda for Sustainable Development in national plans.

Regional and global turmoil has triggered an unprecedented influx of refugees, disrupted trade, and lowered investments. Tourism has been hit hard, depriving the treasury of desperately needed revenue. The impacts of these "shocks" have been compounded by Jordan's vulnerability to international market swings, given the dependence on imports for meeting most food and energy requirements. Vulnerability to global markets was evidenced by a higher Consumer Price Index (CPI) in 2017 and 2018, driven partly by higher global oil and food prices, partly by government fiscal measures, with serious repercussions on access to food and affordable energy.

Jordan's macroeconomic environment thus poses multiple challenges. Real gross domestic product

(GDP) growth in 2018 plummeted precipitously to 1.8 per cent compared with 7.2 per cent in 2008. With limited high value-adding activities, the economy is driven by services (tourism and finance), public jobs, a small industrial sector and raw materials (phosphates and potash) extraction. It continues to rely on foreign assistance in the form of grants and loans, which has caused public debt to soar over the past decade. Today, the primary challenges remain reducing dependence on foreign grants, cutting the budget deficit, lowering public debt and attracting foreign investment.

Although the Government of Jordan views small and medium-sized enterprises (SMEs) as key to stimulating economic growth and local development, a study by the Economic and Social Council of Jordan on enhancing the performance of SMEs has identified multiple barriers to a high-growth SME sector. Lack of access to finance and reliable information, technology, energy and skilled labour, and inadequate marketing skills, continue to pose challenges. To mobilize policy action and bolster the performance of SMEs, the same study advocates institutional and governance reforms, facilitated entry to local and export markets, entrepreneurship development and incentives to enable better access to finance and other resource inputs, including RE and energy efficiency (EE) technologies at discounted rates.

With sluggish economic growth, labour market conditions have continued to be problematic. The overall unemployment rate in 2018 was 18.6 per cent, and it breached the 19 per cent barrier in 2019. It was 16.5 per cent for males and 26.8 per cent for females in 2018, and reached 39.2 per cent for the 15-24 age group. Although there is no gender gap in primary education and women account for 52 per cent of university students, female participation in the workforce, at 15.4 per cent in 2018, is one of the lowest worldwide.

The poverty rate has increased slightly in the past decade, from 14.4 per cent in 2010 to 15.7 per cent in 2017. Children and youth are more likely to experience poverty than other age groups. Rural areas experienced higher poverty rates (16.8

per cent) compared with urban areas (13.9 per cent), according to 2010 survey data. Lack of business and employment opportunities, and inadequate access to social services, have contributed to poverty in rural areas. With the majority of the poor clustered just above and below the poverty line, the fraction of the population slipping into poverty during a year is estimated at one third.

Over the past 10 years, Jordan's score on the Human Development Index has improved marginally, registering a 1.2 per cent increase between 2012 and 2017. Jordan ranked 108 out of 160 countries in the Gender Inequality Index of 2017, which measures inequalities in the three dimensions of reproductive health, empowerment and economic activity. In the 2018 Global Gender Gap Index, Jordan ranked 138 out of 149 countries. These low rankings are attributed primarily to low female participation in the labour market.

Rural women are predominantly engaged in farming and livestock production. Although only 1.1 per cent of all employed females work in agriculture, rural women account for a large proportion of the agricultural labour force, particularly in subsistence farming. This is significant because of the importance of employment in this sector in rural communities as a source of livelihood and food security. Yet rural women engaged in farming and livestock production face a range of challenges, including low productivity, limited access to finance and the high price of inputs such as energy, veterinary services and feed.

Land and water resources in Jordan continue to be exposed to threats, hindering their sustainable use as productive assets. The country's per capita freshwater availability has been steeply declining. Agricultural land and rangelands that underpin rural economic activities are being continuously degraded by unplanned urban development, overgrazing, illegal woodcutting and unregulated mining and quarrying. With their livelihoods and food security dependent on productive use of land and water resources, pastoral and agricultural communities are vulnerable, particularly in rural pockets of poverty.



The effects of climate change are expected to put further pressure on limited land and water resources, accelerating the impacts of water deficit and environmental degradation. The productivity of rain-fed agriculture and rangelands is expected to experience declines, leaving individuals, households and communities vulnerable to extensive asset and livelihood losses. Not only are rural areas more susceptible to climate change risks compared with urban centres, but they also suffer from a diminished capacity to adapt.

In addition to production, processing of agricultural produce in rural areas is an important activity for income generation. For some rural women, food processing at home provides the household with a primary source of income. Underscoring the increasingly important role of rural women in this subsector, agro-processing households led by women accounted for 21.6 per cent of all households in 2013, up from 4 per cent in 2002.

The energy sector in Jordan has been in a state of flux for more than a decade. In July 2020, the Ministry of Energy and Mineral Resources released the Comprehensive Strategy for the Energy Sector for the Years 2020-2030, which calls for energy security and reductions in the country's energy bill by increasing the share of domestic energy supplies, diversifying sources of natural gas imports and adopting national EE programmes. The Government has set a goal for local energy sources to contribute 48.5 per cent of total electricity consumption by 2030. According to this scenario, the share of natural gas in electricity generation will decline from 85 per cent in 2019 to 53 per cent by 2030. The installed capacity for electricity generation by renewable energy sources will increase from 2,400 MW (21 per cent) in 2020 to 3,200 MW (31 per cent) in 2030. Oil shale-fired power generation is projected to contribute 15 per cent to total electricity generation.

Although the Government has recognized RE as a contributor to the country's energy mix since the early 2000s, legislation for establishing policy and regulatory regimes materialized only in April 2012 with the Renewable Energy and Energy Efficiency Law and its 2014 amendment. Procurement schemes

have included direct proposal submissions, competitive tendering, net-metering, electric power wheeling applications and self-generation applications. Three rounds of direct proposal procurements have been completed, which would bring the installed capacity for electricity generation from RE (solar and wind) projects to 2,400 MW by 2021.

The rate of electrification in Jordan is 99.9 per cent, which is credited to a government strategy to provide energy access to rural villages and communities that are located in remote areas or are otherwise not connected to the national grid. Accumulatively, the Government has served 17,410 sites with rural electrification since 1999, at a cost of \$180.5 million.

Within the context of REGEND, field visits to selected rural communities have been conducted to evaluate the potential for implementing project activities and identify capacity-building needs. Four rural areas were shortlisted based on criteria validated by stakeholders.

The selected areas are Bal'ama located in the Governorate of Ma'raq, Deir Youssef in the Governorate of Irbid, Al-Ash'ary in the Governorate of Ma'an, and Batir and Rakin in the Governorate of Al-Karak. During site visits, interviews were conducted with multiple stakeholders, including farmers, livestock owners, leaders of community-based organizations (CBOs), municipality and governorate officials, agricultural cooperative leaders, directors of regional agricultural directorates and capacity-building trainers.

The site visits consisted of two parts. In the first part, a preliminary assessment of all four rural communities was conducted, based on which two communities were selected for more in-depth evaluation. In the second part, a more detailed analysis was prepared on the back of more extensive site visits to the two selected areas. For each rural community, an analysis identified the strengths, weaknesses, opportunities and threats (SWOT) that may affect implementation of project activities.

The visit to Bal'ama revealed it to be incompatible with the project activities and goals. The productive activities of the CBO, limited to finished fabric products and maintenance of appliances, neither lent them to high energy consumption, nor was strongly associated with a rural setting. The subdistrict of Bal'ama is not designated a poverty pocket, and the level of rurality observed was not high. A prevailing debt culture was common in the community, causing cash-flow problems, which raised questions about the viability of undertaking project activities. Based on the findings of the visit, Bal'ama was excluded from the second round of assessment.

The site visit to Deir Youssef revealed a pronounced level of entrepreneurship and small business creation independent of the CBO. It would be difficult to undertake a small-scale RE project when many of the community's entrepreneurs are dispersed. Moreover, the CBO did not seem to specifically cater for the economic needs and priorities of women in the community, and it did not offer training or marketing assistance, being more focused on improving social conditions in the community, with a portfolio of activities not directly translatable to typical productive rural activities. It was recommended Deir Youssef not be included for consideration in the more extensive evaluation of the second round.

Al-Ash'ary presented a compelling site for undertaking project activities based on the findings of the site visit. It was less developed than other areas and the most rural, making it the most vulnerable. Although it suffers from a high poverty rate, rural women have demonstrated the ability to generate value and additional income from limited entrepreneurial activities. It stands to benefit most from RE, entrepreneurial development and rural development investment. The Al-Jawhara CBO is well-reputed locally and regionally, enjoys community buy-in and support, and has a resourceful woman leader who demonstrated qualities that would serve the project well. This bodes well for the sustainability of REGEND.

Entrepreneurial food production activities by women in Al-Ash'ary have been identified as

being at a scale that makes them well positioned to benefit from EE and RE systems, with significant impacts on production costs. There is potential for increasing the capacity of current productive activities and developing new value-adding products based on compelling propositions. The weaknesses and threats identified in the site assessment are not structurally challenging and can be overcome by targeted interventions, including technical assistance, capacity-building and management training focused on developing marketing strategy.

Rural women in Batir and Rakin were observed to be fully invested in the value chain of agricultural and livestock production processes. CBOs in the two communities provide much needed finance, training and marketing assistance to members, all of whom are rural women. One barrier to higher growth is the limited capacity and space for food production. Another is the lack of permanent headquarters for the CBOs, where production activities are housed.

The more practical intervention would be to equip the Jam'iat Shabbat Batir Al-Khayriah CBO caravan headquarters with a suitable RE system supported by EE measures. Homes conducting food production activities will be similarly considered. It is not recommended that RE systems and other equipment be provided for rented buildings to ensure they remain for the parties for whom they were intended. Project interventions will also focus on capacity-building to enhance the marketing abilities of community members by expanding the urban client base and targeting potential customers, with a focus on institutional buyers. It is also proposed to build capacity in digital marketing, such as social media for advertising and selling products.

Batir and Rakin present a compelling site for undertaking reduced-scale project activities due to their smaller productive activities and the capacity constraints in their facilities, some of which are rented. The introduction of RE systems to individual community members engaged in home-based food production is worth considering after further verification of the size of their activities.

# Contents

P. 3	Preface
P. 5	Executive Summary
P. 13	Abbreviations and Explanatory Notes
P. 15	Introduction
P. 17	Methodology
<b>P. 21</b>	<b>1. Country Overview</b>
P. 21	A. Geography
P. 22	B. Demographic indicators
P. 23	C. State of the economy
P. 27	D. Social indicators
<b>P. 35</b>	<b>2. Prevailing Conditions in Rural Areas</b>
P. 37	A. Social context
P. 38	B. Political context: effects of decentralization
P. 40	C. Environmental conditions
<b>P. 45</b>	<b>3. Current and Potential Productive Activities in Rural Areas</b>
P. 47	A. Agriculture
P. 48	B. Agricultural processing
P. 49	C. Beekeeping
P. 49	D. Handicrafts
P. 50	E. Cultural and community-based tourism
<b>P. 53</b>	<b>4. Energy Sector Characteristics</b>
P. 55	A. Existing sources of energy supply
P. 56	B. Reliability
P. 57	C. Affordability
P. 59	D. Oil shale
P. 59	E. Renewable energy
P. 62	F. Bioenergy
P. 63	G. Hydropower
P. 63	H. Geothermal energy
P. 63	I. Key actors
P. 65	J. Rural electrification
P. 66	K. Experience of small-scale RE in rural areas
<b>P. 70</b>	<b>5. Entrepreneurial development in rural areas</b>
P. 71	A. Potential for building entrepreneurial activities and the role of small-scale RE applications
P. 72	B. Women's empowerment and rural development programmes

**P. 74 6. Field Assessment of Rural Communities**

- P. 75 A. Methodology
- P. 75 B. Selection of four rural communities

**P. 78 7. Field Visits 1: Preliminary Analysis of Four Rural Communities**

- P. 79 A. Bal'ama
- P. 81 B. Deir Youssef
- P. 82 C. Al-Ash'ary
- P. 84 D. Batir and Rakin

**P. 85 8. Field Visits 2: Detailed Analysis of Two Rural Communities**

- P. 87 A. Al-Ash'ary
- P. 98 B. Batir and Rakin

**P. 106 9. Capacity-building Assessment****P. 108 10. Conclusions and Recommendations**

- P. 110 Annex
- P. 111 Endnotes
- P. 113 Bibliography

**List of Tables**

- P. 31 Table 1. Absolute and abject poverty rates by governorate, 2010
- P. 32 Table 2. Poverty pockets ranked by their poverty rate 2010
- P. 47 Table 3. Cultivated land (dunum), and as percentage of total land in Jordan, 2015-2017
- P. 48 Table 4. Area planted with field crops, vegetables and fruit trees, 2017
- P. 48 Table 5. Number of sheep, goats and cattle in Jordan, November 1, 2011-2017
- P. 58 Table 6. Tariff of electrical energy supplied to end consumers, 2019
- P. 60 Table 7. Existing and committed renewable energy projects in Jordan, December 2019
- P. 72 Table 8. Productive activities donated by the Ministry of Agriculture for rural development, 2008-2017
- P. 76 Table 9. Preliminary evaluation of project sites
- P. 80 Table 10. SWOT analysis for Bal'ama
- P. 82 Table 11. SWOT analysis for Deir Youssef
- P. 88 Table 12. Area of cultivated land by crop in Al-Ash'ary
- P. 88 Table 13. Livestock in the Municipality of Al-Ash'ary
- P. 89 Table 14. Dairy production value chain, responsibilities by gender in Al-Ash'ary
- P. 92 Table 15. Herbal production value chain, responsibilities by gender, Al-Jawhara farm
- P. 83 Table 16. Food production equipment in Al-Jawhara

- P. 98 Table 17. SWOT analysis for Al-Jawhara and Al-Ash'ary  
 P. 105 Table 18. SWOT analysis for Shabbat Batir and Sayyidat Rakin  
 P. 107 Table 19. Projects and capacity-building needs, Al-Ash'ary and Batir and Rakin

### List of Figures

- P. 21 Figure 1. Population size in Jordan, 1961-2018  
 P. 22 Figure 2. Trends in total fertility rates in Jordan, 1990-2017/18  
 P. 23 Figure 3. Annual rate of change in real GDP in Jordan, 2005-2018  
 P. 24 Figure 4. Inflation rates in Jordan, 2000-2018  
 P. 25 Figure 5. Consumer Price Index in Jordan, 2000-2018  
 P. 26 Figure 6. Distribution of private sector enterprises by size, 2017  
 P. 26 Figure 7. Distribution of employees by size of private sector enterprise, 2017  
 P. 26 Figure 8. Distribution of SMEs by sector, 2017  
 P. 27 Figure 9. Human Development Index for Jordan, 1990-2017  
 P. 28 Figure 10. Trends in Jordan's HDI component indices, 1990-2017  
 P. 29 Figure 11. Unemployment rates by gender, 2010-2018  
 P. 29 Figure 12. Unemployment rates by age group and gender, 2018  
 P. 30 Figure 13. Unemployment rates by educational level and gender, 2018  
 P. 30 Figure 14. Employed Jordanians aged 15 and above by main current economic activity, 2018  
 P. 40 Figure 15. Water uses by sector in Jordan, 2017  
 P. 40 Figure 16. Water resources in Jordan, 2017  
 P. 41 Figure 17. Rainfall in Jordan, 1938-2015  
 P. 42 Figure 18. GHG net emissions by sector, 2012  
 P. 42 Figure 19. Energy sector GHG emissions by subsector, 2012  
 P. 43 Figure 20. Emissions from the agriculture, forestry and other land use sector, 2012  
 P. 55 Figure 21. Quantity of electricity generated by fuel type, 2010-2018  
 P. 57 Figure 22. Electric power losses in Jordan, 2014-2018  
 P. 79 Figure 23. Assembled traditional furniture by Al-Irtiqah  
 P. 81 Figure 24. Jam'iat Deir Youssef Al-Khayriah's carpentry workshop  
 P. 83 Figure 25. Sage and thyme in the Al-Jawhara greenhouse  
 P. 79 Figure 26. Al-Jawhara headquarters  
 P. 90 Figure 27. Apple jam made by members of Al-Jawhara  
 P. 91 Figure 28. New addition to Al-Jawhara headquarters  
 P. 91 Figure 29. Al-Jawhara's rented farmland  
 P. 91 Figure 30. Watermelons being grown by members of Al-Jawhara  
 P. 91 Figure 31. Harvested sage and thyme stored in Al-Jawhara  
 P. 92 Figure 32. Herbs packaged for sale by members of Al-Jawhara  
 P. 92 Figure 33. Pumping of groundwater for irrigation at Al-Jawhara rented farm  
 P. 92 Figure 34. Irrigation water pond and transfer pump at Al-Jawhara rented farm  
 P. 93 Figure 35. White cheese produced by members of Al-Jawhara  
 P. 95 Figure 36. Food production kitchen at JWQTS  
 P. 95 Figure 37. Pottery room at JWQTS

- P. 95 Figure 38. Carpet looms at JWQTS
- P. 100 Figure 39. Caravan housing the CBO Jam'iat Shabbat Batir
- P. 101 Figure 40. Milk heating machine at Shabbat Batir
- P. 101 Figure 41. Dairy kitchen at Shabbat Batir
- P. 101 Figure 42. Butter coated with herbs for better storage in Ms. Fiham Al-Ma'aytah's kitchen
- P. 102 Figure 43. Bookkeeping of dairy orders by Ms. Fiham Al-Ma'aytah
- P. 102 Figure 44. Jameed, soaps and formed copper made at Shabbat Batir
- P. 102 Figure 45. Soap-making equipment at Shabbat Batir
- P. 103 Figure 46. Dairy kitchen at Sayyidat Rakin
- P. 103 Figure 47. Jameed and ghee produced by Sayyidat Rakin
- P. 104 Figure 48. Dairy-making room at Ms. Sameera's house



# Abbreviations and Explanatory Notes

<b>CBO</b>	community-based organization	<b>LED</b>	light-emitting diode
<b>CO<sub>2</sub>eq</b>	carbon dioxide equivalent	<b>MWh</b>	megawatt-hour
<b>CPI</b>	Consumer Price Index	<b>NEEAP</b>	National Energy Efficiency Action Plan of Jordan
<b>DOS</b>	Department of Statistics (Jordan)	<b>NGO</b>	non-governmental organization
<b>EE</b>	energy efficiency	<b>PPA</b>	power purchase agreement
<b>EMRC</b>	Energy and Mineral Regulatory Commission	<b>PV</b>	photovoltaic
<b>ESC</b>	Economic and Social Council	<b>RE</b>	renewable energy
<b>ESCWA</b>	Economic and Social Commission for Western Asia	<b>REGEND</b>	Regional Initiative for Promoting Small-scale Renewable Energy Applications in Rural Areas of the Arab
<b>GCC</b>	Cooperation Council for the Arab States of the Gulf	<b>Region</b>	Sustainable Energy and Economic Development (project)
<b>GDP</b>	gross domestic product	<b>SEED</b>	Sustainable Energy and Economic Development (project)
<b>GGGI</b>	Global Gender Gap Index	<b>Sida</b>	Swedish International Development Cooperation Agency
<b>GHG</b>	greenhouse gas	<b>SME</b>	small and medium-sized enterprise
<b>GWh</b>	gigawatt-hour	<b>SWOT</b>	strengths, weaknesses, opportunities and threats
<b>GNI</b>	gross national income	<b>T&amp;D</b>	transmission and distribution
<b>HDI</b>	Human Development Index	<b>UNDP</b>	United Nations Development Programme
<b>HEIS</b>	household expenditure and income survey	<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>IPP</b>	independent power producer	<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>JD</b>	Jordanian dinar	<b>USAID</b>	United States Agency for International Development
<b>JFDA</b>	Jordan Food and Drug Administration		
<b>JREEEF</b>	Jordan Renewable Energy and Energy Efficiency Fund		
<b>JWQTS</b>	Jordanian Women Qualifying and Training Society		
<b>kWh</b>	kilowatt-hour		
<b>kWhp</b>	kilowatt-hour peak		



# Introduction

Rising disparities between urban centres and rural towns and villages in governorates continue to pose a development challenge for Jordan. Because of their high density and concentration of business and industry, the major urban centres of Amman, Irbid and Zarqa continue to claim a larger share of new jobs, investments, tax revenue and entrepreneurial activities. Youth unemployment particularly has been frustrating for many university graduates. This has at times been the source of political discontent, fuelling protest rallies and demonstrations. Another disturbing feature of the labour market is the high gender gap in economic participation. The rate of females taking part in the labour market in Jordan is one of the lowest in the world.

The rising inequalities have spurred the Government to develop programmes that prioritize gender-based local development. Some have been designed to improve the living conditions of the local communities, while others seek to enhance rural productivity. Jordan's Ministry of Planning and International Cooperation, the Ministry of Agriculture, the Ministry of Energy and Mineral Resources and the Ministry of Social Development each have their own directorate dedicated to instigating, designing and delivering local development programmes to rural communities, with a focus on women, youth, the poor and marginalized groups. On the political level, the Government is introducing decentralization to give governorates, municipalities and local authorities a more prominent role in local development planning and spending.

To assist the very poor, a National Aid Fund has been set up as the centrepiece of the country's social safety network. Increasingly, however, poverty reduction programmes are combined

with productivity enhancement assistance to create an enabling environment. These programmes often target women and focus on their economic and social empowerment. For example, one of the five strategic pillars of the Jordan Poverty Reduction Strategy 2013-2020 addresses rural poverty, with a set of policies designed to increase resilience and assist small landholders to make best use of their land and water resources.

Despite a growing number of income-generating and poverty-reduction programmes designed to assist households in rural areas, need continues to outstrip supply. Not only are additional resources needed to increase the effectiveness and scope of existing programmes, but also development-driven approaches more attuned to entrepreneurship and local knowledge could be of great value.

Recognizing the potential of renewable energy (RE) to enhance productivity, promote entrepreneurship and generate new business models, the Economic and Social Commission for Western Asia (ESCWA), with support from Swedish International Development Cooperation Agency (Sida), has initiated a regional initiative to spur and identify opportunities for introducing small-scale RE applications in Rural Areas of the Arab region. The Regional Initiative for Promoting Small-scale Renewable Energy Applications in rural areas of the Arab Region (REGEND) adopts an integrated rural development approach with a focus on enabling rural women to act for themselves.

To facilitate implementing the proposed projects in Jordan, this report examines the rural and energy development needs, taking into consideration the socioeconomic, political

and environmental context. It seeks to present an assessment of prevailing conditions in rural areas in Jordan, including a stocktaking of the conditions affecting rural productive activities, access to energy, and building resilience to climate change. This assessment assisted in the selection of local communities to undertake the pilot projects.

The report is laid out in chapters. Chapter 1 is a country overview where demographic changes are presented along with an assessment of the economy and socioeconomic indicators related to employment and poverty. Chapter 2 offers a stocktaking of the social, political and environmental conditions in rural areas that may have a bearing on project activities, while chapter 3 presents a general survey of current and potential rural productive activities that can be of significance to REGEND.

The state of the electricity sector, including rural electrification, the potential for RE and

experience with small-scale applications in rural areas is described in chapter 4. Chapter 5 provides an overview of empowerment programmes designed to enhance entrepreneurial activities by rural women. Chapter 6 lays down the methodology used for the rural site assessment account and presents the basis for selecting the four communities, chapter 7 presents a preliminary assessment of rural site visits and chapter 8 an in-depth assessment of the two rural sites that qualified for more extensive evaluation.

Chapter 9 provides an outline of proposed projects to be undertaken by REGEND, along with an assessment of technical training and capacity-building needs for the selected rural communities. Chapter 10, the conclusion and recommendations, describes the reasoning behind the selection of the rural communities where project activities will be undertaken.

# Methodology

This national and rural assessment report for Jordan is designed to provide a conceptual basis for a regional development initiative. REGEND, undertaken by ESCWA and funded by Sida, is premised on taking an integrated approach to promoting economic and social development. Focusing on the empowerment of rural women, it seeks to improve the livelihood of rural populations by identifying opportunities for entrepreneurial development and higher productivity through the optimal use of small-scale RE technologies and applications.

The report presents an assessment study of the political, economic, social and technological considerations affecting rural development in Jordan (PEST analysis). The analysis emphasizes the identification of economic activities by women, the role of civil society organizations and the work of government and international agencies. Primary and secondary data sources have been utilized, including public official documents, government statistics, reports by international development institutions and newspaper articles. The report has also

benefited from input by key stakeholders, representing multiple sectors and operating at national and local levels.

Informed by the prevailing conditions in rural areas in Jordan, REGEND conducted site assessment visits to four communities, which were shortlisted based on a set of criteria developed through a participatory process and REGEND's project document. The assessment of sites provided an analytical basis for the selection of local communities, where REGEND's pilot project(s) may be undertaken. Site visits were organized to the four communities. An analysis was undertaken for each area to identify the strengths, weaknesses, opportunities and threats (SWOT) that may affect project implementation. Selection of project sites was followed with focus group meetings by the project team and key stakeholders. Based on the SWOT analysis and the feedback from the meeting, a capacity needs assessment was prepared outlining proposed pilot projects, technical training needs and capacity-building activities to be undertaken by REGEND.









# 1. Country Overview



GDP

# 1. Country Overview

## A. Geography

The Hashemite Kingdom of Jordan is a semi-arid country located in Western Asia, east of the Jordan River, geographically strategic as the bridge between Africa and Eurasia. Jordan occupies an area of 89,318 km<sup>2</sup>. The country has three distinct natural terrains: the Jordan Rift Valley, the mountain ranges extending from north to south and the desert plateau.

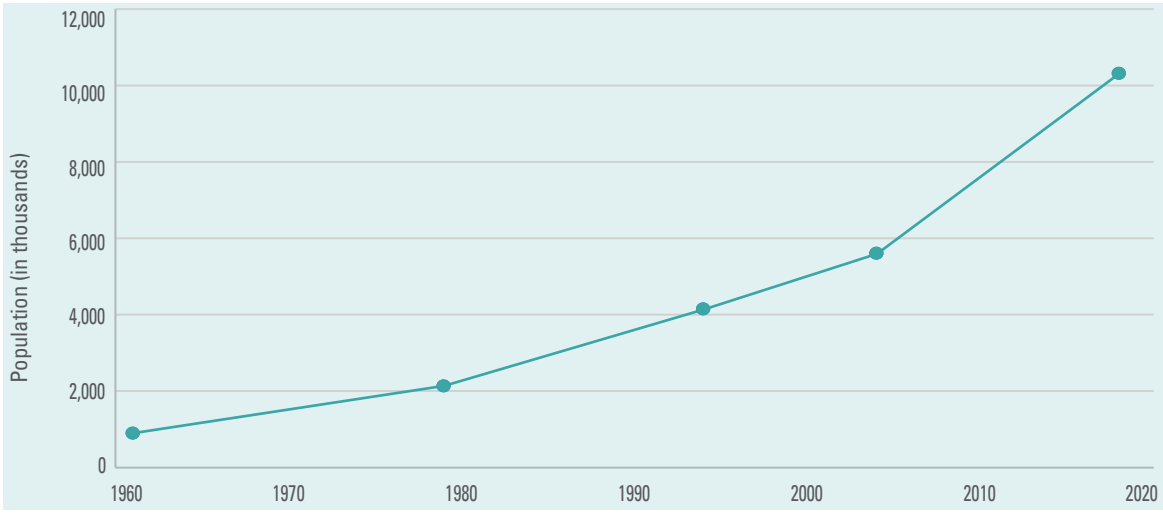
Based on its biophysical characteristics, Jordan is subdivided into four biogeographic regions, namely Mediterranean, Irano-Turanian, Saharo-Arabian and Sudanian. Although the Eastern Desert, or Badia, makes up 88 per cent of Jordan, the country has landscapes and environments with distinctive habitats and biota; variations in physical characteristics, biogeographic regions and climatic zones have yielded an unusual and rich assembly of vegetation types, ecosystems and biodiversity.

These ecosystems include the Badia with poor plant cover, subtropical Sudanian ecosystems, aquatic ecosystems comprised of rivers, wadies and wetlands, and the highland ecosystems comprising mountains with natural woodland and steppes.

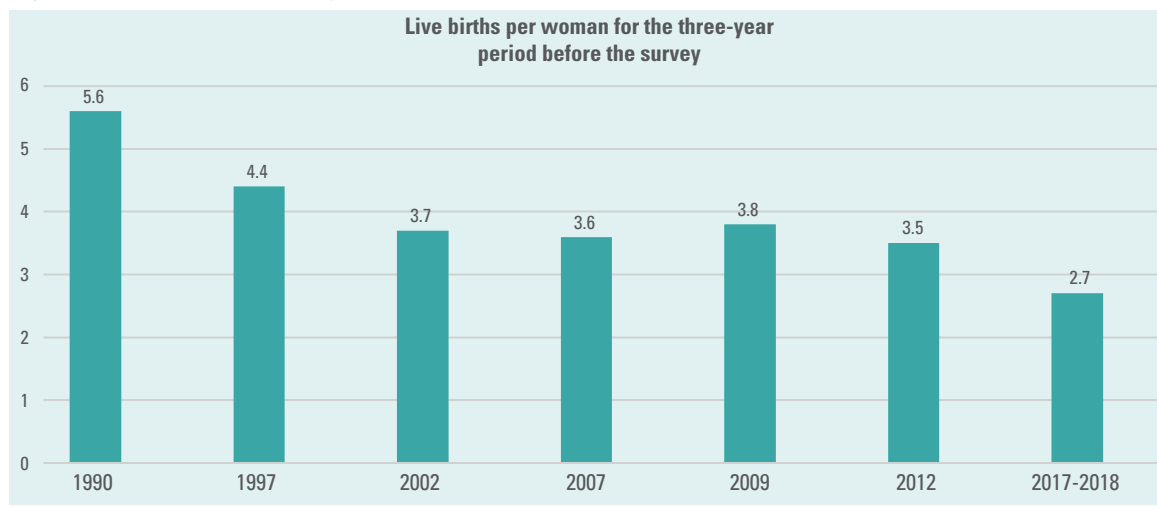
The highlands in the west have a Mediterranean climate characterized by hot, dry summers and cool, wet winters. These areas receive the highest rainfall, are the most richly vegetated and are home to most of Jordan’s dense population centres. The southern and eastern parts of the country are arid, with hot, dry summers and cold, dry winters. Precipitation is extremely variable, and confined largely to the winter and early spring seasons, ranging from 500 mm in the highlands to less than 50 mm in the east.

Jordan is a constitutional monarchy. The 1952 constitution governs the relationship between the monarchy and the Government. The King exercises

**Figure 1** Population size in Jordan, 1961-2018



Source: Jordan, Department of Statistics, 2018a.

**Figure 2** Trends in total fertility rates in Jordan, 1990-2017/18

Source: Jordan, Department of Statistics and ICF, 2018.

his executive authority through the Prime Minister and the Council of Ministers. The legislative branch of the Government consists of two chambers, namely the House of Deputies and the Senate. Members of the upper house (Senate) are appointed directly by the King, while members of the lower House of Deputies are elected for a four-year term.

Administratively, Jordan is divided into 12 governorates (Ajloun, Al-Karak, Amman, Aqaba, Balqa, Irbid, Jerash, Ma'an, Madaba, Mafraq, and Tafiela, Zarqa). Governorates are divided into districts, which are subdivided into subdistricts.

## B. Demographic indicators

According to Jordan's Department of Statistics (DOS), the population has increased more than 11-fold from 900,000 in 1961 to 10.3 million at the end of 2018,<sup>1</sup> as indicated in [figure 1](#).

High fertility rates over the past five decades have contributed to high rates of population growth. Although the number of live births per woman aged 15-49 reached 5.6 in 1990, the rate has declined to 2.7, according to the most recent (2017-2018) Jordan Population and Family Health Survey.<sup>2</sup>

The survey found that fertility is higher in rural (3.1) than urban areas (2.7). Fertility rates, shown in [figure 2](#), indicate decreasing trends, particularly since 2014 to the present. Labour migration to Jordan from Arab countries and elsewhere has also contributed to population growth but the most significant effect since 2011 was the influx of Syrian refugees. According to the 2015 population and housing census, Jordanians accounted for 70 per cent of the country's total population.<sup>3</sup> Of the remaining 30 per cent of non-Jordanians, Syrians account for about half, or 1.3 million.

More than half of Jordanians (54.2 per cent) are under the age of 25, with a third under the age of 15.<sup>4</sup> This age structure foretells shifts in the working-age population over the next few decades as more young people reach working age. A policy paper by the Higher Population Council predicts that the type of structural population changes, towards higher proportions in the working-age population and a declining dependency ratio, may bring about a demographic dividend by 2040 under the best-case scenario.<sup>5</sup> Whether the Government can take advantage of this will depend on the country's economic policies during the demographic transition, including the ability to absorb new entrants to the workforce.

## C. State of the economy

### 1. Major economic indicators

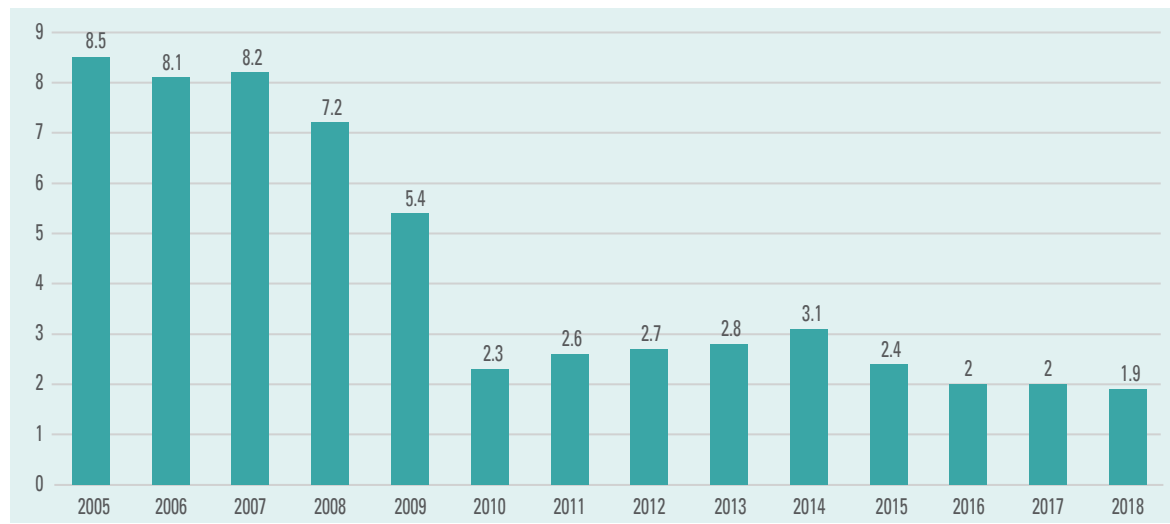
Jordan's economic performance over the past 20 years is a tale of two narratives. Between 2000 and 2009, the annual growth rate of gross domestic product (GDP) averaged 6.5 per cent, but plunged to 2.4 per cent between 2010 and 2018.<sup>6</sup> As indicated in Jordan's First National Voluntary review on the implementation of the 2030 Agenda for Sustainable Development, the country made significant progress in meeting the Millennium Development Goals (MDGs), only to be derailed by "...the global financial crisis and the rise in energy and food prices, which was further exacerbated by the Syria crisis, taking a toll on Jordan's resources, infrastructure, and services".<sup>7</sup> Although the Government has developed a road map to mainstream the 2030 Agenda in national plans, the country continues to be vulnerable.

As the repercussions of the 2008 global financial crisis affected Jordan's economy, real GDP growth dropped precipitously, to 2.3 per cent in 2010 compared with 7.2 per cent in 2008<sup>8</sup> as shown in figure 3. Jordan was also faced with the

aftermath of the Arab Spring. The regional turmoil exposed Jordan's political, economic and social vulnerabilities. Tourism was hit hard, depriving the treasury of desperately needed revenues. Ongoing regional violence caused massive disruption in the country's energy supplies, forcing the Government to switch to more expensive fuel sources. As a result, the National Electric Power Company accumulated debts of 4.5 billion Jordanian dinar, or JD, (\$6.35 billion) between 2011 and 2014.<sup>9</sup> Public debt soared; while the debt-to-GDP was 61 per cent in 2010,<sup>10</sup> the public debt recorded in 2018 was equal to 94.4 per cent of GDP.<sup>11</sup>

In 2011, Jordan had to contend with refugee admissions from the Syrian Arab Republic. By 2015, the number had reached 1.38 million.<sup>12</sup> The presence of the refugees added significant pressure to the public purse, stretching available government resources in education, health care, energy, water, waste management and sanitation. According to a government report, the fiscal impact of the Syrian crisis on the 2015 budget was "estimated at \$1.99 billion, or 5.6 per cent of the country's 2014 GDP".<sup>13</sup> Further, the admission of Syrian refugees, coupled with declining economic growth rates depressed the per capita share of real GDP from 1,491 JD (\$2,103) in 2010 to 1,181 JD (\$1,666) in 2017.<sup>14</sup>

**Figure 3** Annual rate of change in real GDP in Jordan, 2005-2018 (percentage)



Source: Jordan, Economic and Social Council, 2018; Jordan, Department of Statistics, 2018b.

The closure of trade routes with Iraq and the Syrian Arab Republic, Jordan's main trading partners, caused further retrenchment in the economy. As a result of the closures, Jordan's trade with Iraq, Lebanon, the Syrian Arab Republic and Turkey declined from 2.4 billion JD (\$3.4 billion) in 2013 to 1.2 billion JD (\$1.7 billion) in 2016, with the industrial, agricultural and land transport sectors particularly hard hit. The loss of these important export markets pushed the trade deficit higher. In 2017, the value of the country's total exports was 5,333 million JD (\$7,520 million), a 0.5 per cent decline compared with 2016. Over the same time period, total imports increased by 6.1 per cent to 14,553 million JD (\$20,530 million), representing a 10.3 per cent rise in the country's trade deficit.<sup>15</sup> The restoration of cross-border movement of goods between Jordan and Iraq, and the understanding reached between the two in late 2018 to mutually lower custom fees, augurs well for jump-starting higher trade flows. Over the first 11 months of 2018, the value of Jordanian exports to Iraq climbed 32 per cent, to 421 million JD (\$594 million), compared with the same period in 2017.<sup>16</sup>

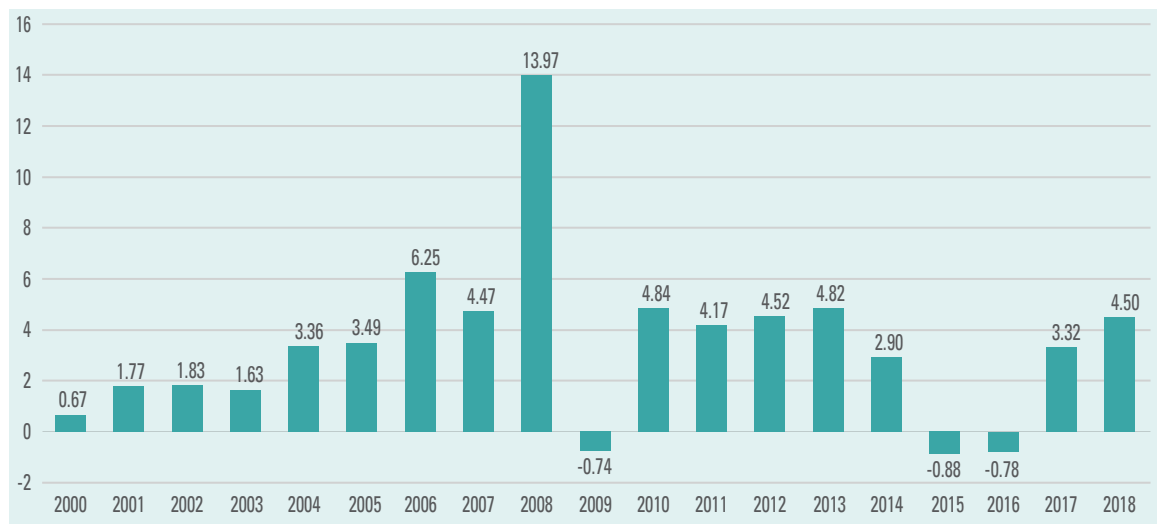
In addition, with its service-based economy,

Jordan is vulnerable to external global shocks. When the economies of the Cooperation Council for the Arab States of the Gulf (GCC), originally known as the Gulf Cooperation Council, were exposed to the 2008 financial crisis, demand for Jordanian goods decreased, remittances from Jordanians working in the GCC declined, and aid from GCC countries slowed. Jordan's economy continues, therefore, to rely on foreign assistance. According to a 2015 World Bank report, Jordan is "one of the largest middle-income country recipients of foreign grants in the world".<sup>17</sup> In 2018, after grants, the country's fiscal balance as a percentage of GDP was -2.4 per cent; before accounting for grants, it was -5.4 per cent.<sup>18</sup> Therefore, the primary challenges facing Jordan remain reducing dependence on foreign grants, cutting the budget deficit, lowering the public debt and attracting foreign investment.

## 2. Consumer prices

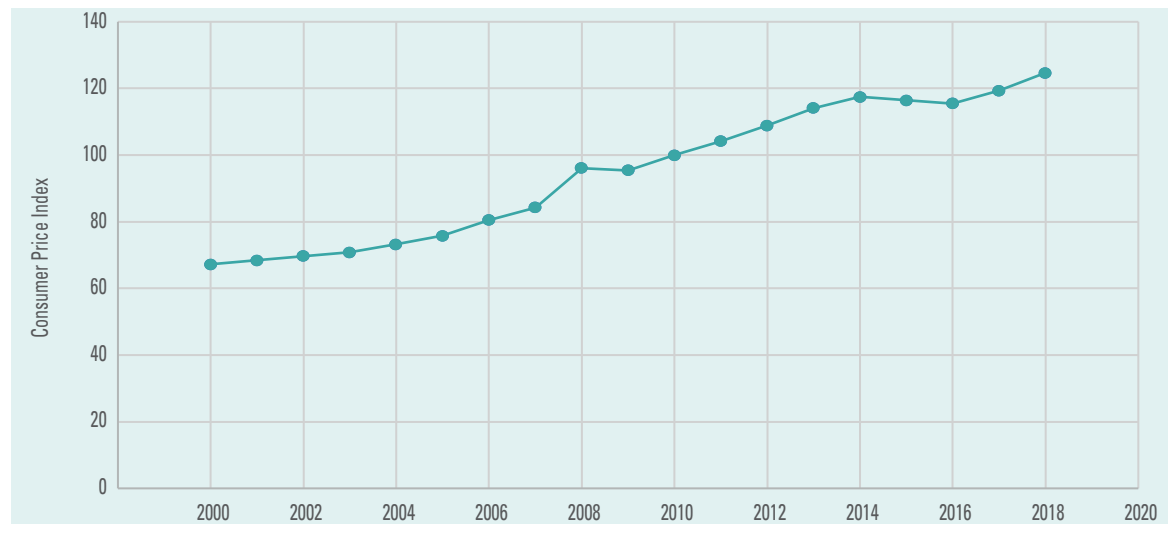
Figure 4 shows fluctuating inflation rates in Jordan, which reflect the impact of changing global oil and food prices, domestic demand and fiscal policies. In 2008, inflation soared to 14 per cent, as a result of lifting price controls

**Figure 4** Inflation rates in Jordan, 2000-2018 (percentage)



Source: World Bank, 2019



**Figure 5** Consumer Price Index in Jordan, 2000-2018 (2010=100)

Source: World Bank, 2019

on petroleum derivatives at a time when global oil prices reached historical highs.<sup>19</sup> This was followed by severe deflationary pressures in 2009, driven by a steep decline in oil prices and a weakening demand for goods induced by the 2008 financial crisis. The negative inflation rates of 2015 and 2016 are also attributed to declining global oil prices and overall demand. In 2017, inflation increased to 3.3 per cent with the upward pressure on prices resulting from higher taxes and higher fuel costs.<sup>20</sup> These inflationary pressures intensified in 2018, reaching a rate of 4.5 per cent, driven partly by the introduction of a higher sales tax regime and bread subsidy reform.<sup>21</sup>

As shown in [figure 5](#), consumer price contractions in 2015 and 2016 were followed by a higher Consumer Price Index (CPI) in 2017 and 2018, driven partly by higher global oil and food prices, and partly by government fiscal measures, which included reductions in tax exemptions, increased tax rates, higher fees and a rise in the national minimum wage, all of which took effect in 2017. These resulted in higher production costs in a number of economic sectors and, therefore, higher prices, relative to 2016. Transport prices rose by 12.9 per cent and 9.9 per cent in 2017 and 2018 relative to 2016 and 2017, driven by a 10 per cent increase

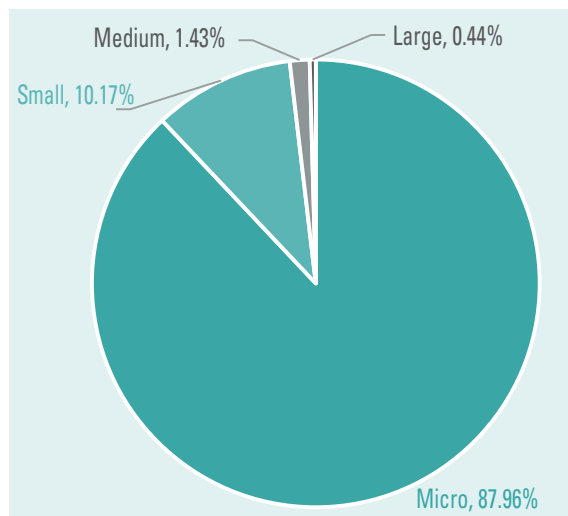
in public transport fees, higher global oil prices and a gasoline fuel surcharge. Higher oil prices also caused a 2.9 per cent increase in 2017 in the price of lighting and fuel use in residential buildings.<sup>22</sup> The relative increase was significantly higher in 2018, reaching 8.2 per cent.<sup>23</sup>

Overall, the CPI has increased by 25 per cent since 2010, as is evident in [figure 5](#), with 15 per cent accounted for by higher food prices.<sup>24</sup> This again underscores Jordan's vulnerability to global food and oil prices, with repercussions on access to food.

### 3. Small and medium-sized enterprises

According to the Department of Statistics, private sector small and medium-sized enterprises (SMEs), defined as those employing less than 100 people, accounted for 99.6 per cent of the total number of private sector establishments in Jordan in 2017, and claimed 67.1 per cent of private sector employees<sup>25</sup> In addition, in 2015, SMEs absorbed 43 per cent of all new private sector entrants to the job market.<sup>26</sup> Microenterprises (1-4 employees) accounted for 88 per cent of all enterprises in 2017, while small (5-19 employees) and medium-sized (20-99 employees) enterprises accounted for 10.2 per cent and 1.4 per cent of the total.<sup>27</sup>

**Figure 6** Distribution of private sector enterprises by size, 2017 (percentage)

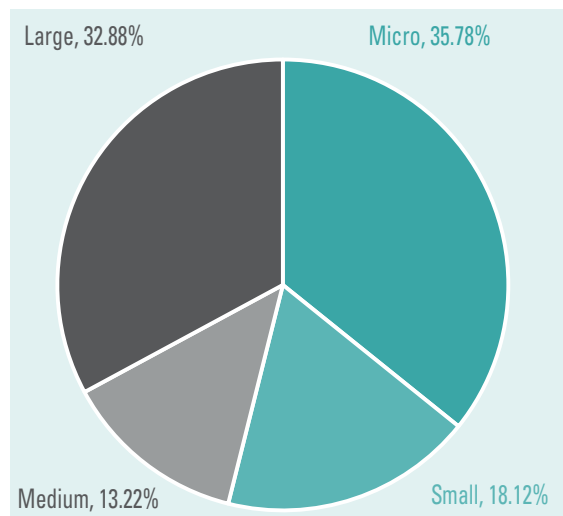


Source: Jordan, Department of Statistics, 2017a.

Figure 6 shows the distribution of private sector enterprises in Jordan, segmented by size. By number of employees, micro, small and medium-sized enterprises accounted for 36 per cent, 18 per cent, and 13 per cent, respectively, of all private sector employees in 2017, as shown in Figure 7. Despite claiming a significant proportion of the number of establishments and employees, SMEs are believed to contribute only 30 per cent to GDP.<sup>28</sup>

The 2017 Department of Statistics labour force survey indicated that the wholesale and retail sector accounted for 56 per cent of the number of SME establishments, followed by manufacturing at 14 per cent,<sup>29</sup> as shown in figure 8. In addition to generating more employment opportunities than large enterprises, SMEs play a strategic role in reducing the development disparity between urban centres, such as Amman, Irbid and Zarqa, and less densely populated governorates. Aided by their broad geographical distribution, SMEs are able to generate jobs, provide services and stimulate development in the less developed parts of the country, including poverty pockets. The Department of Statistics survey revealed 55 per cent of all SMEs are located outside the Governorate of Amman, which claims 78 per cent of all large enterprises.<sup>30</sup>

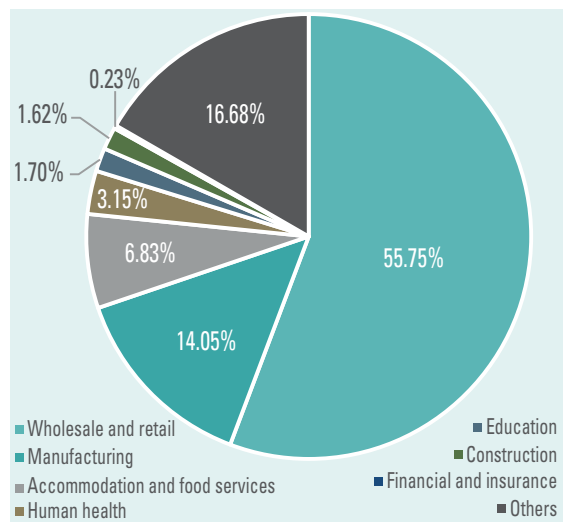
**Figure 7** Distribution of employees by size of private sector enterprise, 2017 (percentage)



Source: Jordan, Department of Statistics, 2017a.

For the Government, enhancing the performance of SMEs is key to stimulating local development and addressing unemployment. A study released by the Economic and Social Council (ESC) of Jordan in 2019 identified lack of finance, inadequate marketing skills and lack of reliable access to information, technology, energy and skilled labour as the primary barriers to a

**Figure 8** Distribution of SMEs by sector, 2017 (percentage)



Source: Jordan, Department of Statistics, 2017a.

high-growth SME sector.<sup>31</sup> To mobilize policy action and bolster their performance, the ESC organized a multi-stakeholder conference in December 2018 and generated a set of recommendations advocating institutional and governance reforms, facilitated access to local and export markets, entrepreneurship development and incentives to enable better access to finance and other resource inputs, including RE and energy efficiency (EE) technologies at discounted rates.<sup>32</sup>

## D. Social indicators

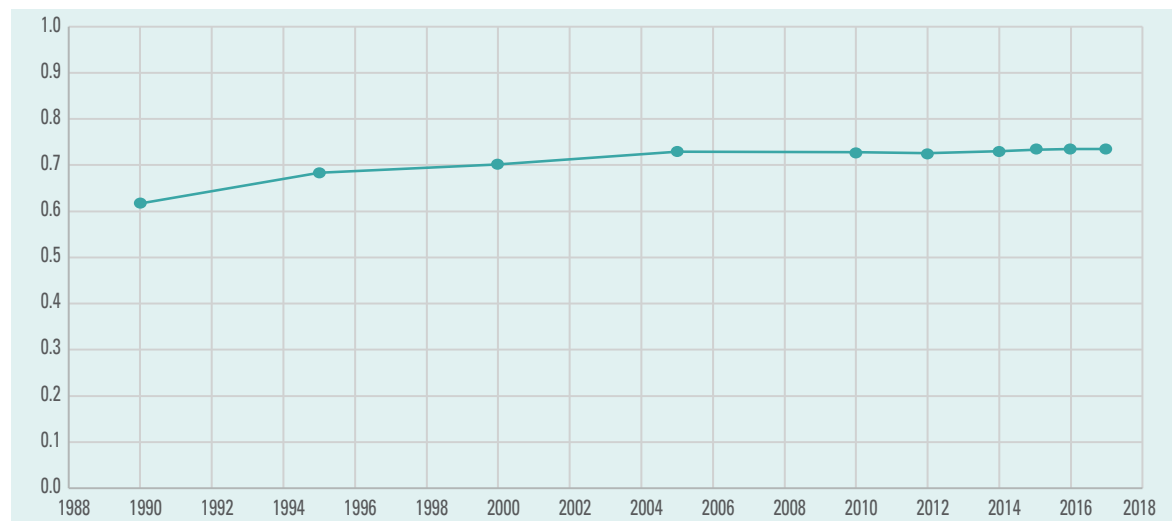
### 1. Human development indicators

According to the 2018 statistical update of the Human Development Indices and Indicators report by the United Nations Development Programme (UNDP), the Human Development Index (HDI) for Jordan for 2017 was 0.735. This put the country in the high human development category, positioning it at 95 out of 189 countries.<sup>33</sup> Although Jordan's HDI value increased by 19.1 per cent between 1990 and 2017, it increased by only 1.2 per cent between 2012 and 2017, from

0.726 to 0.735, as [figure 9](#) indicates. Moreover, the HDI rank dropped five places in the same five-year period, which is attributed to the 2008 global financial crisis and spillovers from the Syrian conflict. Over the period 1990-2017, life expectancy at birth increased by 4.6 years, mean and expected years of schooling by 5.3 and 1.4 years, and the gross national income (GNI) per capita by about 40 per cent.<sup>34</sup> Relative to other countries in the region, Jordan's 2017 HDI value of 0.735 was above the 0.699 average for Arab countries.

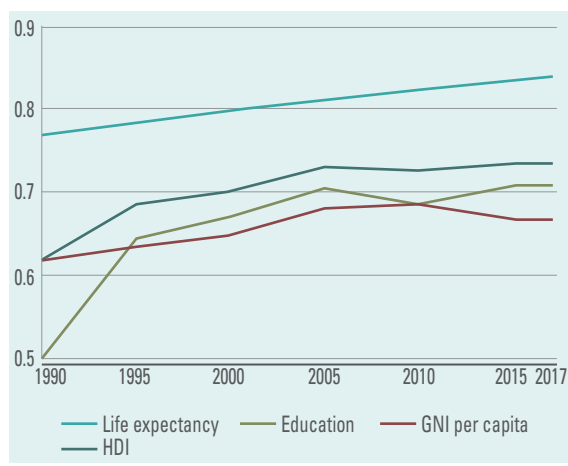
Although the HDI value combines information about progress in health, education and income (as shown in [figure 10](#)), the indicator does not capture disparities in the distribution of development within Jordan. The Inequality-adjusted Human Development Index (IHDI) accounts for inequalities in the three dimensions of the HDI, causing a depression in its value. When Jordan's 2017 HDI value of 0.735 is adjusted for inequalities, it falls to 0.617, which represents a category drop from high human development to medium.<sup>35</sup> The average loss in Jordan's HDI value due to

**Figure 9** Human Development Index for Jordan, 1990-2017



Source: United Nations Development Programme, 2018.

**Figure 10** Trends in Jordan's HDI component indices, 1990-2017



Source: United Nations Development Programme, 2018.

inequality is approximately 16.1 per cent. Other inequalities appear across gender in Jordan. According to the UNDP statistical update, in 2017 Jordan ranked 108 out of 160 countries in the Gender Inequality Index (GII), which measures inequalities in the three dimensions of reproductive health, empowerment and economic activity. For the 2018 Global Gender Gap Index (GGGI), Jordan ranked 138 out of 149 countries.<sup>36</sup> These low rankings are attributed primarily to low female participation in the labour market.

## 2. Education

Jordan has high enrolment rates for primary, secondary and higher education compared with countries of similar income levels.<sup>37</sup> The vast majority of Jordanian children aged 6-15 are enrolled in schools at similar ratios for males and females (95 per cent), with the percentage of those completing all primary education grades reaching 99 per cent in 2015.<sup>38</sup> According to 2018 figures, the illiteracy rate of Jordanians (aged 15 and above) was 5.1 per cent.<sup>39</sup> Regional and social inequalities exist, however, and concerns persist about the quality of education.

Progress in school enrolment has not benefited all children equally, with those from poor socioeconomic backgrounds, involved in child labour or with disabilities at higher risk of being out of school.<sup>40</sup> Regarding socioeconomic educational inequalities, only 16 per cent of girls from poorer households were at or above level 2 in mathematics, compared with 57 per cent of those from richer households in 2009. Of children with disabilities, 40 per cent were illiterate and 32 per cent had read-only ability, compared with 11 per cent among the total population.<sup>41</sup>

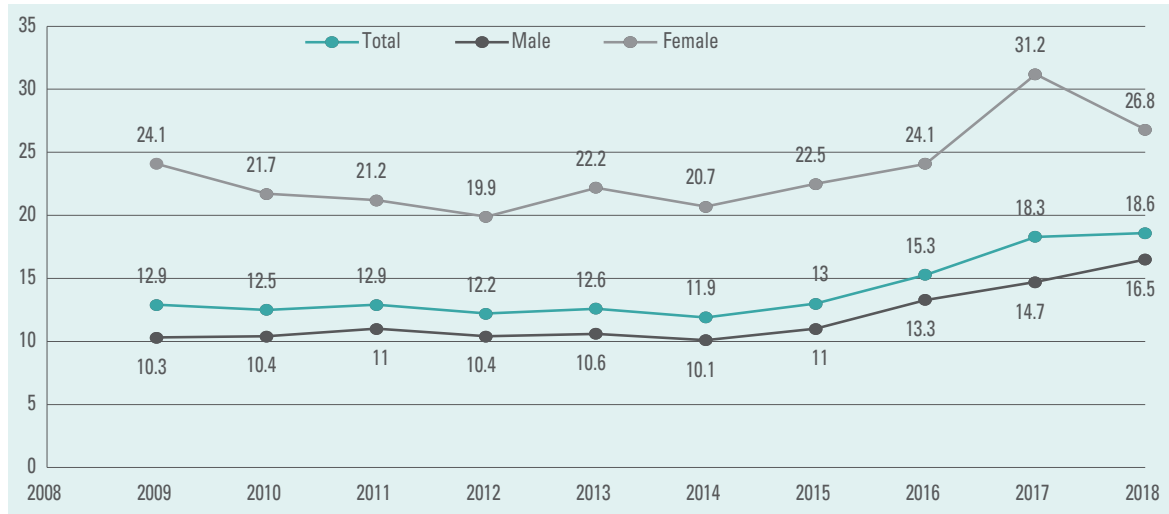
In addition, student learning outcomes are lagging behind and graduate skills are not meeting the needs of the economy.<sup>42</sup> Learning outcomes in Jordan are poor throughout basic and secondary education, with 70 per cent of students in grades 2 and 3 reading without comprehension, according to the National Committee for Human Resource Development in 2016, and students consistently performing poorly in international standardized tests, including mathematics and science.

While access to free, compulsory basic education for girls and boys has been achieved for Jordanian children, Syrian refugee children do not fare as well. Of 212,000 registered Syrian refugees of school age (6-17 years) in the 2016/17 academic year, 126,127 were enrolled in Jordanian schools, leaving 40 per cent out of school. To cope with a large influx of students, a double-shift system has been adopted in 209 schools, where Syrian and Jordanian students attend separate morning and afternoon shifts.

## 3. Unemployment

Sluggish growth has meant the economy could not generate sufficient jobs to reduce unemployment. As a result, rising rates persist, as shown in figure 11. The overall unemployment rate in 2018 was 18.6 per cent.<sup>43</sup> Labour market conditions have remained challenging, with the unemployment rate rising to 19.2 per cent in the second quarter of 2019, an increase of 0.5 percentage points on the second quarter of 2018.<sup>44</sup>

**Figure 11** Unemployment rates by gender, 2010-2018 (percentage)



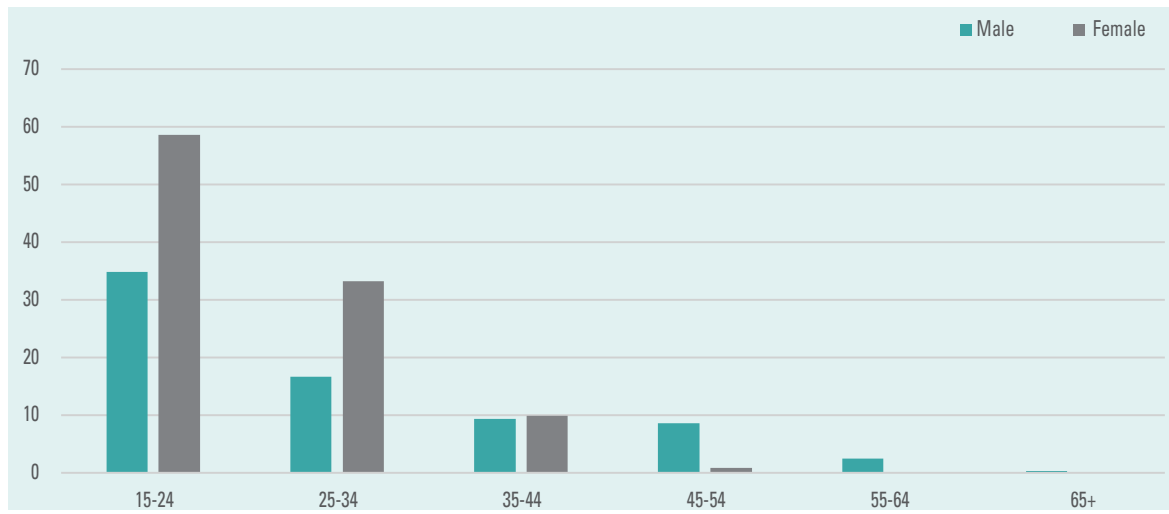
Source: Jordan, Department of Statistics, 2018b.

Unemployment remains particularly serious for young age groups and for women; recorded unemployment for those aged 15-24 was 39.2 per cent in 2018, while female unemployment, at 26.8 per cent, is 1.5 times the rate of male unemployment.<sup>45</sup> Figure 12 breaks down unemployment rates by gender and age group. In addition, unemployed females tend to be more educated, while unemployment for

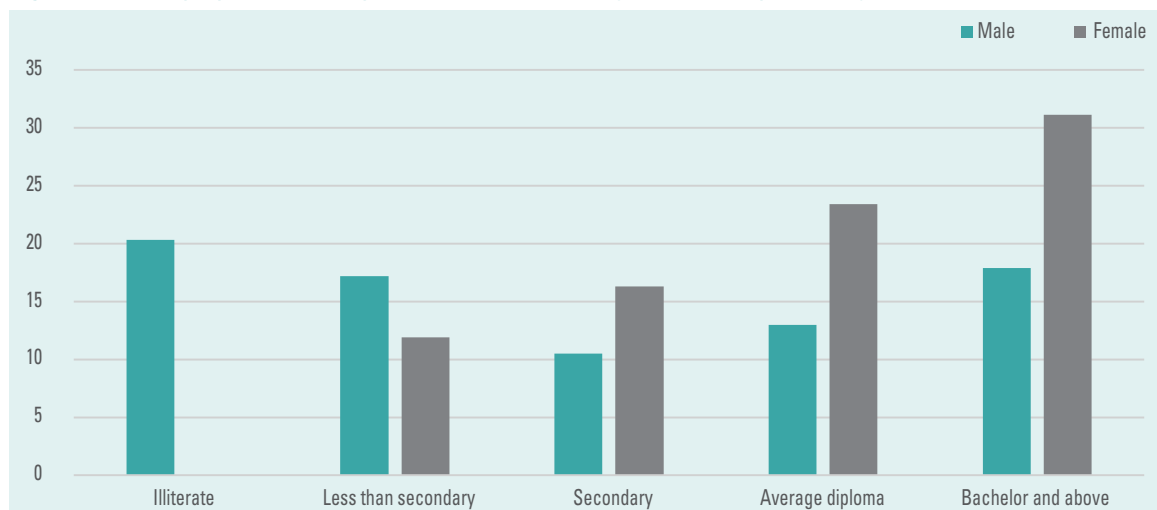
males is less affected by educational level, as illustrated in figure 13.

A more disturbing challenge in the labour market, though, is the low participation rate among the working-age population. According to the National Employment Strategy (NES) 2011-2020, the proportion of economically inactive people in the working-age population is 60 per cent.<sup>46</sup>

**Figure 12** Unemployment rates by age group and gender, 2018 (percentage)



Source: Jordan, Department of Statistics, 2018b

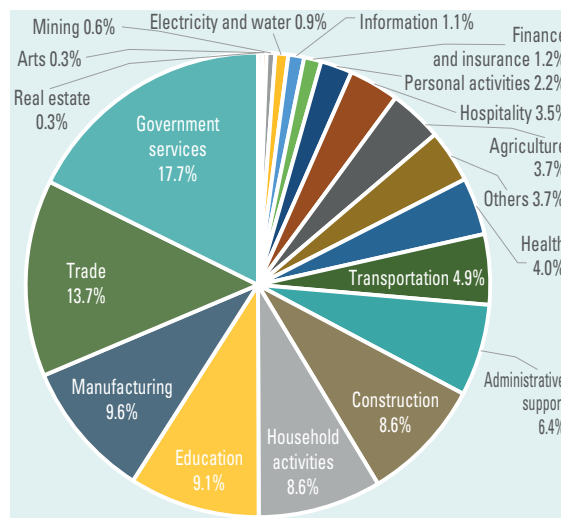
**Figure 13** Unemployment rates by educational level and gender, 2018 (percentage)

Source: Jordan, Department of Statistics, 2018b

Another worrying feature is the high gender gap in economic participation rates. Of males of working age, 65 per cent are economically active, compared with 15 per cent of women.<sup>47</sup> This rate of labour participation for women is one of the lowest in the world, despite the high educational levels attained by women in Jordan.

The labour market analysis indicates there is more to the story than anaemic economic growth. According to the National Employment Strategy, even "... periods of strong economic growth have not resulted in strong job creation for Jordanians, which may clearly indicate a structural dysfunction that needs to be addressed".<sup>48</sup> For example, of all the jobs created in the period 2000-2008, where GDP growth rates reached 6.7 per cent annually, 42 per cent were in the public sector. More than half those created in the private sector went to foreign workers, whose number is estimated to be 300,000-500,000.<sup>49</sup> The influx of Syrian refugees has infused the labour market with low-wage workers, making an already difficult situation worse for Jordanian workers. Lack of labour market reforms and inadequate government investments have also contributed to rising rates of unemployment.

Of all classified economic activities, public administration and defence retain the highest proportion of all employed Jordanians of working age, as shown in figure 14, potentially supporting claims of a bloated public sector. It also indicates the need to prioritize national security in an unstable and turbulent region. Trailing public jobs, retail and wholesale trade

**Figure 14** Employed Jordanians aged 15 and above by main current economic activity, 2018 (percentage)

Source: Jordan, Department of Statistics, 2018d.



and manufacturing employ 13.7 per cent and 9.6 per cent of Jordanians, respectively. The household activities category accounts for 8.6 per cent of employed Jordanians. This is believed to be a measure of home-based businesses, the majority of which are believed to be women working informally.

#### 4. Poverty

According to the 2010 household expenditure and income survey (HEIS), the national poverty rate in Jordan in 2010 was 14.4 per cent.<sup>50</sup> A more recent HEIS in 2017 recorded a slightly higher rate of 15.7 per cent.<sup>51</sup> The Economic Policy Council, however, in a government planning document, reported the poverty rate had surged to 20 per cent in 2016.<sup>52</sup> Poverty rates by governorate and other data on those districts identified as poverty pockets according to the 2017 HEIS have not yet been released. According to the HEIS 2010 survey, the governorates of Amman and Al-Karak had the lowest incidence of poverty, with rates at 11.4 per cent and 13.4 per cent, respectively, while the highest was recorded in Ma'an (26.6

per cent), reflecting substantial variations among governorates.<sup>53</sup> Table 1 shows the poverty rates by governorate. Almost 64 per cent of the poor reside in the governorates of Amman, Irbid and Zarqa, reflecting their greater populations.

The 2010 HEIS survey was used to determine the poverty pockets, a key indicator in designing social protection programmes. The poverty pockets include all subdistricts located within a "poor" district, defined as having a poverty rate above 25 per cent. There were 27 poverty pockets identified by the 2010 survey, accounting for 13.6 per cent of the total population. Within these 27 pockets, the poverty incidence was 31.6 per cent.<sup>54</sup> The list of poverty pockets is shown in table 2.

To go beyond poverty lines based on money metrics and caloric intake, a social indicator pilot study was conducted, motivated by the fact that, according to a 2012 survey, "the majority of poor are clustered just above and below the poverty line with only a small proportion of the poor significantly and chronically below it".<sup>55</sup> Another study in 2017 put the proportion of the

**Table 1** Absolute and abject poverty rates by governorate, 2010 (percentage)

Governorate	Absolute poverty rate	Abject poverty rate
Ma'an	26.6	2.68
Ajlun	25.6	0.26
Balqa	20.9	0.00
Aqaba	19.2	0.60
Mafraq	19.2	1.27
Tafleeh	17.2	0.33
Madaba	15.1	0.00
Irbid	15.0	0.10
Zarqa	14.1	0.34
Al-Karak	13.4	0.59
Amman	11.4	0.25
Jerasha	20.3	0.00
<b>Kingdom</b>	<b>14.4</b>	<b>0.32</b>

**Source:** Jordan, Department of Statistics, 2012.

**Note:** Statistics for Jerash based on HEIS 2008 data due to sampling constraints in the governorate during data collection for HEIS 2010.

**Table 2** Poverty pockets ranked by their poverty rate, 2010 (percentage)

	District	Subdistrict	District poverty rate	Subdistrict poverty rate
1	Qasabat Al-Aqaba	Wadi Arabah	16.0	71.5
2	Al-Ruwaished	Al-Ruwaished	69.6	69.6
3	Al-Aghwar Al-Janoobiyah	Ghour Al-Safi	45.4	61.9
4	Al-Hussainiyah	Al-Hussainiyah	52.5	52.5
5	Qasabat Ma'an	Al-Maraghah	31.4	50.5
6	Qasabat Ma'an	Iel	31.4	48.3
7	Al-Quairah	Dieseh	34.6	47.5
8	Al-Badia Al-Shamaliyah	Al-Salhiyyeh	29.5	44.7
9	Al-Badia Al-Shamaliyah	Dair El-Kahf	29.5	42.8
10	Al-Shonah Al-Shamaliyah	Al-Shonah Al-Shamaliyah	36.0	36.0
11	Qasabat Ajlun	Erjan	27.8	33.9
12	Qasabat Ma'an	Al-Jafr	31.4	33.8
13	Qasabat Al-Zarqa'a	Al-Dhlail	13.8	31.7
14	Al-quairah	Al-quairah	34.6	31.1
15	Bsairah	Bsairah	30.0	30.0
16	Deir Alla	Deir Alla	29.9	29.9
17	Ain El-Basha	Ain El-Basha	29.5	29.5
18	Al-Qasr	Al-Mujeb	10.0	28.6
19	Qasabat Ajlun	Qasabat Ajlun	27.8	28.0
20	Qasabat Ma'an	Adhroh	31.4	26.5
21	Al-Badia Al-Shamaliyah	Um El-Qottain	29.5	26.5
22	Al-Ramtha	Al-Ramtha	25.1	25.1
23	Qasabat Ajlun	Sakhrhah	27.8	22.5
24	Qasabat Ma'an	Qasabat Ma'an	31.4	21.5
25	Al-Aghwar Al-Janoobiyah	Ghour Al-Mazra'ah	45.4	21.4
26	Al-Badia Al-Shamaliyah	Um Ejjmal	29.5	17.6
27	Al-Badia Al-Shamaliyah	Sabha	29.5	14.2

Source: Jordan, Department of Statistics, 2012.

population slipping into poverty during a year at one third,<sup>56</sup> possibly driven by higher living costs, deteriorating socioeconomic conditions and/or global economic shocks. To address the vulnerability, the Jordan Poverty Reduction Strategy was designed to target both the poor and those immediately above the national poverty line.

In May 2019, the Government launched a social protection and integration programme, the biggest in the country's history, at a cost of 200 million JD (\$282 million) over three years. The complementary support programme, or Takaful, is part of the national social protection strategy and targets underprivileged youth and women, and people with disabilities. The programme

seeks to redefine poverty and social protection to address the unresolved issues of inequality, social exclusion and the ineffectiveness of social policy.<sup>57</sup> Administration, monitoring and evaluating the complementary support programme is valued at 23 million euros (\$26 million) over four years, with funding provided by the European Union.<sup>58</sup>

Designed to reach 85,000 families in poverty over the three-year period, the programme was expected to support 25,000 families in its first year, 30,000 families in 2020 and 30,000 in 2021.<sup>59</sup> In addition, it will not only provide financial support in cash, but also include educational, health, transport and RE bundles and services.<sup>60</sup> It is estimated that 50,000 low-income households will receive free health insurance coverage, 10,000 families public

transport services to help their youth access job markets, 5,000 households solar power systems for electricity generation to reduce the burden of electricity costs, and 50,000 children of underprivileged families school meal assistance.<sup>61</sup> The provision of small-scale solar energy systems will be implemented by the Rural Electrification Directorate of the Ministry of Energy and Mineral Resources, with the list of beneficiaries provided by Takaful. Over the course of the programme, job training will target beneficiaries to enhance their skills and improve their prospects of securing a job. The welfare-to-work programme will be administered by the Ministry of Labour, with funding from the World Bank. According to the programme director, Takaful is expected to reduce the poverty percentage from its current rate of 15.7 per cent to 13.1 per cent by 2021.











## 2. Prevailing Conditions in Rural Areas

### A. Social context

According to 2016-2019 data from the Department of Statistics, Jordan's urban population has remained unchanged at 90.3 per cent. But the Department of Statistics defines urban centres as those whose population exceeds 5,000, which may underestimate actual rural populations. It is not uncommon for households to engage in typically rural activities, such as farming and animal husbandry, while residing in towns defined as urban, as specified in the urban-rural threshold adopted by the the Department of Statistics. Using the World Bank's World Development Indicators, a working paper by the International Food Policy Research Institute (IFPRI) estimated the 2016 urban population at 84 per cent. The 2018 paper found that although the percentage of the population living in rural areas has been declining, from 20 per cent in 2000 to 16 per cent in 2016, the numbers had continued to expand, if slowly, with an annual growth rate of 1.8 per cent in 2016.<sup>62</sup>

Geographically, there is considerable variation in the proportion of rural population between governorates. The highest concentration of rural villages is in the fertile north-west corner of the country and in the Jordan Valley, in the Governorates of Balqa, Jerash and Madaba. However, Mafraq, Al-Karak and Ma'an have the highest share of their populations living in rural areas (30-50 per cent) compared with less than 5 per cent in the Governorates of Amman, Irbid and Zarqa,<sup>63</sup> where approximately three quarters of the total population reside.<sup>64</sup> This should not underplay the rural-to-urban migration that has characterized demographic changes in Jordan since 2005. Urbanization has increased pressure on affordable housing and municipal services. It has also contributed to rising inequality and

disparities in the level of development across the country.

For example, according to the HEIS 2010 survey, rural areas experienced higher poverty rates – 16.8 per cent, compared with 13.9 per cent in urban areas<sup>65</sup> – although the number of poor was more concentrated in urban centres. A further 28.8 per cent of rural dwellers are vulnerable to poverty, according to the Jordan Poverty Reduction Strategy 2013-2020. The lack of business and employment opportunities, and inadequate access to social services, has contributed to higher poverty in rural areas. In addition, children and youth are more likely to experience poverty than other age groups. Most of the poor are below the age of 25, including 67.2 per cent in the poorest quintile.<sup>66</sup>

Variation between urban and rural areas also exists in the quality of schooling. According to the National Strategy for Human Resource Development 2016-2025 titled Education for Prosperity: Delivering Results, of schools with no students passing the Tawjihi (high school) exams, 81 per cent were in rural areas.<sup>67</sup>

As previously indicated, the Jordanian labour market is characterized by significant gender differences. A 2018 study by the International Labour Office, however, found little variation between rural and urban areas regarding labour force participation or unemployment, although it warned, "it should be kept in mind that these statistics exclude some forms of unpaid family labour such as farm-related work, in which young rural women are particularly engaged, often as contributing family workers".<sup>68</sup> According to a UNDP study in 2013, 16 per cent of women who work in the agricultural sector are informally employed.<sup>69</sup>



## B. Political context: effects of decentralization

The subnational governance system in Jordan is composed of governorate-level administrations, presided over by Governors, and municipal authorities preside over by elected mayors. The duties of the governor, who is appointed by the King and reports to the Ministry of Interior, have traditionally been associated with security, although that role is being expanded to include local development planning. The Governor is supported by an Advisory Council comprising up to 25 appointed members but which has limited accountability.

Municipalities are governed by a municipal council, which is elected every four years, with 25 per cent of the seats assigned to women. An elected Mayor chairs the municipal council, assisted by a municipality director appointed by the Ministry of Local Administration (formerly the Ministry of Municipal Affairs). There are 100 municipalities, classified into three categories based on population size. Municipalities have 29 areas of responsibility, such as street lighting, road construction and maintenance, solid waste collection, public parks maintenance and town planning. According to the Law of Municipalities, amended in 2011, water supply and sanitation, health, education and energy supply do not constitute municipal functions. These and other services are delivered by local directorates, which represent line ministries at governorate level. The Executive Council, chaired by the Governor, is a body designed primarily as a coordination platform, with members consisting of the heads of the local directorates. These subnational bodies are dependent on the central government.

Budgets for governorates and municipalities remain centralized. Governors have no independent budgets for subnational programming and depend on the central government's various line ministries. Income

sources for municipalities include state budget transfers, loans from the Cities and Villages Development Bank, and investment revenues. These financial resources are inadequate to meet local service needs, let alone fund local development. Municipalities are generally underfunded, with operating expenses, mostly salaries, accounting for a significant percentage of their budget. In addition, municipalities are hindered by loan service costs, low technical abilities and weak institutional capacity.

As this brief overview indicates, the supervision of the subnational governance system remains centralized and shared between the Ministry of Interior at governorate level and the Ministry of Local Administration at municipal level, with the Ministry of Planning and International Cooperation playing a significant role in local development planning and funding. Most municipalities, however, are not empowered and are underfunded, and therefore continue to underperform. Governorate administrations do not have financial or executive powers. Directorates lack autonomy. The Executive Development Plan 2016-2018 listed the large development disparities between regions and municipalities among the foremost economic and social challenges confronting the Kingdom.<sup>70</sup>

In 2005, the King called for a transition towards decentralization as part of his vision to achieve administrative, economic, political and social reforms. Various initiatives between 2005 and 2011 to translate this into an accepted formula encountered resistance from entrenched interests. The Arab Spring and the 2008 financial crisis stymied quick progress. Renewed attention resulted, in 2013, in the first municipal elections in Jordan, under a revised Law of Municipalities. But little has actually changed as the newly elected municipal administrations inherited a bloated and dysfunctional system of municipalities, some of which are hosting a large number of Syrian refugees, further stressing an

already precarious situation. In the last major push towards political reform, the Law of Decentralization No. 49 of 2015 was enacted, stipulating the establishment of an elected governorate council.

To help bridge the gap between centralized, vertical planning, and horizontal, multisectoral locally based planning, the Ministry of Planning and International Cooperation launched the Governorate Development Plans (GODPs) through a multi-stakeholder process designed to anchor development planning locally and elicit the participation of local citizens in public investment decisions. The first set of programmes, for 2017-2019, were prepared for all governorates in 2017. In addition, the Ministry of Interior set up local development units (LDUs) for each governorate, with responsibilities for collecting and documenting socioeconomic data about each governorate to support policymaking. Supported by the Ministry of Local Administration, similar LDUs have also been established in about half of municipalities for the same purpose.

Elections for the governorate councils and municipal councils were held in August 2017. Many believed these would herald a transition towards decentralization, but observers have questioned the outcome. At a meeting with presidents of the governorate councils in July 2018, the Prime Minister, Mr. Omar Razzaz, admitted to shortfalls and challenges in the first year of the project, and vowed to address the failures and the lack of a defined role for the councils.<sup>71</sup>

To address the underlying source of the shortfalls, the ESC convened a series of stakeholder meetings in 2018 and 2019, seeking to offer a diagnosis and future scenarios for action. The ESC concluded in a published paper that the decentralization project, as it played out, has created a hybrid system that eschewed local empowerment and self-governance, while espousing and even enhancing the existing administrative structures at the governorate

level, namely, the Governor, representing the Ministry of Interior.<sup>72</sup> The locally elected Governorate Council has limited authority and has not been able to discharge its duties to hold the Governor or Executive Council accountable. In addition, the 2015 Law of Decentralization was silent on the role of municipalities. Arguing for reforms under it, the ESC paper presented three options for re-thinking local administration and governance structures.

The Government has initiated a six-month national dialogue on the proposed options. Although it has not made any official announcement about a new direction, a realignment in the role of municipalities is expected to anchor the reforms. A Municipal Council will replace the Governorate Council, with membership selected through a mix of direct and indirect elections. In addition to locally elected representatives, membership will include current mayors and elected representatives of local organizations, including professional associations, labour unions, local chambers of commerce and industry and community-based organizations (CBOs). It is believed that such a formula will transform the role of municipalities from one of providing a limited set of services to more prominence in development planning, while empowering them through technical, administrative and financial resources. The realignment will require amendments to the Law of Decentralization and the Law of Municipalities. The impact of these changes on Jordan's ability to close the development gap between the centre and governorates cannot be underestimated. According to a 2017 document by the United Nations Country Team, "Local partnership structures between public, private and community bodies should also be encouraged to tackle priority local issues, including water, energy, service provision, natural environment and social cohesion".<sup>73</sup> It remains to be seen whether decentralization will enable local solutions to underdevelopment and poverty in rural areas.

## C. Environmental conditions

Land and water resources in Jordan continue to face challenges, hindering their sustainable use as productive assets. This section addresses the key environmental threats and the effects they are having on economies and livelihood security in rural communities.

### 1. Water availability

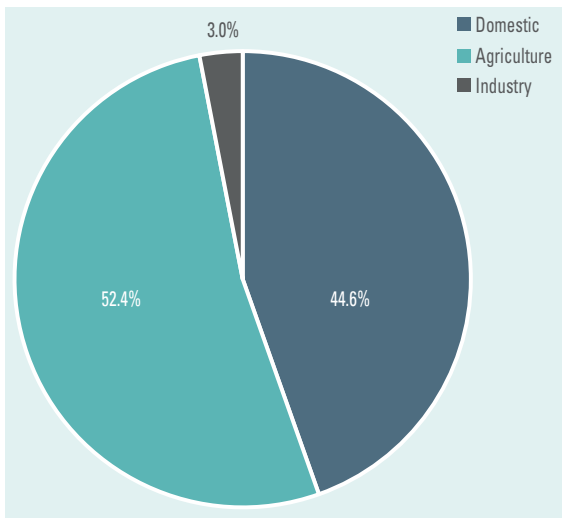
Water resources face continual threats. Current use exceeds the available renewable supply. While the total water use in 2017 was 1,054 million cubic metres, only 853 million cubic metres of renewable freshwater resources were available.<sup>74</sup> This imbalance is a source of concern because agriculture is a major consumer of water, as shown in [figure 15](#). A diminished agricultural sector would pose a threat to food security and undermine livelihood security for tens of thousands of rural families.

To cover the deficit, Jordan has turned to unconventional, more expensive alternatives, including treated wastewater and fossil aquifers. More recently, the Government has

shifted its attention to investing in seawater desalination and deep aquifer extraction. It will take a few years before such investments produce results. Until then, water abstraction from renewable aquifers at unsustainable rates will continue to be a significant concern. Of the 618.8 million cubic metres of groundwater abstracted in 2017, overpumping accounted for 200 million cubic metres. Of the 12 major groundwater basins, six are overextracted, four are at capacity and two are underexploited.<sup>75</sup> The heightened alarm arises from the threat of pollution and salinization caused by depletion of the aquifers, given that groundwater accounted for 59 per cent of all water resources in 2017, as shown in [figure 16](#). Broken down by sector, groundwater was used to meet 72 per cent and 46 per cent of domestic and agricultural water needs, respectively, in 2017 .

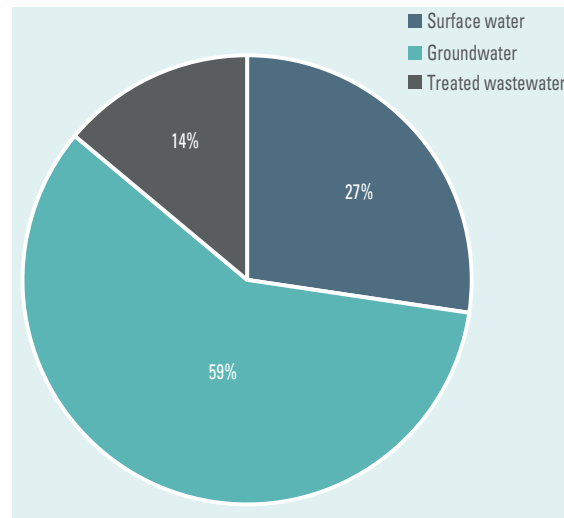
Further, the country's per capita freshwater availability has been declining, from more than 500 m<sup>3</sup> in 1975 to 140 m<sup>3</sup> in 2010, to less than 100 m<sup>3</sup> in 2017,<sup>76</sup> well below the threshold of severe water scarcity set at 500 m<sup>3</sup> per person, per year. If the water supply remains unchanged, public health and the economy could be put at risk.

**Figure 15** Water uses by sector in Jordan, 2017 (percentage)



Source: Jordan, Ministry of Water and Irrigation, 2017.

**Figure 16** Water resources in Jordan, 2017 (percentage)



Source: Jordan, Ministry of Water and Irrigation, 2017.

## 2. Climate change

The risks of climate change are accelerating the impacts of water deficit and environmental degradation. The vulnerability to climate change was assessed in Jordan's third national communication to the United Nations Framework Convention on Climate Change (UNFCCC). The findings indicate high vulnerability to reduced water availability as a result of changing precipitation patterns, reduced soil moisture (as a result of higher evaporation) and diminished aquifer recharge.<sup>77</sup> Figure 17 shows changes in rainfall patterns in Jordan since 1938. Grasslands, which cover 10 per cent of Jordan, are projected to shrink, and semi-arid rangeland, 80 per cent coverage, is projected to shift, becoming arid land.<sup>78</sup> Productivity of rain-fed agriculture and rangelands will experience declines, which will affect rural livelihood security. In other words, climate change multiplies the environmental threats caused by unsustainable land use patterns, illegal practices and development pressures.

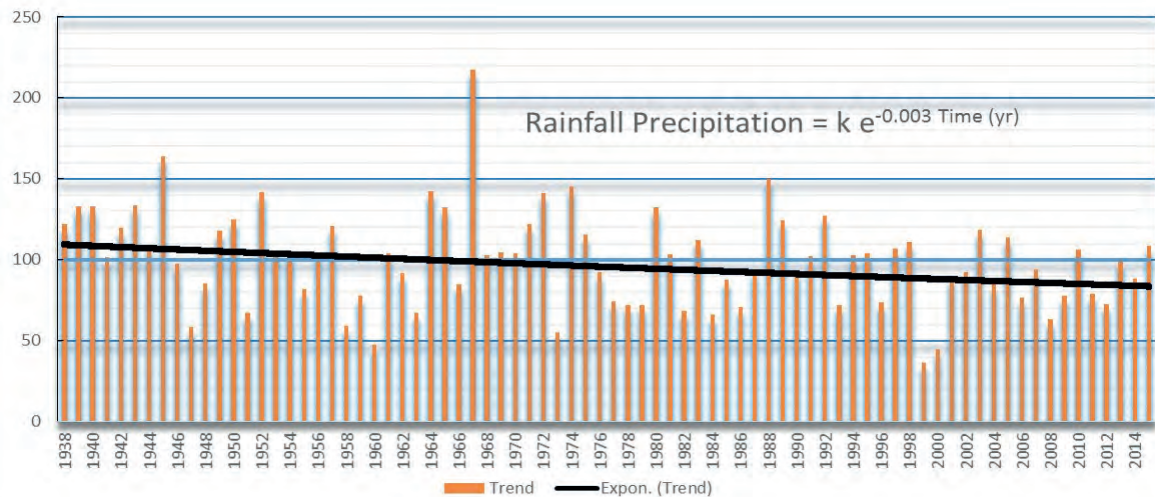
Not only are rural areas more susceptible to climate change risks compared with urban

centres, but they also suffer from a diminished capacity to adapt. Poverty, limited alternatives for income generation and weak institutional capacity for natural resource governance have reduced the capacity of social systems in rural areas to cope with the vagaries of climate change.<sup>79</sup> The rural poor, particularly women, are the most vulnerable. They are also least likely to afford adaptation costs.

As part of the third national communication, a pilot socioeconomic study targeting rural communities was undertaken in four villages located in the upstream section of the Zarqa river basin to assess the impacts of climate change on income. It indicated that farmers in Subeihi and Bayoudah will experience a 10-20 per cent fall in income as a result of declining crop yields; climate change impacts in the two other communities, Seehan and Al-Irmemeen, were found to be insignificant because they possessed higher levels of adaptive capacity.<sup>80</sup> Farmers had higher levels of agricultural experience, used modern technology and practised protected agriculture.

According to Jordan's First Biennial Update Report, submitted to the UNFCCC in 2017,

**Figure 17** Rainfall in Jordan, 1938-2015 (mm)



Source: Jordan, Ministry of Water and Irrigation, 2018.

greenhouse gas (GHG) emissions in 2012 were 27.99 million metric tons of carbon dioxide equivalent (CO<sub>2</sub>eq). The energy sector was the largest emitter, contributing 81 per cent of national emissions, followed by the industrial sector at 12 per cent. The waste sector's share was 6 per cent. The 2012 net GHG emissions by sector are shown in [figure 18](#).

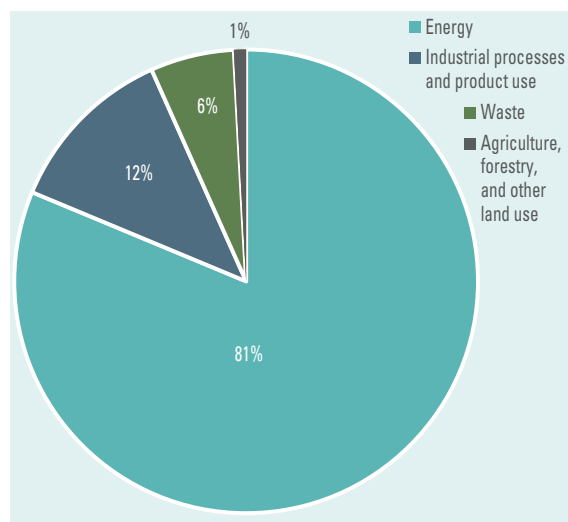
Total emissions from the energy sector, defined as those resulting from fuel combustion activities, were 22.76 million metric tons of CO<sub>2</sub>eq. Within fuel combustion activities, energy production and transport accounted for 50 per cent and 32 per cent of the sector's emissions, respectively. A breakdown of the 2012 energy sector's GHG emission contributions by all subsectors is shown in [figure 19](#).

Total emissions from the agriculture, forestry and other land use sector were 0.24 million metric tons of CO<sub>2</sub>eq, accounting for less than 1 per cent (0.85) of the country's total GHG emissions. The contributions to emissions and removals of GHG to and from the atmosphere in 2012 are shown in [figure 20](#).

### 3. Biodiversity

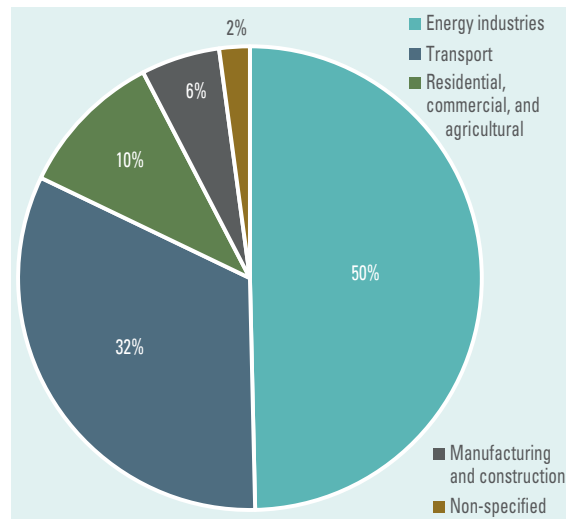
Habitat destruction as a result of uncontrolled urban expansion, overgrazing, illegal woodcutting, intensive agricultural practices, unregulated mining, invasive species, water damming and overharvesting continue to contribute to biodiversity loss in Jordan, according to the National Biodiversity Strategy and Action Plan 2015-2020. These have resulted in the severe degradation of natural ecosystems, undermining the quality of their functions and the services that underpin rural economic activities. Illegal hunting and climate change exacerbate these threats. With livelihoods and food security dependent on the productive use of land and water resources, pastoral and agricultural communities are the most vulnerable, particularly in rural pockets of poverty. The lack of employment opportunities in rural areas, coupled with increasing living costs, have pushed communities to try to squeeze incremental income from already degraded resources and assets by engaging in overgrazing, overhunting and forest clearing in what has become a vicious cycle .

**Figure 18** GHG net emissions by sector, 2012 (percentage)



Source: Jordan's First Biennial Update Report 2017.

**Figure 19** Energy sector GHG emissions by subsector, 2012 (percentage)



Source: Jordan, Ministry of Environment, and UNDP , 2017.

The Jordan Poverty Reduction Strategy makes sustaining the productive capacity of land and water resources a key pillar to rural development. The strategy seeks to “alleviate the impacts of climate change and environmental degradation upon the members of poor and vulnerable households”, while adopting “measures aimed at preparing for pro-poor climate change adaption”.<sup>81</sup> The National Adaptation Plan (NAP) has not yet been released due to Covid-19, but it is anticipated it will address the role of gender in adaptation in rural areas. It remains to be seen if and what resources are allocated to the rehabilitation of degraded rangelands and to adaptation mechanisms.

**Figure 20** Emissions from the agriculture, forestry and other land use sector, 2012 (Gg of CO<sub>2</sub>eq)



Source: Jordan, Ministry of Environment, and UNDP, 2017.





Book Rack

Use Kohel







### 3. Current and Potential Productive Activities in Rural Areas

The Department of Statistics defines rural areas as those districts or subdistricts with a population not exceeding 5,000. This report adopts a more expansive definition, according to which rural areas are characterized by the use of land and water resources as assets in productive activities designed to produce food and improve livelihood security. This extends the productive activities to include downstream value-chain activities in agro-processing serving local and urban markets and other industries, such as hospitality and nature- cultural tourism.

#### A. Agriculture

Although the agricultural sector's contribution to GDP has been growing since 2000, the long- term trend has been that of a decline in the sector's share of GDP from 11.6 in 1970 to 4.2 per cent in 2015.<sup>82</sup> According to the World Food Programme's draft strategic plan (2020-2022) for Jordan, Agriculture employed 3.5 per cent of the workforce in 2018.<sup>83</sup> While a small proportion of the workforce, it is significant because of the importance of employment in this sector in rural communities. According to a 2012 assessment by the European Commission, "about 25 per cent of the total poor in Jordan who live in rural areas continue to depend on agriculture as a primary source of livelihood".<sup>84</sup> Although only 1.1 per cent of all employed females work in agriculture, rural women account for a large proportion of the agricultural labour force, particularly in subsistence farming.<sup>85</sup> The same 2012 assessment report has concluded that "women's participation in the agricultural sector remains a critical source of employment for the

country's poorest citizens, and also serves as a major source of subsistence and food security in the country". Yet rural women engaged in farming and livestock production "have limited access to productive resources such as land, agricultural inputs, credit and other financing, extension services and technology".<sup>86</sup> They are also hampered by low productivity and high prices for inputs such as energy, veterinary services and feed.

Agricultural land use in Jordan is a complex function of water availability, climatic conditions, socioeconomic conditions and governance. According to the National Strategy for Agricultural Development 2016-2025, the proportion of cultivable land is 10 per cent.<sup>87</sup> Only approximately 2-3 per cent of the total land area is cultivated, however, as shown in [table 3](#). [table 4](#) shows the areas by dunum planted with field crops and vegetables, and bearing fruit trees in 2017.<sup>88</sup> With agriculture a large water consumer, a vulnerable water sector might be a cause of food shortages, livelihood insecurity for farmers and herders, and economic risk. In addition, soil continues to be exposed to erosion, salinization and depletion as a result of unsustainable agricultural and grazing practices.

**Table 3** Cultivated land, 2015-2017 (in dunum and as percentage of total land in Jordan)

Area planted	2015		2016		2017	
	percentage of total	Area planned	percentage of total	Area planned	percentage of total	Area planned
2 665 964	3.0	2 727 697	3.1	1 984 300	2.2	

Source: Jordan, Department of Statistics, 2018e.

Wheat and barley accounted for 93 per cent of the area planted with field crops in 2017. Almost 90 per cent of field crops are rain-fed. The areas planted with maize and clover, which are irrigated, accounted for 4.8 per cent of all areas cultivated with field crops. Most vegetables (98 per cent) are irrigated. Olive trees accounted for 49 per cent of the 21.5 million fruit trees counted in Jordan in 2017. Of all the acreage planted with fruit trees, olives accounted for 72 per cent, with a considerable 62 per cent of this acreage rain-fed. It is estimated that 90 per cent of rain-fed agriculture is practised in the northern and western highlands, while irrigation is widely practised in the Jordan Valley and highlands.<sup>89</sup> Although the Eastern Desert, or Badia, which accounts for 88 per cent of the country, is used as rangeland for flocks of sheep and goats, crop cultivation on this fragile ecosystem is increasingly practised using borehole irrigation.<sup>90</sup>

Table 5 shows the number, in thousands, of sheep, goats and cattle for the years 2011-2017.

The Jordan Badia, stretching to the east and south-east of the country, receives less than 200 mm of rainfall annually. Providing fodder for grazing animals for most of the year, the natural rangelands have sustained the traditional pastoral systems of the desert. Over the past five decades, however, grazing resources have become increasingly degraded, with the rangelands today supporting only 25 per cent of animal feeding needs during a rainy season.<sup>91</sup> Changes in land tenure regulations, brought about by misguided government policies, set in motion the degradation, unleashing new environmentally damaging land uses, such as overgrazing, quarrying, ploughing, crop cultivation and urbanization. This rangeland degradation is now being aggravated by climate change.

## B. Agricultural processing

In addition to farming and livestock production, processing of agricultural produce in rural

**Table 4** Area planted with field crops, vegetables and fruit trees, 2017 (in thousands dunums)

	Irrigated	Rain-fed	Total
Field crops	76.8	659.9	736.7
Vegetables	369.8	7.2	377.0
Fruit trees	417.9	362.7	780.6

Source: Jordan, Department of Statistics, 2018f.

**Table 5** Number of sheep, goats and cattle, November 1, 2011-2017 (in thousands)

Year	Sheep	Goats	Cattle
2011	2264.6	752.2	67.6
2012	2234.0	792.0	68.5
2013	2311.1	836.5	69.7
2014	2680.3	857.7	69.4
2015	2596.4	860.2	73.6
2016	3198.9	977.7	74.7
2017	3063.1	772.7	75.7

Source: Jordan, Department of Statistics, 2017b.

areas is an important activity for generating income. Agri-processing has traditionally included dried goats milk (jameed), ghee (samneh baladi), butter, white cheese, other dairy products, dried foods, jams, herbal recipes, oil extracts, soaps, baked goods, olive oil, vinegar and pickled products. For example, pickles are commonly made from turnips, peppers, carrots, cauliflower, eggplant, olives, cucumbers, cabbage and lemons. These products reach the market via formal channels and seasonal bazaars, but it is not uncommon for deliveries to be made directly to urban households through informal channels due to word of mouth.

The assessment of rural sites conducted for REGEND reveals that rural women engage

in food processing activities individually at home or as part of a local women's collective. Some women entrepreneurs complement their portfolio of products by adopting a network model, whereby some food processing activities are contracted out to other women from the local community for a fee. The entrepreneur packages and markets the final products in urban centres.

Government data on the contribution of home-based food processing to rural income or employment do not exist. Statistical surveys by the Department of Statistics do not account for this subsector and many rural women view licensing fees as too high and avoid registering their businesses with public agencies. A project by the United States Agency for International Development (USAID) has, however, estimated that there are 5,000 home-based businesses in Jordan – half of which are women-owned – that contribute 50 million JD (\$70.5 million) to the national economy, directly and indirectly. Based on focus groups and stakeholder meetings, the USAID project determined, “the group of home-based business owners who are considered a key area of growth are women working in food production from their homes”.<sup>92</sup>

The site visits provided insight into the significance of home-based food processing in supplementing a household's income. For some rural women it is the primary source of income. Consistent with the visits, and the ESC study on SMEs, the USAID project found home-based businesses were hindered by the lack of access to finance and inadequate marketing skills.

The International Food Policy Research Institute (IFPRI) paper on agriculture and agro-processing's significance to economic development found that the agro-processing subsector, within the industrial sector, contributed 12.5 per cent of the total value added to the economy in 2015, accounted for 20 per cent of total exports, and had a 13.6 per cent share in total employment. Its analysis emphasizes the increasingly important role of

rural women in agro-processing. In rural areas, agro-processing households led by women accounted for 21.6 per cent of all households in 2013, up from 4 per cent in 2002.<sup>93</sup>

### C. Beekeeping

The beekeeping industry is considered small. In 2017, there were 42,600 colonies producing 182.6 tons of honey that generated 3 million JD (\$4.23 million) in sales, while employing 1,660 people, 49 of whom were women. Beekeeping is prized for other products made by the hives, including beeswax, propolis (bee glue), flower pollen, bee pollen and royal jelly, which are used to pollinate crops or produce bees to sell to other beekeepers. These products generated 420,700 JD (\$593,400) in sales in 2017.<sup>94</sup>

According to USAID, beekeepers in Jordan lack formal training in production operations, including harvesting, processing, marketing and quality control. The industry “requires substantial support to become an income and employment generator and contribute to national development”.<sup>95</sup>

### D. Handicrafts

Tourism contributed 19.2 per cent to GDP in 2018.<sup>96</sup> As a form of cultural tourism, the making and marketing of handicrafts play a key role. Handicraft producers include rural women cooperatives, microenterprises associated with national non-governmental organizations (NGOs), small private-sector players and retail outlets with their own workshops. According to an unpublished handicraft marketing report based on a field survey, women-based cooperative associations are the largest category of souvenir producers in Jordan.<sup>97</sup> These cooperatives are CBOs, and provide training and production facilities to their members, selling their handicrafts through retail outlets. The survey noted cooperatives



do not have the ability to develop sustainable handicraft businesses because a supportive business climate is lacking, demonstrated by rising prices for raw material, competition from crafts imported from China and India, low training quality and lack of industry regulations. In many cases, cooperatives rely on foreign donors to cover the cost of handicraft manufacturing and are not economically sustainable.

Large institutional NGOs have developed an alternative model whereby training and production workshops are established and women from poor rural and urban areas are employed or hired to make handicrafts. Product designs and materials are provided by the NGOs. This offers women opportunities to set up their own micromanufacturing enterprises at home. The Royal Society for the Conservation of Nature (RSCN), Noor Al-Hussein Foundation (NHF), Jordan River Foundation and the Jordanian Hashemite Fund for Human Development (JOHUD) are among the national NGOs who have adopted this model. By associating themselves with large NGOs, women entrepreneurs enjoy higher visibility, better market access and higher standards of quality control compared with handicraft cooperatives.

Private sector players are few and target the high-end local and regional markets, in addition to the tourist market. They often have their own workshops providing employment for women handicraft producers.

The basic categories of Jordanian handicrafts include weaving crafts (carpets and rugs), embroidery, textiles, silver jewellery, ceramics and pottery, wood crafts, mosaics, copper crafts, natural soap, basketry, sand-blasted images on glass and leather goods.

Although the importance of the handicrafts sector to the national economy and to the sociocultural landscape is recognized, national statistics are not available.<sup>98</sup> According to

a report for the United Nations Educational, Scientific and Cultural Organization (UNESCO), the tourism handicraft sector in Jordan is fragmented, with responsibility shared by four ministries and lacking alignment.<sup>99</sup> This lack of integrated national planning and coordination has deprived the sector of a representative body that can lead the development of a multifaceted strategy for the industry that addresses regulations, marketing, training, funding, awareness-raising and research.<sup>100</sup> In addition, the UNESCO study drew attention to the absence of authenticity in handicraft production, resulting in “products that lack a story, a history or a unique association”.<sup>101</sup>

Given the potential of the handicraft industry to sustain livelihoods, employ rural women, utilize local raw materials and mitigate rural-to-urban migration, Jordan’s handicrafts should be considered a cultural heritage concern and supported.

## E. Cultural and community-based tourism

Experiential tourism is increasingly seen as a catalyst for new businesses and income generation in rural areas. By combining nature and cultural tourism, visitors seek to have an authentic rural experience. In Jordan, interaction between tourists and the local community is often intermediated by NGOs, and may include environmental groups, social entrepreneurs and private sector players. NGOs play a key role in coordination, training and marketing. The value proposition embedded in community-based tourism is based on employing rural assets, such as traditional crops, food heritage, archaeology, rural knowledge, cultural expressions, handicrafts, wild plants and oral history, to kick-start environmentally sustainable socioeconomic development.

One model is exchange tourism, where NGOs coordinate trips for domestic visitors from urban centres to rural areas to engage with local hosts

in traditional activities. Fees are channelled to the rural host community as interest-free microloans to fund local socioeconomic development activities. In another model, rural microenterprises offer home-cooked cuisine, accommodation and guided tours, while catering to visitor needs for camping, biking, foraging and hiking. By utilizing the unique story of place, cultural assets, archaeological sites and scenic natural surroundings, community businesses are able to fulfil the demand for authentic travel experiences. To raise their capacity, tourism microenterprises are co-managed by a private-sector partner for 3-5 years, after which these micro-businesses become locally owned. In one village site, this model of experiential and adventure tourism attracted 3,000 visitors over the two-year period 2017-2018, benefiting 105 local community members, according to a private-sector partner.

Experiential tourism is a niche subsector, and national data about its economy-wide

contribution to income generation and employment are not available. Research by USAID has focused on why tour operators do not incorporate experiential travel in travel packages. Two main barriers to growth were identified, namely, “lack of resources to identify, access, and train local experiential hosts around Jordan and the lack of marketing tools, like videos, to promote and sell these experiences”.<sup>102, 103</sup>

The Jordan Trail, a 650 km hiking route through 52 villages and towns connecting Umm Qais in the north-west to Aqaba in the south,<sup>102</sup> is expected to expand experiential and adventure tourism activities to rural communities. The trail provides opportunities to develop new services and connect tourists with the micro and small businesses in rural areas offering them. Identifying local entrepreneurs and building their capacity to develop services and marketing should be a government priority.





Book Rack

Kohel





## 4. Energy Sector Characteristics



# 4. Energy Sector Characteristics

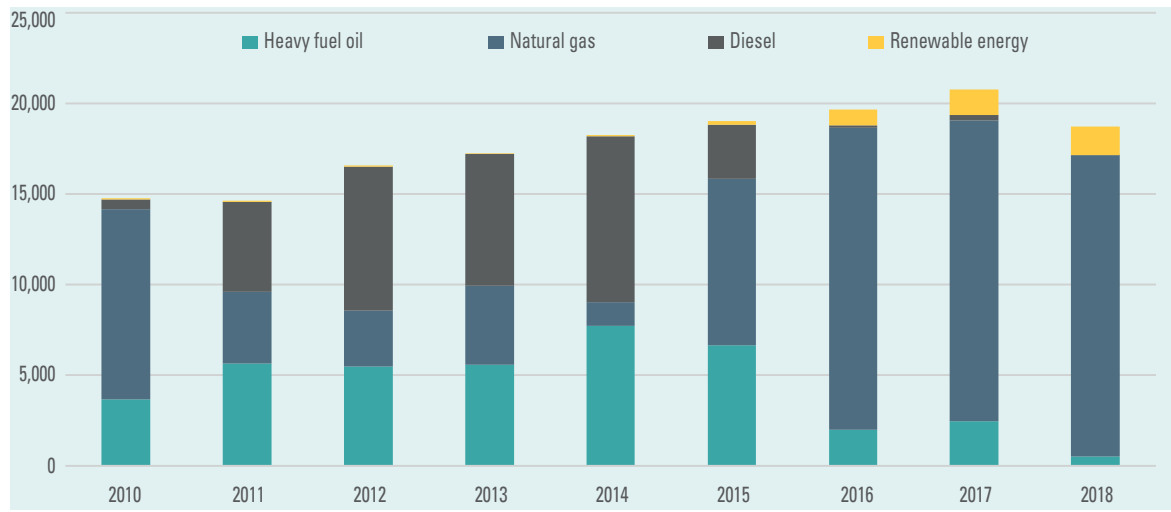
## A. Existing sources of energy supply

The management of a secure, diversified, efficient and affordable energy sector has posed significant challenges for the Government over the past decade. Energy imports continue to dominate supply, accounting for 94 per cent of power needs in 2017, at a cost of 2.43 billion JD (\$3.4 billion) and 8.5 per cent of GDP.<sup>103</sup> This is seen as a source of vulnerability for the Kingdom. Disruption to undiversified gas imports from Egypt, rising demand and global oil price swings since 2011 have caught the country unprepared. The National Electric Power Company suffered 4.4 billion JD (\$6.2 billion) in losses during the period 2011-2014, the cost of electricity generation rose from 0.068 JD per kWh (\$0.096) in 2010 to 0.139 JD/kWh (\$0.196) in 2014, and consumers and businesses experienced higher electricity bills.<sup>104</sup> In 2014, energy imports were 17.6 per cent of GDP. Jordan

turned to liquid fuels and diesel for electricity generation until 2015, when a liquefied natural gas terminal in Aqaba came online. In 2016, imported natural gas accounted for 85 per cent of electricity generation.<sup>105</sup> The amount of generated electricity by fuel type is shown in [figure 21](#).

In 2015, the Ministry of Energy and Mineral Resources published the National Energy Strategy (2015-2025) offering a road map for achieving energy security and reducing the country's energy bill. The strategy was elaborated in the Jordan Economic Growth Plan 2018-2022, which called for increasing the share of domestic energy, diversifying the natural gas import base and adopting national EE programmes.<sup>106</sup> The Government set a goal of local energy sources contributing 35 per cent to total electricity consumption by 2020, with renewable sources and oil shale supplying 20 per cent and 15 per cent, respectively.<sup>107</sup>

**Figure 21** Quantity of electricity generated by fuel type, 2010-2018 (GWh)



Source: National Electric Power Company, 2017; National Electric Power Company, 2018.



In addition to the losses suffered by the National Electric Power Company, the energy sector was dealt another setback in 2018 prompted by the demand for generated electricity lagging behind the amount the National Electric Power Company is obligated to buy in accordance with the company's long-term power purchase agreements (PPA). The "surplus" in electricity generation is believed to have resulted, to an extent, from an economy-wide lower than expected demand, induced by weak economic growth. According to the Department of Statistics, the electricity generated and consumed in 2018 declined by 1.5 per cent and 0.2 per cent, relative to 2017.<sup>108</sup> In addition, as distributed renewable power systems have proliferated, particularly by adopting wheeling schemes,<sup>109</sup> demand for the National Electric Power Company's grid-connected electricity has dropped.<sup>110</sup> This may have induced the cabinet in 2019 to impose a temporary freeze on direct proposal submission proposals for RE projects greater than 1 MW.<sup>111</sup>

Given these dynamics in the energy sector, the Ministry of Energy and Mineral Resources has completed a review of the National Energy Strategy (2015-2025) with a view towards 2030. The new strategy, titled the Comprehensive Strategy for the Energy Sector for the Years 2020-2030, was unveiled in July, 2020. The review was conducted, in part, to implement a road map for the financial sustainability of the electricity sector.<sup>112</sup> According to the 2020- 2030 strategy, the contribution of local energy sources for electricity generation will increase to 48.5 per cent by 2030 compared with 13 per cent in 2019. This is to be achieved by: reducing reliance on natural gas for electricity generation from 85 per cent in 2019 to 53 per cent by 2030; increasing the installed electricity generation capacity of RE projects from 2,400 MW (21 per cent) in 2020 to 3,200 MW (31 per cent) by 2030; bringing into service oil shale-fired power generation plant, which will account for 15 per cent of total electricity generation; and improving energy efficiency in all sectors by 9 per cent relative to 2018 average consumption levels.<sup>113</sup>

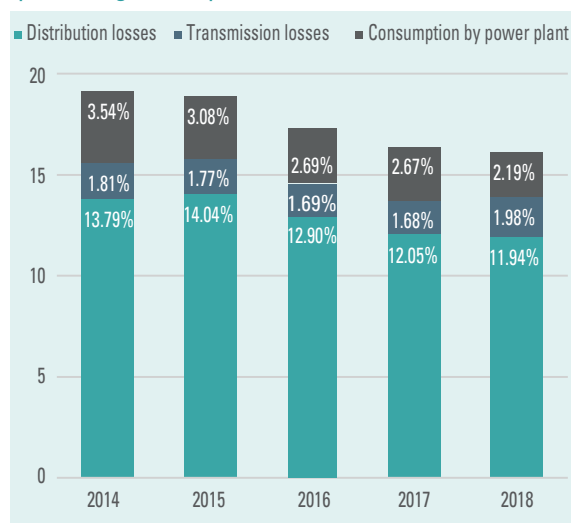
## B. Reliability

Annual electric power transmission availability was 99.89 per cent in 2018. Transmission and distribution (T&D) losses (percentage of output) were 1.98 per cent and 11.94 per cent, respectively.<sup>114</sup> While transmission losses accord with international benchmarks, distribution losses are considered higher than tolerable international standards, estimated at 5.5 to 7 per cent. The high distribution losses are attributed to the age of the grid and an inadequate maintenance workforce.

The financial impact of T&D losses can be significant. A plan to reduce distribution losses from 2015 to 2018 generated 29 million JD (\$41 million) in savings.<sup>115</sup> Figure 22 shows T&D losses by sector. Transmission and distribution losses measure power lost in the transmission of (high-voltage) electricity from power generators to distributors and in the distribution of (medium and low-voltage) electricity from distributors to end-users. As a percentage of gross electricity production, T&D losses include technical and non-technical (or commercial) losses. Included in the latter are unmetered, unbilled and unpaid electricity, including theft. According to the Energy and Mineral Regulatory Commission (EMRC), non-technical losses account for 2.5 per cent of all T&D losses.<sup>116</sup> Theft of electric power has been a challenge for Jordan, with 19,962 cases of sabotage or tampering in 2018.<sup>117</sup>

Another source of electric grid instability has been the lack of investment in storage capacity with increased RE penetration to the country's electricity mix. The Ministry of Energy and Mineral Resources has included energy storage in the most recent tender for new solar and wind projects. In addition, the National Electric Power Company is investigating the feasibility of using solar and wind power to pump water to a higher elevation behind dams.<sup>118</sup> This turns the dam into a reservoir of excess electricity, helping manage the intermittency challenges of renewable power.

**Figure 22** Electric power losses in Jordan, 2014-2018 (percentage of output)



Source: National Electric Power Company, 2018.

### C. Affordability

When Jordan faced disrupted gas supplies from Egypt in 2011, the cost of producing electricity increased by several fold as producers were forced to switch to expensive diesel and heavy fuel oil, the share of which climbed to 93 per cent in 2014 from 28 per cent in 2010 [figure 21](#). In 2012, generation and distribution costs were 0.146 JD/kWh (\$0.206), while the average selling price was 0.0636 JD/kWh (\$0.09).<sup>119</sup> With the increased costs not passed on to final consumers, the National Electric Power Company assumed them all and began running deficits, which amounted to 1.2 billion JD (\$1.7 billion) annually, starting in 2011.<sup>120</sup>

To address its fiscal problems, the Government introduced price reforms. In 2012, subsidies on petroleum products were drastically reduced, and a cash transfer programme was put in place to lessen the impact of higher fuel prices on the most vulnerable consumer groups. Liquified petroleum gas (LPG) subsidies were not

affected. At the end of 2015, electricity subsidies began to be gradually adjusted towards cost recovery. In 2017, an automatic electricity tariff adjustment mechanism came into effect.

Households spend on average an estimated 314.3 JD (\$443) on electricity annually, which translates to a budget share of 2.6 per cent.<sup>121</sup> As a fraction of non-food expenditures, the budget share of electricity is 3.8 per cent. These electricity expenditures are considered substantial. Moreover, the impact on the poorer quintiles is greater, although such households spend less on electricity in absolute terms than the wealthiest quintile. By extrapolating HEIS 2010 data, a study revealed, “the budget shares of electricity are higher among the poorest households; the poorest households spend about 3.5 per cent of their budgets on electricity compared with 2.4 per cent for the richest households”.<sup>122</sup> Although these budget share calculations are based on 2010 survey data, disparities in electricity budget shares remain as true today. Poorer households continue to be more vulnerable to higher electricity tariffs.

There are seven electricity tariff brackets for households. According to the latest revision, shown in [table 6](#), electricity tariffs range from 0.033 JD/kWh (\$0.047) for the lowest consumption bracket (1-160 kWh/month) to 0.265 JD/kWh (\$0.374) for the highest consumption bracket (1,000+ kWh/month), with households paying progressively higher amounts only on the incremental consumption of the higher brackets. Consumers in the first two brackets, those whose consumption falls below 300 kWh/month, are exempt from the electricity price adjustments. To reduce the fiscal implications of these exemptions, the Government has targeted these two consumer segments with RE and EE subsidy measures.

**Table 6** Tariff of electrical energy supplied to end consumers, 2019

Tariff type	Consumption segments	Tariff (fils/kWh)
A. Household	1-160 kWh/month	33
	161-300 kWh/month	72
	301-500 kWh/month	86
	501-600 kWh/month	114
	601-750 kWh/month	158
	751-1 000 kWh/month	188
	More than 1 000 kWh/month	265
B. Standard	1-160 kWh/month	42
	161-300 kWh/month	92
	301-500 kWh/month	109
	501-600 kWh/month	145
	601-750 kWh/month	169
	751-1 000 kWh/month	190
C. TV and broadcasting stations	More than 1 000 kWh/month	256
	Flat rate	173
D. Commercial sector	1-2 000 kWh/month	120
	More than 2 000 kWh/month	175
E. Banking sector	Flat rate	285
	1-2 000 kWh/month	230
F. Telecommunication sector	More than 2 000 kWh/month	273
	1-10 000 kWh/month	71
G. Small industries	More than 10 000 kWh/month	81
	At peak load 2 JD/kW/month	..
H. Medium industries	Day energy	89
	Night energy	75
I. Agriculture	Flat rate	60
	Peak load 3.79 JD/kW/month	..
J. Agriculture maximum load exceeding 100 MVA	Day energy	59
	Night energy	49
K. Water pumping	Flat rate	94
L. Hotels	Flat rate	91
	Peak load 3.79 JD/kW/month	..
M. Hotels (4 stars or more, connected before 3/2008)	Day energy	89
	Night energy	75
N. Street lighting		114
O. Army forces		146
P. Port corporation		159

**Source:** EMRC, Electricity Tariff Instructions, 2019.

**Note:** fils is a subdivision of currency used in many Arab countries. 1,000 fils are equivalent to 1 Jordanian Dinar.

## D. Oil shale

While sources of oil and natural gas in Jordan are limited, oil shale reserves are estimated at 70 billion tons.<sup>123</sup> The Government has signed a \$2.2 billion agreement with an international consortium for the extraction and processing of mined oil shale and the construction of a 470 MW oil shale-fired power generation plant. The concession area, Attarat Um Ghudran, is located 40 km east of the village of Al- Qatrana, 110 km south of Amman. It contains approximately 3.5 billion tons of oil shale, enough to supply the power plant with 10 million tons per year for 40 years.<sup>124</sup> Commissioning of the plant is expected to take place during the second half of 2020.<sup>125</sup> The consortium has also signed another 40-year concession agreement for converting 3.5 billion tons of oil shale into synthetic crude oil. The shale oil production plant will have a capacity of 40,000 barrels per day.<sup>126</sup>

## E. Renewable energy

Recognizing the potential of RE to contribute to the country's future energy needs, the Government in 2007 incorporated ambitious targets in the Updated Master Strategy of the Energy Sector in Jordan, which was originally developed in 2004. The adapted strategy set a target for RE to supply 7 per cent of the country's energy supply by 2015, 10 per cent by 2020. The National Energy Strategy (2015- 2025) included another update, establishing the goal of 1,350 MW of RE capacity by the end of 2020, which would account for 25 per cent of all installed generating capacity and contribute 20 per cent to generated electricity.<sup>127</sup>

Although the Government has recognized RE's contribution to the energy mix since the early 2000s, legislation establishing policy and regulatory regimes did not materialize until April 2012, with the Renewable Energy and

Energy Efficiency Law and its 2014 amendment. Subsequently, by-laws and regulations were issued addressing the different procurement methods and investment schemes that would be allowed for grid-scale, commercial-scale and small-scale RE projects. Procurement schemes have included direct proposal submissions (DPS), competitive tendering, net-metering, electric power wheeling applications and self-generation applications. To further the deployment of renewable power, support policies and fiscal incentives have been enacted. Three rounds of direct proposal procurements have been completed to bring the installed electricity generated capacity from RE projects to 2,400 MW by 2021, thus exceeding National Energy Strategy targets. Policymakers would do well to ponder how Jordan's energy sector might have experienced less turmoil, had legislation for RE been passed earlier.

The Government has also demonstrated its commitment to EE. Building on the lessons of the first National Energy Efficiency Action Plan (NEEAP) for the period 2012-2014, it launched a second NEEAP for 2017-2020, seeking to reduce energy consumption by 2,000 gigawatt- hours (GWh) by 2020 with investments of 696 million JD (\$981 million).<sup>128</sup>

To facilitate the scaling up of distributed RE systems and EE measures, the 2012 Renewable Energy and Energy Efficiency Law stipulated the establishment of the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF). Since being founded in 2012, the fund has played a key role in subsidizing RE and EE projects in residential buildings, public schools, houses of worship, public buildings, and SMEs in the tourism and industrial sectors.

**Renewable Energy Procurement:** the direct proposal submissions scheme has garnered the most interest from independent power producers (IPPs) of RE companies. Three rounds have been undertaken for procuring grid-scale solar and wind power projects.

- The first round consisted of 12 solar photovoltaic (PV) projects with a total capacity of 200 MW and two wind power projects with a capacity of approximately 400 MW. The electricity tariff set by the PPA was \$0.17/kWh for solar PV projects, and \$0.12/kWh for wind power projects;<sup>129</sup>
- The second round consisted of four solar PV plants, each with a capacity of 50 MW. The signed memorandum of understanding set the price at \$0.06-0.13/kWh.<sup>130</sup> The projects are located in the Governorate of Ma'raq;
- The third round will consist of three solar PV projects with a total capacity of 150 MW and one wind power project with a capacity of 50 MW. They will be located in the Governorate of Ma'an. The electricity tariff set by the PPA was \$0.025/kWh for the solar PV projects.<sup>131</sup> The tariff for the wind power project was not set yet at the time of

writing. The Ministry of Energy and Mineral Resources stated in the project documents that it will consider incorporating energy storage using batteries for both solar and wind projects.

Competitive tendering has also been used to procure grid-scale RE plants. The 90 MW Fujeij wind farm alone was procured using competitive tendering on a "build, own and operate" (BOO) basis, and came online during the second half of 2018. The Government also utilized competitive tendering to procure two RE projects on a "build, operate and transfer" (BOT) basis. Such turn-key contracts allow the Government to own the plants once they are completed and connected to the grid. The 80 MW Ma'an wind farm and the 90 MW Al-Quairah solar PV projects were procured under BOT turn-key contracts. [Table 7](#) is a list of existing and committed solar and wind energy projects as of the end of 2019.

**Table 7** Existing and committed renewable energy projects in Jordan, December 2019

Project	Technology	Project type	Size (MW)	Location	Ownership	Status	Commercial operation
Baynona PV project	PV	Direct proposal	200	East Amman	Private	Under construction	..
Risheh PV	PV	Direct proposal	50	Risheh	Private	Operational	Q3 2019
AES	PV	Direct proposal	40	East Amman	Private	Operational	Sept 2019
Philadelphia Husaineyyah	PV	Direct proposal	50	Ma'an	Private	Under development	..
Al Badiya Philadelphia	PV	Direct proposal	20	Ma'raq	Private	Operational	Phase I: 10 MW 10/2015 Phase II: 10 MW + 12.6 MW storage 2/2019
Falcon Ma'an	PV	Direct proposals round 1	20	Ma'an	Private	Operational	June 2016
Sun-Edison	PV	Direct proposals round 1	20	Ma'an	Private	Operational	June 2016
Shamsuna	PV	Direct proposals round 1	10	Aqaba	Private	Operational	Feb. 2016

Oryx	PV	Direct proposals round 1	10	Ma'an	Private	Operational	June 2016
Green Land Alternative Energy Project	PV	Direct proposals round 1	10	Ma'an	Private	Operational	June 2016
Arabia One	PV	Direct proposals round 1	10	Ma'an	Private	Operational	Aug 2016
EJRE	PV	Direct proposals round 1	20	Ma'an	Private	Operational	Aug. 2016
Jordan Solar One	PV	Direct proposals round 1	20	Mafraq	Private	Operational	Sept. 2016
Alzanbaq	PV	Direct proposals round 1	10	Ma'an	Private	Operational	Sept. 2016
Zahrat Alsalam	PV	Direct proposals round 1	10	Ma'an	Private	Operational	Sept. 2016
Alward Aljoury	PV	Direct proposals round 1	10	Ma'an	Private	Operational	Sept. 2016
Shams Ma'an	PV	Direct proposals round 1	50	Ma'an	Private	Operational	Sept. 2016
Mafraq 1	PV	Direct proposals round 2	50	Mafraq	Private	Operational	Nov. 2018
Mafraq 2	PV	Direct proposals round 2	50	Mafraq	Private	Operational	Nov. 2018
ACWA PV Project	PV	Direct proposals round 2	50	Mafraq	Private	Operational	Oct. 2018
Al Safawi Arabia Two Solar PV Plant	PV	Direct proposals round 2	51	Mafraq	Private	Operational	Mar. 2019
Round 3 PV Projects	PV	Direct proposals round 3	150	Ma'an	Private	Tendering	..
Expansion of Azraq PV plant project	PV	Grant	5	Azraq	Government	Tendering	..
South Amman PV Plant	PV	Grant	40	South Amman	Government	Under construction	..
Al-Quairah PV Plant	PV	Grant	89	Aqabah	Government	Operational	July 2018
Zaatri Refugee Camp PV Plant	PV	Grant	11.1	Mafraq	Government	Operational	Feb. 2017
Azraq Camp Solar PV Power Plant	PV	Grant	2	Azraq	Government	Operational	Apr. 2015
Azraq Solar PV Power Plant	PV	Grant	2.5	Azraq	Government	Operational	Apr. 2015
Al Badiya Philadelphia	Storage	Direct proposal	12.6 MWh	Mafraq	Private	Operational	Feb. 2019
Energy Storage	Storage	Direct proposal	60 MWh	Irbid	Private	Under development	..
Jordan wind Farm	Wind	Direct proposal	117	Tafieleh	Private	Operational	Sept. 2015
Al-Rajif wind Farm	Wind	Direct proposals round 1	86	Ma'an	Private	Operational	Oct. 2018
Fujeij wind	Wind	Direct proposal	89.1	Ma'an	Private	Operational	Oct. 2019
Tafieleh Wind 2	Wind	Direct proposal	100	Tafieleh	Private	Under Construction	..
Shobak Wind	Wind	Direct proposals round 1	45	Ma'an	Private	Under construction	..
Tafieleh Wind 1	Wind	Direct proposals round 1	50	Tafieleh	Private	Under development	..
Daihan	Wind	Direct proposals round 1	51.75	Tafieleh	Private	Under construction	..
Third Round Wind	Wind	Direct proposals round 3	50	- Ma'an	Private	Tendering	..
Ma'an Wind Project	Wind	Grant	80	Ma'an	Government	Operational	Sept. 2016

Source: Ministry of Energy and Mineral Resources, Renewable Energy Projects, 2019; National Electric Power Company, 2018; Author's research.



The regulatory framework for net-metering and wheeling systems has fuelled a drive for distributed solar energy installations. According to the Energy and Mineral Regulatory Commission, the number of installed decentralized solar systems increased from 292 in 2013 to 9,720 by the end of 2018. Total installed capacity of all distributed systems has risen from 3 MW to 360 MW over the same time period, with net-metering systems accounting for 248 MW of the total.<sup>132</sup> An update in December 2019 put the total installed capacity of net-metering and wheeling systems at 450 MW, with another 166 MW of newly approved but uninstalled capacity.<sup>133</sup>

## F. Bioenergy

Jordan has a number of bioenergy projects for electricity generation. The first plant was sited at the Russaifeh landfill to utilize methane gas generated from the decay of food waste and had a maximum output of 1 MW. Owned by Jordan Biogas, it was established in 1998 as a 50/50 partnership between the Greater Amman Municipality and the Central Electricity Generating Company. In 2017, Jordan Biogas added an anaerobic digestion unit to convert food waste from hotels, restaurants, slaughterhouses and dairy factories.<sup>134</sup> The plant's installed generation capacity is 3.5 MW.<sup>135</sup>

More recently, a biogas plant with a 5 MW capacity was built at the Ghabawi landfill, which serves Amman and the cities of Zarqa and Russaifeh in the central region and receives 4,000-4,500 tons of municipal solid waste daily. The project, which began in 2003 and is slated for 2027, is forecast to contain nine sanitary cells. In addition to the landfill gas recovery system, a leachate collection and evaporation system has been installed to prevent groundwater contamination.

The plant, which is owned by the Greater Amman Municipality, was commissioned in

2019. It is expected to generate 5 million JD (\$7 million) annually in energy savings, an amount equivalent to 40 per cent of the municipality's annual energy bill, by selling electricity to the national grid through a wheeling scheme.<sup>136</sup>

**The National Energy Research Center**, one of the specialized technical centres at the Royal Scientific Society, has developed a number of bioenergy applications in rural areas. In one, a solar-heated biogas digester was built at a poultry farm in Kofer-Abeel, a village in the Governorate of Irbid. The biogas plant uses poultry manure as a feedstock. The digester produces about 15 m<sup>3</sup> of biogas for heating and cooking at the farm,<sup>137</sup> while an off-grid solar PV system has also been installed with a storage battery to power the lighting system, at a rate of 3 kW per hour. Commissioned in 2015, the project was funded by the Small Grants Programme of the Global Environment Facility.

In another application, a demonstration biogas digester was built on the Al-Albayt University campus. Food residue from the university kitchen is used as feedstock, with the biogas burned to generate heat for cooking.<sup>138</sup> The project was funded by the university.

A pilot plant for the European Union-funded project, Biogas Production in Local Communities in Jordan, was commissioned in 2018 to promote the production of biogas from agricultural waste. Operated by the German Jordanian University (GJU), it will generate data to determine the biogas potential of different local agricultural substrates. Designed and installed on a local farm in the Jordan Valley's South Shouneh region, the design is hybrid and includes PV panels and batteries to meet the plant's electricity needs for pumping, stirring, sampling and control, as well as cooling and heating loads. The produced biogas can be used for cooking.<sup>139</sup>

The potential for waste-to-energy power generation, whether it is for heat or electricity, could be increased when other waste



streams are considered. Sludge generated by wastewater treatment plants, cow and chicken manure, agricultural residues and food waste (residential and institutional) can be used as feedstock. But the dispersed and remote locations of some, and the lack of separation at source, present logistical challenges.

---

## G. Hydropower

Electricity production from hydropower sources in Jordan is constrained by the country's lack of abundant surface water resources. The contribution of hydropower to the total amount of electricity generated in 2018 was 22.7 GWh, accounting for 0.11 per cent of the total.<sup>140</sup> The country's two hydropower installations, which combined, have an electricity generating capacity of 12 MW, are the King Talal dam hydropower plant located across the Zarqa River, and the hydroelectric generating installation at the Aqaba thermal power station, where the returning cooling seawater head is used to spin the hydro-turbines.<sup>141</sup>

---

## H. Geothermal energy

Government surveys of hydrothermal fields in the eastern flanks of the Jordan Valley and on the plateau to the east of Madaba have not yielded high-temperature geothermal resources that can be commercially exploited for electricity generation.<sup>142</sup> With water available at temperatures below 100°C, these geothermal resources are being used for applications that require low to medium heating loads. Further, a study on geothermal resources concluded that deeper drilling down to 3,000 metres would be required to evaluate the technical and economic feasibility of geothermal energy for electricity generation.<sup>143</sup>

---

## I. Key actors

The Ministry of Energy and Mineral Resources lays down the targets and political framework conditions for developing the energy market. Its core task is to facilitate continuing expansion by ensuring adequate availability of energy.





EMRC is an independent institution responsible for the regulation of the electricity sector. It sets tariffs and the charges for services related to the sale of electricity, and awards licences to power providers and distributors, and monitors compliance with the terms of the licences.

The National Electric Power Company is a joint stock corporation whose capital is in the hands of the State. It is responsible for expanding and operating the nationwide transmission network. As a single buyer, the company purchases electricity from producers and sells it to operators of the distribution grid. The company runs a national load-dispatching centre to coordinate power demand and supply.

Three private companies act as distribution system operators in Jordan, as follows:

- The Jordanian Electric Power Company, which was established in 1938, is responsible for distributing electricity to 66 per cent of the country's consumers. It serves an area of 5,000 km<sup>2</sup> (Amman, Zarqa,

Madaba and Al-Balqaa), and owns more than 5,600 main stations and substations, with a total of 19,000 km of underground and overhead lines;

- The Electricity Distribution Company, which was established in 1997, is responsible for distributing electricity to the southern part of the Kingdom, including Aqaba, Ma'an, Al-Karak, Tafieleh, Jordan Valley, Azraq, Safawi, Ruwished and Reshah;
- The Irbid District Electricity Distribution Company, established in 1957, is responsible for the northern part of the Kingdom, which includes Irbid, Jerash, Mafraq and Ajloun.

Seven main generators of electricity are active in Jordan, five privately owned. The Central Electricity Generating Company, in which the Government owns a 40 per cent share, has a nominal capacity of 983 MW (2018). The Samra Electric Power Company is government-owned and responsible for operating the conventional energy power plant at Al-Risha, which in 2018

had a nominal capacity of about 1,241 MW, accounting for 37.6 per cent of all electricity generated.<sup>144</sup>

AES Jordan and Al-Qatraneh Power Generation Company are combined cycle plants, each with a nominal capacity of 373 MW in 2018. IPP3, owned and operated by Amman Asia Electric Power Company, has a combined plant capacity of 573 MW and can run on three different fuels, namely natural gas, light fuel oil or heavy fuel oil. IPP4, which is owned and operated by AES Levant Holding BV, had a nominal capacity of 240 MW in 2018. Both IPP3 and IPP4, located in the Amman East area, are on a build, own and operate basis, and include the construction of generating plants run by heavy fuel oil, diesel oil and natural gas. The Zarqa power plant has a nominal capacity of 485 MW. Its combined cycle gas turbine power generation uses natural gas as a primary fuel and light distillate oil as an alternative.

## J. Rural electrification

According to the Department of Statistics, in Jordan the rate of electrification is 99.9 per cent.<sup>145</sup> This is credited, in part, to a government strategy to provide energy access to rural villages and communities located in remote areas, or otherwise not connected to the national grid. The Rural Electrification Directorate at the Ministry of Energy and Mineral Resources has been responsible for developing and implementing the directorate's strategy since 2011. Electrification projects target remote population clusters, low-income households and National Aid Fund beneficiaries, and artesian wells. For some categories, eligibility applies to land that has not been subjected to zoning, where neither land use planning nor government services are available. Other remote targets include government installations (public schools, houses of worship), industrial projects, farms near permanent water sources, cooperative

associations in the Badia and municipalities. Access is provided by connecting users to the national grid or by installing off-grid solar PV systems. More recently, solar PV systems have been installed using a net-metering scheme. Electricity tariff deductions are set aside to provide funding for rural electrification projects, and the ministry does not charge any fees in exchange for the services supplied.

The number of residential homes connected to the national grid in 2018 was 2,721, at a cost of 8.5 million JD (\$12 million). The ministry also began installing off-grid solar PV systems, with 26 residential homes fitted with such systems at a cost of 135,400 JD (\$191,000). In 2019, rural electrification grew rapidly, with grid-connected solar PV systems installed targeting beneficiaries of the National Aid Fund. The capacity of each system is 2 kWp. Also in 2019, 2,213 solar PV systems were delivered to the homes of low-income families at a cost of 2.5 million JD (\$3.5 million). It is expected that 7,000 households will be served with grid-connected, solar-powered electricity by the end of 2019, and also in 2020 and 2021. To qualify, household average monthly consumption must be below 300 kWh.

The Government push to invest in rural electrification is motivated by the need to improve living standards in remote locations, stimulate local economic development, provide employment, reduce living costs and discourage rural-to-urban migration. In addition, utilizing solar power to generate electricity on site reduces costs associated with T&D losses. The value of all rural electrification services delivered in 2018 exceeded 11 million JD (\$15.5 million).<sup>146</sup> Decentralized solar systems stimulate direct job creation in engineering, installation and maintenance, as smaller-scale installations are more intensive. Projects by the Rural Electrification Directorate had at the time of writing in 2019 engaged seven Jordanian companies, creating 12 jobs for entry-level engineers, 12 for technicians and 24 for labourers. Between 1999 and 2018, the Ministry



of Energy and Mineral Resources served 14,410 sites with rural electrification, at a cost of 125 million JD (\$176.3 million).<sup>147</sup>

## K. Experience of small-scale RE in rural areas

One of the most common small-scale RE applications in rural areas is the replacement of diesel motors with off-grid solar-powered water pumping systems for irrigation purposes. The German political foundation Friedrich-Ebert-Stiftung Amman documented the installation of a 10 kW PV system at a farm/ranch in the Sukhneh area in the Governorate of Zarqa, which cut 300 JD (\$423) off the farmer's monthly energy bill.<sup>148</sup> The savings allowed the farmer/ rancher to expand his operations by leasing an extra 20 dunums and hiring more workers from the local community.

To accelerate the introduction of RE in the agricultural sector, the Ministry of Agriculture has begun replacing 300 inefficient water pumps with pumps fitted with solar panels. The project is being implemented by the National Energy Research Center with financial support – estimated at 5.55 million JD (\$10.65 million) – provided by the European Union.<sup>149</sup> The project will target 200 pumps in the Jordan Valley and valleys in the south. One hundred pumps will be distributed across the high plateau, in the Governorates of Azraq, Mafraq and Madaba. Some of the solar panel systems will be connected to the national grid using net metering to offset a portion of the electricity bill. The project was ongoing at the time of writing.

While the project is concerned with in-farm water irrigation, the Ministry of Water and Irrigation is implementing a plan to introduce EE and RE measures to the national water distribution network. According to a ministry policy paper in 2016, the RE share will be increased to 10 per cent by 2025, while EE measures are expected to reduce overall

energy consumption by public water facilities by 15 per cent.<sup>150</sup>

In addition, JREEEF has since 2012 been active in subsidizing the introduction of small-scale RE systems. The fund targets RE and EE projects in residential buildings, public schools and buildings and houses of worship buildings in urban and rural areas. To date, it has installed 1,300 rooftop solar PV systems and 24,000 solar water heaters, and has distributed 150,000 light-emitting diode (LED) lamps throughout Jordan. The rooftop PV system has a capacity of 2 kWp, although there are plans to increase output to 3 kWp. More programmes are being proposed, including replacing old, inefficient appliances with energy-saving ones and the retrofit of buildings with thermal insulation. Besides the residential housing subsector, the fund targets the private sector. It has offered EE subsidies targeting hotels in the Petra area and small and medium-sized industrial enterprises in collaboration with the Jordan Chamber of Industry.

JREEEF's outreach to the residential sector is facilitated by CBOs. Although a 50 per cent subsidy is applied to the capital cost of a rooftop system for a residential home, the number of applicants from this subsector has not met the target set by the fund. It is believed the 50 per cent co-share payment is still considered too high by potential applicants. JREEEF is adjusting terms to allow the household owner's co-share payment to be made over a period of time. The inability to meet the target is also attributed to the lack of awareness about the fund or its subsidized RE schemes. It should be noted that JREEEF has not tailored its programmes to small businesses in rural areas, nor to rural women in particular.

The rural site assessments corroborated the findings. Projects by national and international NGOs for solar water heaters in rural areas are more common than small-scale solar PV systems. Although the enterprising home-based rural women interviewed referred





to the high cost of monthly electricity bills, no one appeared to appreciate that small-scale RE systems can reduce business energy costs. Moreover, members of the communities visited did not know the price of rooftop solar PV systems. This is consistent with the conclusions of a 2016 field study of families living in a remote village community, which noted, “none of the family heads had any understanding of the costs of these RE systems relative to the cost of the conventional energy systems”.<sup>151</sup>

In 2018, the Rural Electrification Directorate introduced off-grid solar PV systems to provide energy access to remote villages and communities where the costs of connecting to the national grid are prohibitive. The village of Rawdhat Al-Bandan, located in the north-east, provides one case study. Villagers work predominantly in agriculture and livestock herding. There are 60-70 residents living in 12 houses, each fitted with a 3 kWp off-grid solar PV system. The community’s primary school, mosque and artesian well also benefit from off-grid solar power systems. Battery storage packs capable of providing electricity for two days at average consumption rates were also installed with each PV system. The cost of the project, estimated at 70,000 JD (\$99,000), pales in comparison to that of drawing power from the national grid over a distance of 25 km.

It is not known whether residents in Rawdhat Al-Bandan are aware of the capability of a rooftop PV system. There is a fear they may experience an upsurge in electricity demand through the addition of more appliances than can be satisfied by the rooftop system. The rural site assessment chapters of this

report document such a case. In one village, households encountered higher bills after solar PV systems were installed due to higher consumption. Lack of information about distributed RE solutions may present challenges, which can be addressed through raising awareness.

It should be noted that utility-scale RE plants transmit output directly to the national grid. This means nearby communities are not able to draw low-cost power from them, to the consternation of local officials. This has been a source of frustration for mayors of nearby municipalities, which have accumulated debt as a result of unpaid municipal electricity bills.

RE in Jordan will have attracted more than \$4 billion in investments by 2021, according to the Minister of Energy and Mineral resources.<sup>152</sup> There were 543 licensed RE companies as of October 2019, according to the Companies Control Department at the Ministry of Industry, Trade and Supplies.<sup>153</sup> At the latest available count, in 2016, there were 7,928 personnel employed by licensed RE companies. In addition, the RE industry creates value indirectly by soliciting products and services from banks, insurance companies, law firms, contractors and other service providers and support industries. Despite RE’s key role in attracting new foreign investment, creating jobs and increasing income, a review of existing literature and secondary data suggests there is limited up-to-date information available on the economic value created by the industry, in terms of the ripple effect on the country’s trade balance, competitiveness, cost of living, employment, air quality, foreign currency reserves and energy security.







GDP

## 5. Entrepreneurial Development in Rural Areas

### A. Potential for building entrepreneurial activities and the role of small-scale RE applications

The 2016-2020 Sustainable Energy and Economic Development (SEED) project is the most visible initiative in Jordan seeking to engage rural communities in adopting sustainable energy solutions. Implemented by CowaterSogema, a Canada-based international development firm, in partnership with JREEEF, the four-year project seeks to drive sustainable economic growth through developing the RE sector. It uses a three-pronged approach: (1) providing and financing mechanisms for installing solar energy systems and solar water heaters in public institutions and households; (2) catalysing employment and entrepreneurship support for women and youth to participate in the RE market; and (3) institutional capacity-building for two power utilities, JREEEF and energy regulators. The project, funded by the Government of Canada, is focused on the towns of Ajloun and Deir Alla.

Project activities include awareness-raising, training and the installation of RE systems and EE solutions, with campaigns targeting households, schools and public institutions. Assisted by more than 460 volunteers, Cowater has reached 25,000 people directly and 65,000 indirectly. Women accounted for 93 per cent of all volunteers. Awareness-raising in public schools involved setting up energy laboratories equipped with RE and EE prototype models – more exciting for students than placing PV panels and solar water heaters on the roof, where access is highly restricted. Some 21,000 schoolchildren have been made aware of RE and EE uses.

Training to install and maintain RE systems and solar water heaters was delivered, along with topical training on climate change, environmental challenges, health and safety, and the cross-cutting role of gender in addressing these issues. Twice as many women as men took part, and successfully completed the training. Those demonstrating leadership qualities were selected to be Energy Ambassadors. The 17 champions, all female, have taken on a leading role as advocates for RE and EE solutions in their communities.

Project activities also included the subsidized installation of solar PV power systems and solar water heaters for households and public institutions, such as schools, health clinics and municipality buildings, among others. The subsidy accounted for 50 per cent of the purchase cost. LED lamps were distributed to households for free. For the household sector, 1,500 solar PV systems and 1,000 solar water heaters were installed, and 6,000 lamps distributed.

Contracts were awarded based on a process whereby bidders were required to hire a minimum number of local engineers and technicians. The applicant pool included unemployed recent university graduates. The hiring process, facilitated by Cowater's training, was designed to be driven by private sector needs as well as by the interests of trainees. It is believed that 25 per cent of those hired have become full-time employees following their project engagement.

Some of those engaged with SEED as employees or volunteers are expected to start their own small RE and EE businesses after the completion of the project in March 2020. A group of 40 SMEs in the agricultural and tourism sectors



have expressed an interest in investing in RE, having conducted their own economic feasibility studies.

The next logical step for the SEED project, or any follow-up, is to target SMEs in rural areas. It was instructive for this analysis to learn of the eagerness of a group of SMEs to adopt RE, though it is not yet known if they will have access to the funding required.

This brief analysis, and the example of SEED, demonstrate that access to finance and to information by SMEs is key to the introduction of RE in rural areas. This is consistent with the findings of the ESC report, discussed above, about enhancing the economic performance of SMEs.

## B. Women's empowerment and rural development programmes

The Government has established programmes to support the socioeconomic empowerment of women. One programme, administered by the Directorate of Rural Development and Women's

Empowerment at the Ministry of Agriculture, offers economic and technical assistance to enable landholders to meet their food security needs while generating sustainable income. Target beneficiaries include households in rural poverty pockets, prioritized based on several factors, including gender, family size, age, income level, marital status and special needs. The assistance package consists of donated production inputs, such as livestock, and the technical training needed to utilize them in productive activities.

Statistical data provided by the directorate show animal husbandry to be the dominant activity, as shown in [table 8](#), which lists the type of productive activities donated by the directorate.<sup>154</sup> The types of livestock may include goats, sheep, chicken (layers) and dairy cows. Small-scale agricultural production is the second most popular activity, followed by beekeeping, while others include dairy production and extracting oils from plants. The ministry's package of assistance often includes installing systems for rainwater harvesting and greywater recycling to help beneficiaries secure as much of their water needs as possible domestically. According to the directorate's data, 5,287 households benefited during the period 2008-2017.

**Table 8** Productive activities donated by the Ministry of Agriculture for rural development, 2008-2017

Activity	Number of household beneficiaries	Percentage share of activity	Cost of activity (JD)
Rearing of sheep/goats	3 631	51.7	3 712 884
Rearing of poultry	1 554	22.1	1 080 576
Rainwater harvesting	1 132	16.1	1 342 180
Small-scale farming	260	3.7	484 843
Beekeeping	189	2.7	132 300
Rearing cows	183	2.6	496 754
Rearing rabbits	28	0.4	18 169
Dairies	23	0.3	48 782
Greywater recycling	12	0.2	13 200
Other	13	0.2	10 300
<b>Total</b>	<b>7 025<sup>a</sup></b>	<b>100</b>	<b>7 339 988</b>

**Source:** Jordan, Ministry of Agriculture, 2019.

**Note:** <sup>a</sup> Some household beneficiaries have benefited from more than one activity, which inflates the total number of households displayed in table 6 by 1,738.

According to the directorate, the need for pro-poor rural development funding strips the amount allotted from the Ministry of Agriculture's budget. It is estimated that 34.7 per cent of the total cost of activities – 7.34 million JD (\$10.4 million) – spent by the directorate over the nine years was donor-funded,<sup>155</sup> which helps explain the stringent eligibility criteria.

A second government programme is managed by the Directorate of Productivity Enhancement and Eradication of Poverty at the Ministry of Social Development. Since 2008, 5,117 households have benefited from productivity-enhancing projects, at a cost of 10 million JD (\$14.1 million). The directorate has also provided CBO funding for 893 projects, also valued at 10 million JD.<sup>156</sup> A portion of this was injected into more than 480 credit funds providing revolving loans to households. REGEND's rural site assessment visits have documented the significance of rural women entrepreneurs taking advantage of the revolving loan programme to boost the productivity of home-based businesses.

The Directorate of Local Development and Productivity Enhancement at the Ministry of Planning and International Cooperation administers another programme that builds capacity in project development, economic feasibility assessment, project monitoring and evaluation, marketing planning and project financing. The directorate's programmes emphasize empowering local people and contribute to the enhanced productivity of socioeconomic projects, targeting poverty pockets, CBOs, cooperative associations and women's organizations. While its annual budget was reduced over the three years to 2017, from 20 million JD (\$28.2 million) to 11.4 million JD (\$16.1 million), the directorate has provided financing for more than 1,800 micro, small and medium-sized enterprises and technical assistance for the launch of 1,700 projects.<sup>157</sup>

In addition to public programmes for the women's socioeconomic empowerment, there are a

significant number financed and managed by NGOs, international organizations and the private sector. For example, the Jordan River Foundation helps families establish micro-businesses and generate income through entrepreneurship, and with job training and placement. This non-profit organization selects and qualifies 800-1,000 microenterprises annually, depending on available finance. Like government empowerment programmes, demand for funding outstrips supply. The Jordan River Foundation offers 700-2,000 JD (\$987-2,800) grants, revolving loans and capacity-building to qualified enterprises. Women's enterprises have included production kitchens and those making handmaid carpets, embroidered items and artisanal objects.

One drawback for empowerment programmes is a lack of coordination. The site visits revealed communication between the three interministerial directorates was deficient, despite them, more or less, sharing the same objectives and target beneficiaries; managers from one directorate may not even be aware of comparable programmes offered by another. Given the shortage of government funding – another hindrance – the three directorates would be well served to coordinate activities, and share an administrative infrastructure to avoid duplication and optimize the outcomes they aspire to. Rural women interviewed alluded to the lack of coordination, even among international organizations, resulting in disorganization and the abandonment of donated projects by the community. This supports the adoption of empowerment projects that can be sustained beyond the project, and long after donor engagement is finished.

Further, the lack of available monitoring and evaluation of women's empowerment programmes must be reconsidered. Such assessments are periodically prepared but remain out of public view. Disclosure would better serve all parties, allowing a more comprehensive view of programme effectiveness and an understanding of the challenges and opportunities. Donor agencies have a role to play in the push for transparency.



## 6. Field Assessment of Rural Communities

### A. Methodology

Informed by the national baseline study, a field assessment of rural communities provided an analytical basis for selecting sites where REGEND activities will be implemented. The evaluation and selection used criteria and followed a process defined in the project document.

Field visits were conducted in selected rural communities to collect qualitative and quantitative information regarding energy and rural development needs. Interviews with key stakeholders during the site visits gauged the potential for the safe and sustainable use of RE as a catalyst for rural development and identified possible strategies and interventions (information and awareness campaigns, training, capacity- building, research, projects and policies).

The SWOT framework was used as a strategic analytical technique to identify strengths, weaknesses, opportunities and threats that could impact REGEND activities. The assessment was designed to:

1. Understand the challenges concerning the socioeconomic context, particularly for rural women (primary income sources, potential of the region, principal economic activities).
2. Identify major barriers to development in the selected community.
3. Prepare an activities list based on small-scale RE for further promoting livelihoods.
4. Identify assistance to be offered to the

selected community and the role of organizations working to improve people's economic situation and performance.

5. Assess capacities and needs at several levels (local administration, socioprofessional structures, rural women).

The assessment also identified key national and local stakeholders to be involved in the project as part of a local facilitating team at the national and community level.

The methodology followed was developed to:

1. Establish and validate a set of selection criteria through a participatory approach with stakeholders.
2. Undertake an extensive field survey in four rural communities for collecting, analysing and processing data and information.
3. Apply selection criteria to identify potential rural communities that will benefit most from the project's activities.

### B. Selection of four rural communities

To facilitate the selection of rural areas for REGEND, ESCWA and the Ministry of Energy and Mineral Resources organized a focus group meeting in Amman to establish and validate criteria. Key project stakeholders attended the meeting, namely, the Ministry of Agriculture, Ministry of Environment, Ministry of Social Development, the ESC, the Jordan River Foundation, the West Asia and North Africa

(WANA) Institute, the National Agricultural Research Center, the Royal Society for the Conservation of Nature, the community tourism programme Zikra and the Microfund for Women.<sup>158</sup>

The selection criteria validated were as follows:

1. Regional development status of the proposed region.
2. Existence of RE potential allowing implementation of small-scale applications to support improving the livelihood of the rural population.
3. Existence of one or more socioprofessional structures able to guarantee project sustainability.
4. Existence of CBOs able to gather and unify rural women.
5. Accessibility.
6. Security situation.
7. Budget dedicated to the pilot projects in the REGEND framework.

Based on the selection criteria, with input from national institutions, four rural communities were identified for field visits. At this stage, the Directorate of Rural Development at the Ministry of Agriculture and the Directorate of Policies and Strategies at the Ministry of Social Development were consulted because of their extensive knowledge of rural areas. Both directorates are active in the design and delivery of pro-poor programmes in rural areas, with a focus on the socioeconomic empowerment of women. And both have long-standing relationships with CBOs in all rural areas of Jordan, who mediate the delivery of government pro-poor programmes to rural households.

In soliciting input from the two directorates, a preliminary evaluation matrix template was provided by the project, based on a qualitative set of criteria. Two rural areas were nominated by each directorate; Bal'ama in the Governorate of Mafraq, Deir Youssef in the Governorate of Irbid, Al-Ash'ary in the Governorate of Ma'an, and Batir and Rakin in the Governorate of Al-Karak. With input from national partners, data was obtained for each area, as shown in table 9.

**Table 9** Preliminary evaluation of project sites

Criteria	Al-Ash'ary	Batir and Rakin	Bal'ama	Deir Youssef
Level of regional development	Weak	Average	Average	Average
Level of poverty	High	Average	Average	Average
Level of rurality	High	High	High	High
Economic activities	Animal husbandry, farming	Animal husbandry, farming, beekeeping	Agriculture, services, grazing, dairies	Agriculture, services, grazing, dairies
Quality of local governance	Good	Good	Good	Good
Level of women participating in the local force (or potential)	High	High	High	High
Level of organization of civil society	Active	Active	Active	Average
Security risk	No risk	No risk	No risk	No risk



These preliminary findings provided a logical basis for field visits, which would provide a detailed evaluation of the four communities.

Against this background, a series of field visits to the selected rural communities was organized. Based on the findings of the initial set of visits, two rural communities qualified for a more extensive site assessment. Based on the outcomes of the second set of visits, community

selections and capacity-building needs were suggested.

The analysis of site visits consists of two parts. In the first part, a preliminary analysis of all four rural communities is presented and a rationale given for selecting two communities. In the second, a more detailed analysis is provided, based on the more extensive visits to the two areas.



Field  
Visits 1:

## **7. Field Visits 1:** Preliminary Analysis of Four Rural Communities

## 7. Field Visits 1: Preliminary Analysis of Four Rural Communities

The findings presented in this chapter are based on field interviews with a broad range of stakeholders, including farmers, livestock owners, CBO leaders, municipality and governorate officials, agricultural cooperative leaders, directors of regional agricultural directorates and trainers. A list of stakeholder interviewees and their affiliations is provided in annex. The interviews formed the basis for conducting a SWOT analysis of each area.

### A. Bal'ama

Bal'ama is located 42 km north-east of Amman in the Governorate of Mafraq. The second largest by area, the governorate occupies the north-eastern part of Jordan. About 24 km to the north-east of Bal'ama is Al-Mafraq, the governorate capital. Bal'ama is one of four subdistricts in the District of Qasabat Al-Mafraq.

Guided by the Ministry of Social Development, the site visit to Bal'ama targeted Jam'iat Al-Irtiqat' for Women, a local CBO that seeks to empower women in the community by providing workshops, consultations and project implementation assistance. Al-Irtiqat' owns a facility for training and for producing and upgrading furniture fabric. Donated by the Ministry of Planning and International Cooperation, the centre contains 10 sewing machines, an iron press machine and an electric bulk fabric cutter.

The primary activity is making and recycling furniture. Initially, the CBO purchased and refurbished used furniture for sale to nearby

communities. However, making and installing curtains and assembling traditional Bedouin furniture have become more popular. [Figure 23](#) shows a traditional seating arrangement made by the CBO. It has also begun refurbishing and maintaining stoves; a second-hand cooking stove was seen during the visit.

The CBO is led by Najah Al-Faraj (Umm Zain). A resourceful woman with eight children, her husband earned the minimum wage as a member of the support staff at the University of Science and Technology. Though she did not complete her schooling, Umm Zain has worked in several ventures to sustain herself and her household, selling second-hand clothes and refurbished stoves, making and installing curtains and sewing fabrics. Her driving determination has lifted her family out of poverty, with her husband leaving his job to assist with her small business. When she became leader of the CBO, she deployed her experience in these ventures to help the CBO diversify its revenue streams.

During the visit, one middle-aged woman was demonstrating a sewing machine to two trainees. The other machines were

**Figure 23** Assembled traditional furniture by Al-Irtiqat'



Source: Author.

idle. Demand for the CBO's furnishings has slackened, relative to prior periods, with Umm Zain explaining the area is suffering from an economic downturn.

The CBO serves 20,000 people in the subdistrict, where government employment and retirement wages are the main sources of income. Other productive activities include agriculture (wheat and barley) and livestock rearing. Although the governorate has a poverty rate of 19.2 per cent with six subdistricts designated as poverty pockets, Bal'ama is not one of them.

To generate additional income for their households, members of Jam'iat Al-Irtiqa' for Women have started small businesses, such as a flower shop, veterinary centre, small grocery store (without refrigeration) and livestock rearing, with seed funding provided by Care, a not-for-profit organization whose programme in Jordan serves the needs of vulnerable Jordanians and refugees. Some members have also begun home-based dairy enterprises, producing butter, yogurt and dried goat milk. CBO members attending the site meeting raised questions about the long-term sustainability of their small enterprises, while one member indicated that she is interested in starting up a kitchen but does not have the funding.

According to CBO members, a lack of financing to invest in expanding production is a barrier, resulting in the proliferation of "agents" offering cash to those needing credit. The legality of such practices is questionable, and there are also concerns about the ability of community members to pay back accumulated debts and the consequences of that. A prevailing debt culture is common in the community, causing cash flow problems. Poor marketing skills seemed to be another hindrance. The scale of the productive activities appeared small and home-based. The findings raised questions about the viability of undertaking project activities.

The CBO's productive activities are limited to finished fabric products, for which demand is low, though refurbishing stoves was recently added to the portfolio. The productive activities did not lend themselves to high-energy consumption. When asked about the electricity costs associated with their businesses, CBO members did not consider them a major item. Moreover, when presented with the possibility of small-scale RE, they did not raise any potential opportunities.

The CBO's choice of economic activities appeared to be driven by Umm Zain's

**Table 10** SWOT analysis for Bal'ama

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• CBO well established in the community and active in supporting women members;</li> <li>• CBO has experience managing projects with donors (Care, the Ministry of Planning and International Cooperation, Save the Children Fund, Acted);</li> <li>• Leader of CBO strong-willed and resourceful.</li> </ul>	<ul style="list-style-type: none"> <li>• Activities of CBO not directly translatable to typical productive rural activities;</li> <li>• Dairy activities small-scale and home-based;</li> <li>• Urban-rural line blurry but degree of urbanism more pronounced;</li> <li>• CBO members lack business skills.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Kitchen start-up in planning stage provides opportunities for small business growth;</li> <li>• Infrastructure and ease of access good.</li> </ul>	<ul style="list-style-type: none"> <li>• Area suffering from economic downturn;</li> <li>• Prevailing debt culture in community causes cash flow problems;</li> <li>• Transportation to markets expensive for community members.</li> </ul>

entrepreneurial experience rather than other factors. The CBO does not provide opportunities for women to participate in productive activities more associated with a rural setting; in fact, the level of rurality observed was not high. Described as an urban locality, Bal'ama has one of the largest populations in Mafraq, with a population of 38,000, according to a 2018 Department of Statistics survey.<sup>159</sup> Table 10 shows a basic SWOT analysis for Bal'ama. Based on the findings of the visit, it was excluded from consideration for the second round of assessment.

## B. Deir Youssef

Deir Youssef lies 80 km north of Amman in the Governorate of Irbid, which occupies the north-west corner of Jordan. The governorate is the second largest by population but has the highest population density. Deir Youssef is one of 12 subdistricts in the District of Al-Mazar Al-Shamali, located 15 km south-west of the governorate capital Irbid.

Jam'iat Deir Youssef Al-Khayriah, established in 1968 as a local CBO, offers social services to a community of 15,000 people, including a day-care centre, kindergarten and special-needs centre. It also owns and manages a carpentry workshop that employs two people Figure 24. A CBO-run revolving loan programme is available for members.

Government employment and retirement wages are the main sources of income. Members of the community, however, are also engaged in small business creation. Women's enterprises are typically home-based, producing dairy products and food. Men are engaged in livestock businesses. One entrepreneurial woman ran a kitchen in a rented space but had to move her business back home because she could no longer afford the rent. Lack of finance and marketing skills were cited as primary challenges. Members spoke of an opportunity

**Figure 24** Jam'iat Deir Youssef Al-Khayriah's carpentry workshop'



Source: Author.

to target local institutional customers such as schools, as opposed to those in distant markets, such as Amman, though there was no indication of whether capturing this market segment was realistic, or sustainable.

The interrupted municipal water supply to the subdistrict was also mentioned. When stored water runs out, residents buy water from private operators, a financial burden on them.

CBO members referred to a difficult business climate that makes investment in small enterprises challenging and less viable due to the high start-up and management costs. In general, members of the community believe themselves motivated to work hard to expand their businesses but said they lacked resources. They blame government negligence. The lack of access to regulated credit and finance was stressed.

Jam'iat Deir Youssef Al-Khayriah focuses on bettering social conditions in the community.



The carpentry workshop's primary purpose is to provide a steady source of revenue. The CBO administers a revolving loan programme, though neither offers a centrally located facility for women to engage in productive activities, nor provides business training or marketing assistance. Further, it did not seem to be focused specifically on the economic betterment of women. More men attended the meeting than women, and those who did were small business owners interested in identifying opportunities to access credit.

Revolving loan programme applicants invest in their own business creation independent of the CBO. Also, when asked about the potential of RE projects, CBO members did not offer concrete opportunities. This could be down to an existing RE project donated by the Jordan River Foundation.

The interruption to the municipal water supply is part of a nationwide plan by the Government and water utilities to rationalize consumption. Municipal supply is interrupted over regular,

scheduled periods to provide incentives for households to monitor their consumption, limit usage to household needs and avoid use for agricultural purposes. By holding sufficient water to meet household needs, roof tanks have become part of the national water storage infrastructure.

Table 11 shows a basic SWOT analysis for Deir Youssef. Based on the findings of the visit, it was recommended Deir Youssef not be included for the second-round evaluation.

### C. Al-Ash'ary

The town of Al-Ash'ary is located 215 km south of the capital Amman in the Governorate of Ma'an. The largest in Jordan by area, the governorate occupies the southern and south-eastern part of the Kingdom. To the south-east is Ma'an, the governorate capital. Petra, a World Heritage site, lies 20 km west of Al-Ash'ary.

**Table 11** SWOT analysis for Deir Youssef

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• CBO well established and enjoys community buy-in;</li> <li>• CBO has experience managing projects with donors (Jordan River Foundation, Mercy Corps).</li> </ul>	<ul style="list-style-type: none"> <li>• CBO does not specifically cater for economic needs and priorities of women;</li> <li>• CBO activities more focused on social programming and not directly translatable to typical productive rural activities;</li> <li>• Urban-rural line blurry but degree of urbanism more pronounced;</li> <li>• CBO does not have training and production centre, small businesses by members dispersed;</li> <li>• Members lack financing and marketing skills.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Community members have entrepreneurial spirit;</li> <li>• Kitchens have potential to supply institutional customers (schools);</li> <li>• Good infrastructure and ease of access.</li> </ul>	<ul style="list-style-type: none"> <li>• Area suffering economic downturn;</li> <li>• Dependence on livestock risky because of high feed prices;</li> <li>• Interruptions in domestic water supply, forcing people to buy from private operators;</li> <li>• Scalability of business output in question.</li> </ul>

Established in 2009 as a local CBO in Al-Ash'ary, Jam'iat Al-Jawhara Al-Khayriah plays a key role in developing and improving the productive capacity of rural women in the community by assisting with training, production and marketing. The organization, which serves a community of 10,000, owns its building and used its own revenue to expand to accommodate a kitchen factory. The CBO's president is Jamileh Al-Jazi.

Government employment in security services, school teaching, and agriculture and livestock rearing are the primary sources of income. Most community members own livestock. Al-Ash'ary is considered a poverty pocket. The area has attracted considerable investment for commercial agricultural production, aided by groundwater availability. Residents rarely work on commercial farms and foreign labour is tapped for work in agriculture.

The CBO's activities portfolio includes producing dairy foods, jams, pickled vegetables, herbal recipes and vinegars. It owns its own greenhouse, where thyme and sage are grown for use in herbal recipes [Figure 25](#). The CBO assists its members in production activities and participates in bazaars and seasonal shows in Amman. According to Ms. Al-Jazi, local products are sought by repeat customers and often sell out at bazaars. Majid Al-Rifa'i, Deputy Governor of the district, says marketing is not a hindrance.

The CBO plans to provide training to operate the kitchen factory in the new building once construction is complete, though is falling short of the funds needed. The building is expected to be finished by the end of 2019. About 20,000 JD (\$28,200) worth of equipment for the kitchen factory, donated by the Royal Court of Jordan, is on site but has not yet been assembled.

All the equipment requires electrical power, and the bill is expected to be high once operation begins. In fact, electricity may account for the highest operating cost. Installing a distributed

**Figure 25** Sage and thyme in the Al-Jawhara greenhouse



Source: Author.

PV solar power system to supply electricity for factory operations would be a good fit for this facility; an opportunity to reduce costs and therefore increase profit margins.

Ms. Al-Jazi said many homes in Al-Ash'ary had small-scale rooftop solar PV power systems, though CBO members indicated their households had not experienced any difference in electricity bills, and may have seen them increase. It seemed that no one has sought to follow up with the local power provider.

The findings match the profile of a rural community that can benefit from an integrated approach for economic and social development through adopting small-scale RE solutions. A more in-depth site assessment was required to learn about Al-Jawhara's model of community engagement and the scale and type of women's entrepreneurial activities in Al-Ash'ary, which is presented in chapter 9, along with a more detailed SWOT analysis.

## D. Batir and Rakin

The towns of Batir and Rakin lie in the Governorate of Al-Karak. Located 140 km south-west of Amman, it borders the Governorate of Ma'an in the east and south, and the Dead Sea in the west. Batir and Rakin are 10 km to the north of the city of Al-Karak, the governorate capital.

Batir and Rakin are adjacent towns, with populations of 4,000 and 12,000 respectively. The profiles of the two communities are similar and they will be addressed as one rural area for the purposes of this report. The main sources of income include government employment, retirement wages, livestock rearing and agriculture.

The two most active CBOs are Jam'iat Shabbat Batir Al-Khayriah and Jam'iat Sayyidat Rakin Al-Khayriah. Dedicated to the economic and social empowerment of women in the community, both play a key role in improving their productive capacity through training and financing. In addition, the CBOs help community members market their home-based food products at bazaars in Amman and other urban centres for no charge.

The CBOs provide financing for small, home-based enterprises using a revolving loan

programme. Most convert raw milk into jameed, a hard, dry yoghurt, and ghee. Each CBO owns a small facility for making jameed and other dairy products, employing two to three women seasonally for training and production. Having learned the trade, trainees can then start their own home-based enterprises the following season. Community members engaged in producing jameed have alluded to high electricity costs during the production season. Al-Karak jameed is well-branded and sought annually by households throughout Jordan.

Both CBOs offer skills programmes to community members. Training has included the production of pickled vegetables, medicinal and herbal recipes, baked food, dairy products and textiles. Because the demand for jameed is always high, both CBOs are keen to expand production but lack the financial means to do so.

The preliminary findings offered a compelling basis to qualify Batir and Rakin for a second site visit and the more detailed assessment of its potential to undertake project activities and to identify the capacity-building needs of entrepreneurial women, the findings of which are presented in chapter 8, along with a SWOT analysis.



## 8. Field Visits 2: Detailed Analysis of Two Rural Communities



GDP



## 8. Field Visits 2: Detailed Analysis of Two Rural Communities

### A. Al-Ash'ary

#### 1. Introduction

Administratively, the Municipality of Al-Ash'ary is located in the subdistrict of Adhroh, part of the District of Qasabat Ma'an, one of the Ma'an Governorate's four districts.

The municipality covers 2,500 km<sup>2</sup> and has a population of 12,000. The city council consists of nine members, five of whom are women. According to the municipality's local development unit, there are 2,250 households, 11 per cent headed by women. The subdistrict of Adhroh is considered a poverty pocket, as stated in the household expenditures and income survey 2017-2018. The local development unit puts the poverty rate in Al-Ash'ary at 26 per cent, much higher than the national average of 14.4 per cent. The unemployment rate among women is 35 per cent, and among men 45 per cent. The educational attainment profile is considered positive, with 65 per cent of college-age individuals holding a bachelor's degree, and 33 per cent with high school diplomas. Two per cent hold a master's degree. According to the Governorate of Ma'an, food, housing and transport expenditures account for 36.7 per cent, 26.8 per cent and 17.2 per cent, respectively, of household income.<sup>160</sup>

The municipality serves the seven areas of Adhroh, Al-Jarba Al-Kabirah, Al-Jarba As-Saghirah, Al-Ash'ary, Al-Muhammadiyah, Bir Abu Al-A'alaq and Al-Manshiyah. Inhabitants belong to the two main tribes, Al-Jazi and Al-Mara'yah, and inter-tribal relations are described as friendly. According to municipality sources, a small number of Syrian refugees –

estimated at 50 – have settled in the subdistrict, although other sources have pegged this at 500. The refugees work in farming and livestock grazing in the summer and move to the Jordan Valley in the winter. The District of Shoback, in the Ma'an Governorate, claims upwards of 400 refugee households, also working in farming and livestock grazing, and are sought after because of their superior farming skills and work commitment.

Like all municipalities, Al-Ash'ary is responsible for road construction and maintenance, street lighting, municipal waste collection and transport, and other basic services. The municipality has no jurisdiction over municipal water supply, power supply, land-use planning or groundwater management, other than having a coordination role with central authorities. With structural decentralization expected to take effect, the municipality will play a more central role in local development planning. The local development unit of the municipality is tasked with collecting and documenting socioeconomic data, to be used in local planning.

The Electricity Distribution Company manages distribution through its local affiliate, Ma'an Electricity. The municipal water supply is managed by the Petra Water Directorate, which is affiliated to the Water Authority of Jordan (WAJ). Groundwater for agricultural and other uses is also regulated by WAJ. Agricultural activities, including livestock husbandry, are regulated by the Directorate of Agriculture, which reports to the Ministry of Agriculture. The Ministry of Agriculture's Directorate of Rural Development has a local department in the city of Ma'an to administer the delivery of pro-poor programmes and assess progress.

Al-Ash'ary people have their roots in Bedouin life but most have settled down. A small proportion cling to a nomadic lifestyle, preferring to move with their livestock to Al-Jafr, a neighbouring district, during the winter. Farmers in Al-Ash'ary plant alfalfa for animal feed, wheat and barley, which is rain-fed, and vegetables and fruit such as tomatoes, watermelons, cauliflower and beans. On the higher ground, fruit trees, such as apple, apricot and peach, olive trees and grape vines are planted, using aquifer water for irrigation. There are 11 investor-owned, commercial-scale apple farms in the surrounding areas, with a large proportion of production destined for export. In general, agricultural productivity has declined as a result of changing rainfall patterns and groundwater depletion caused primarily by the commercial apple farms. Because there is less affordable groundwater, farms have had to reduce the size of their cultivated area over the past seven years. Table 12 shows the areas by dunum of cultivated land by crop.

Livestock have been the mainstay of life in this southern region for many generations. Most households own livestock for their economic import. Large-size holders may own anywhere between 100 and 1,000 head of livestock. Milk is often sold to outside contractors. Small-size holders may own between 40 and 60 head. Their milk is used to make dairy products to meet household needs, with the surplus sold. Poorer households tend to own four to five

**Table 12** Area of cultivated land by crop in Al-Ash'ary (dunum)

	Water source	Area
Olives	Irrigated	222
Fruit trees	Irrigated	2 610
Grapes	Irrigated	49
Wheat	Rain-fed	400
Barley	Rain-fed	400
<b>Total</b>		<b>3 681</b>

Source: Directorate of Agriculture.

head of cattle to meet their own needs and supplement family income. Women typically tend to the animals. Table 13 shows the head of livestock within the administrative area of the municipality.

Earth dams in the surrounding Badia are used to harvest rainwater, which can be utilized as drinking water for livestock. But these water collection areas have not been maintained, causing water loss to evaporation or infiltration, according to local officials. Because of their diminished resources, low-income households are the most vulnerable to changing conditions, and hence, have less capacity to adapt to fluctuating weather patterns or higher livestock rearing costs. They have been the most affected by rising feed prices, and are sometimes forced to sell livestock to generate enough cash to meet the feeding needs of the remainder.

Ahmad Al-Mara'yah, Mayor of Al-Ash'ary, spoke of his dismay over the lack of investment and economic development aid by the central authorities in Amman and Ma'an, and the empty promises he claimed were often made by visiting international development organizations.

Economic marginalization is deeply felt in Al-Ash'ary, a result, it is believed, of being a peripheral town in a peripheral region. The mayor cited the abandoned proposal by a donor to adopt the traditional Al-Hima rangeland management system to rehabilitate 300 dunum of land for grazing. It was thought the project would alleviate the high cost

**Table 13** Livestock in the Municipality of Al-Ash'ary

Livestock	Size
Sheep	7 200
Goats	3 000
Camels	45
Cows	0

Source: Directorate of Agriculture.

of feed, particularly with the reduction in government feed subsidies. The region's low development status is compounded by the municipality's fragile financial situation. In 2014, salaries and rent accounted for 57 per cent of the municipality's annual budget, leaving fewer funds than hoped for to invest in local development. The municipality accumulated a debt of more than 3 million JD (\$4.2 million) that same year.

Ahmad Al-Rafay'ah, director of the Directorate of Agriculture in Shoback, confirmed the higher share of feed costs incurred by livestock owners as a result of the partial lifting of government subsidies. His agency distributes feed to owners in proportion to their livestock numbers; the amount meets their needs for just one week of each month. The directorate also offers owners veterinary assistance free of charge to ensure all animals are immunized.

The local directorate established a new division within the Department of Projects targeting rural women. It donates livestock and offers technical training to enable women to have their own productive, income-generating projects. This includes livestock, beekeeping equipment and greenhouses. According to the directorate, the number of beneficiaries – selected based on those with the greatest need, as documented by the National Aid Fund – has reached 70 women households, with 187 family members benefiting indirectly. Mr. Al-Rafay'ah expressed his support for any international project enhancing rural development, and his willingness to offer whatever assistance is required.

## 2. CBOs in Al-Ash'ary

Al-Ash'ary has a number of CBOs that seek to improve the socioeconomic conditions of their communities. The activities of three are detailed as follows.

**Jam'iat Al-Jawhara Al-Khayriah:** established in 2009, Al-Jawhara has 35 members, 27 of them

women. The CBO plays a key role in developing and improving the productive capacity of rural women in the community by assisting with training, production, financing and marketing. Al-Jawhara has its own building, shown in figure 26, and has used its own revenue to build additional space. The services offered by the CBO are outlined below.

**Financing:** the CBO administers a revolving loan programme to finance productive activities for members. Interest-free loans up to 500 JD (\$705) per applicant are available. The loan is spent directly by the CBO for purchasing production inputs to prevent misuse. Ms. Tharafeh, who owns her own livestock and produces dairy products to sell, borrowed the 500 JD to boost

**Figure 26** Al-Jawhara headquarters



Source: Author.

**Table 14** Dairy production value chain, responsibilities by gender in Al-Ash'ary

Activity	Work performed by females (%)	Work performed by males (%)
Grazing	55	45
Milking (morning shift)	100	0
Milking (evening shift)	100	0
Dairy production	100	0
Marketing	15	85

Source: Directorate of Agriculture.

production with the purchase of 500 kg of raw milk from other owners. She said the additional revenue was used to pay back the loan and meet her household needs.

Another member, Umm A'affash, took advantage of the loan to buy four ewes and animal feed. She spends six to seven hours daily tending her livestock, hoping to maximize their milk production. Her husband markets her products in Ma'an or Amman. [Table 14](#) shows the division of labour by gender in the production value chain.

Women participate less in marketing because of the travel required, which may conflict with other household responsibilities, though this is not a hard and fast rule. It is not uncommon for women to participate in seasonal bazaars and exhibitions in Amman or Aqaba, as conditions permit.

For most livestock owners, raw milk is used to produce jameed, ghee and butter. Secondary products include yoghurt and dewatered yoghurt or labenah. White cheese was not traditionally produced by Bedouin communities but is being introduced to diversify product lines and capitalize on the demand from urban customers. According to the rural women of Al-Ash'ary, 100 kg of raw milk yields on average 9 kg of jameed and 5 kg of ghee. The same 100 kg of raw milk can yield 25 kg of white cheese. The market price per kg is 10 JD (\$14) for jameed, 10 JD for ghee, 6 JD (\$8.5) for butter and 3 JD (\$4) for yoghurt. White cheese commands 6.5-7.5 JD (\$9-19.6) per kg. Input costs include raw milk (when not self-produced), animal feed and electricity. Raw milk is usually purchased at a rate 1 JD/kg (\$1.4 /kg), while the cost of feed has been at 5 JD (\$7) per head, per month. Al-Jawhara members related how electricity bills account for a bigger portion of their monthly expenditure during the high production season from February to June. Electricity is needed to power the fat separation machines and refrigerators. Bills shared by CBO members were all observed to have accounts that were overdue.

**Marketing:** Al-Jawhara offers its members opportunities to market a variety of home-made products at seasonal fairs and bazaars in urban centres such as Amman, Ma'an, Jerash and Aqaba. Members are not required to travel to these locations but often do when group transport is arranged. Marketed products include jameed, ghee, jams, pickled vegetables, herbal recipes, dried tomatoes, vinegars and baked products such as shrak, a traditional bread, and date cookies. [Figure 27](#) shows apple jam stored on the premises. The CBO gets a small fraction of the proceeds to cover the cost of participation and transport. It also engages in networking, connecting members with commercial outlets interested in purchasing home-made products.

According to Ms. Al-Jazi, products marketed by the CBO often sell out at bazaars. In addition, Mr. Al-Rafay'ah indicated that food production in this southern region has failed to take advantage of the opportunities provided by unserved segments of the market; commercial establishments in Aqaba often reach out to him, seeking local agricultural suppliers, he said.

**Providing a production centre:** the building where Al-Jawhara is headquartered also provides space for members to participate in a variety of productive activities. These include:

Dairy production: for members without the space or equipment to engage in home-based food production, Al-Jawhara offers them the

**Figure 27** Apple jam made by members of Al-Jawhara



Source: Author.



**Figure 28** New addition to Al-Jawhara headquarters

Source: Author.

facilities. The CBO has basic equipment, including an electric shaker, refrigerator and stove. Raw milk is provided by members for processing, and the CBO markets the products. All livestock owners interviewed indicated a desire to own extra livestock to produce more milk and expand production but are constrained by the lack of finance and larger capacity equipment;

More recently, the Royal Court in Jordan donated kitchen equipment to enable an industrial scale up of food production. To accommodate the equipment, the CBO used its own funds to erect an additional building on its site, as shown in [figure 28](#). The CBO is falling short of the finance necessary to complete construction and efforts are underway to raise additional funding. Once up and running, the industrial kitchen will provide an excellent opportunity for CBO members to expand dairy and food production and increase revenues.

Herbal and medicinal production: Al-Jawhara has a long-standing agreement for the rental of a 300 dunum plot of land ([figure 29](#)) from Al-Jadwa Agricultural Cooperative Association. Tomatoes, cucumbers and a variety of other vegetables and fruit have been planted in recent seasons. At the time of the site visit, watermelons were being grown, as shown in [figure 30](#). Harvested produce is transported to the Vegetables and Fruits Central Wholesale Market in Amman. Sales net the CBO approximately 9,000 JD (\$12,700) annually, according to Ms. Jamileh. The revenue finances CBO programmes and covers expenses for the upcoming planting season.

**Figure 29** Al-Jawhara's rented farmland

Source: Author.

**Figure 30** Watermelons being grown by members of Al-Jawhara

Source: Author.

**Figure 31** Harvested sage and thyme stored in Al-Jawhara

Source: Author.

In addition, the CBO owns two greenhouses on the same land, where local varieties of sage and thyme are planted, ([figure 25](#)). Once harvested, the plants are stored on the premises, as shown in [figure 31](#). They are washed and left to dry in an open-air space that is kept dark to prevent colour change.



**Figure 32** Herbs packaged for sale by members of Al-Jawhara



Source: Author.

Once dried, the herbs are packaged for sale, as shown in [figure 32](#).

Over the past year, Al-Jawhara members have experimented with planting scallions and *Artemisia Vulgaris* (a mugwort known locally as *baitharan*), an aromatic herb used for treating stomach ailments. It was deemed a success, and plans are underway to plant more next season. Women members are often responsible for planting and harvesting, with a labourer hired to irrigate the field. Synthetic fertilizers are not used, nor pesticides. [Table 15](#) shows the division of labour by gender in the value chain of herbal production.

**Table 15** Herbal production value chain, responsibilities by gender, Al-Jawhara farm

Activity	Work performed by females (%)	Work performed by males (%)
Planting of saplings	85	15
Irrigation	0	100
Harvesting	90	10
Washing and drying of herbs	100	0
Packaging	100	0
Marketing	75	25

**Figure 33** Pumping of groundwater for irrigation at Al-Jawhara rented farm



Source: Author.

**Figure 34** Irrigation water pond and transfer pump at Al-Jawhara rented farm



Source: Author.

Underground water is extracted from a depth of 200 metres for farm crop irrigation. One pump withdraws water from the aquifer into a storage pond on site, as shown in [figure 33](#) and [34](#). Another transfer pump, shown upper centre in [figure 34](#), distributes irrigation water to the fields. The pumps are powered by electricity, with an average monthly bill of 5,000 JD (\$7,005).

**Training:** Al-Jawhara holds training workshops for members interested in food production. During the site visit, a trainer was delivering a three-day workshop on dairy production. White cheese, which is highly desired, was being introduced for the first time; a sample is shown in [figure 35](#). The trainer works at the Higher Council for Science and Technology (HCST) in the Badia Research and Development Programme, which offers capacity-building in production activities, including dairy, soap, creams and skincare products sourced from

**Figure 35** White cheese produced by members of Al-Jawhara



Source: Author.

local cacti species. According to the trainer, the HCST has developed standards for all dairy products covering the fat, salt and water content. No dairy production facility in Jordan, however, has applied for these standards.

A minimum of two sets of workshops are required for a professional qualification in dairy production. The first set is a mix of theory and demonstrations, the second is designed to be hands-on, with trainees practising under supervision. According to the site trainer, organizations can afford to hold only one set of workshops, constrained by a lack of funding

**Table 16** Food production equipment in Al-Jawhara

Equipment name	Current (amp)
Vertical refrigerator, stainless steel, 700 litre	6
Milk boiler, stainless steel	(3 phase) 25
Pasteurizer, 100 litre	30
Water cooler	3
Milk fat separator, stainless steel	20
Water filter (reverse osmosis)	3
Beater (three blades)	(3 phase) 16
Cheese slicer, stainless steel	10
Dough roller	16

needed to cover the cost of trainers as well as that for supplies (gloves, pots, raw milk). He noted that production operations by rural women in general can benefit significantly from modern equipment for sterilization, centrifugal fat separation, and vacuum packing and wrapping, but that the cost of purchasing and running these devices compels them to continue relying on more traditional methods, at the expense of productivity and quality.

The CBO has plans to provide training for operating the newly acquired food production equipment, which will be housed in the new building once construction is complete. A list of equipment is shown in [table 16](#).

In addition to food production training, Al-Jawhara hosts workshops for the personal development of members and their children. During the site visit, the Danish Council was conducting an educational workshop for women on child-rearing, including sessions dedicated to engaging children in different activities.

According to Al-Jawhara, there are three constraints on the scale of support provided by the CBO to the community:

**Lack of a large production space:** the current space is small, limiting the ability of members to increase production volumes. Kitchen equipment to boost production has been donated, but the additional building space to house the new equipment has not been completed due to lack of funds. The CBO will continue to be hampered by low production capacity unless funding for a more spacious production kitchen is addressed.

**High cost of production:** the economic returns generated by CBO activities continue to be limited by the high cost of electricity, animal feed and seedlings. Effective dairy production requires extensive use of electric shakers and refrigerators, pushing up monthly bills. Pumping groundwater for irrigation consumes

large amounts of electricity. Irrigation water distribution to a farm of 300 dunum adds to electricity bills. When bill payments fall into arrears, cut-off becomes a risk. At the time of writing this report the livestock rearing has also become more expensive with the reduction in government subsidies for feed. The cost of seedlings and the labour required in the two greenhouses add to operating costs.

**Lack of advanced training:** Al-Jawhara's members have mastered the production techniques of a limited set of products such as jameed, ghee and butter as traditionally practised and passed on in the community. Advanced training to acquire new capabilities, develop skills and gain expertise is required for introducing new product lines such as different cheeses. The associated cost of trainers/supplies is higher when compared with basic training costs. The CBO may not have the funding to hold advanced workshops. In addition, the introduction of new lines and the drive to improve product quality necessitate investment in new equipment. The shortage of funding to meet these investment needs becomes another constraint.

**Jam'iat Thatt Al-Nitaqayn:** the CBO has 30 members and is led by Fatima Al-Mara'yah. The president is also treasurer of the Municipality of Al-Ash'ary. The CBO has benefited from support donated from different sources. Ms. Fatima, however, lamented the lack of coordination among donors at the municipality level. Donated projects have not been thought through, and have had to be abandoned at a later stage. Thatt Al-Nitaqayn maintains a good working relationship with Al-Jawhara CBO, and their coordination level seems to be high. The CBO's portfolio of activities is outlined below.

**Financing:** like most CBOs in Jordan, and like its sister organization Al-Jawhara, Thatt Al-Nitaqayn administers a revolving loan programme financing productive activities for members. The programme offers members interest-free loans, with a four-month grace

period. The amount ranges from 200 JD (\$282) to 3,500 JD (\$4,900). Sources of credit have been Mercy Corps (38,000 JD/\$53,600), the Jordan River Foundation (5,000 JD/\$7,000) and the Royal Court (25,000 JD/\$35,200). Ms. Fatima said the total number of household beneficiaries is 129. To prevent misuse, the loan is directly spent on purchasing production inputs.

**Agricultural production:** using greenhouses donated by the Hashemite Fund for the Development of the Badia, the CBO has experimented with agricultural production. The project was abandoned due to low yields caused by high salinity in irrigation water, according to Ms. Fatima.

**Stationery store:** the CBO owns a stationery store, donated by the Royal Court in Jordan, which meets the needs of the area's schoolchildren. The store provides employment for one local woman.

**Food production:** the CBO owns a small kitchen containing a refrigerator and a stove, though lack of financial resources and limited equipment have rendered the kitchen impractical. The kitchen was donated by the Jordan River Foundation.

**Child-care:** the CBO runs a kindergarten for children aged 4-5.

**Jordanian Women Qualifying and Training Society (JWQTS):** founded in Amman in 1995; a branch to serve the southern Badia was inaugurated in 2007. The Adhroh centre supports children and women through educational programmes and training services and workshops. It is equipped with facilities for training, and production activities are outlined below.

**Knowledge and technology station:** the JWQTS centre contains a computer lab and offers training and other workshops focused on soft skills and life skills, such as child-rearing and time management.

**Food production:** it boasts a good-sized kitchen but equipment is restricted to gas ovens, refrigerators and freezers, as shown in [figure 36](#). Although it has hosted workshops, at the time of writing this report, the kitchen was not used for food production.

**Pottery workshop:** a workshop is dedicated to pottery making and production. It is equipped with three different types of electric kiln, a clay mixer and supplies, as shown in [figure 37](#). According to the manager, the high electricity costs required to run the kilns discourages the use of the workshop.

**Sewing workshop:** JWQTS owns approximately 15 sewing machines, which are idle at the time of the site visit.

**Carpet production:** the centre houses different types of carpet looms, as shown in [figure 38](#). In addition to carpet manufacturing, other weaving machines have been used to make curtains, blankets and clothing. The carpet looms were not in use at the time of the site visit.

**Beauty salon:** the centre houses a beauty salon that can be used for training or services such as haircuts, colouring and styling, manicures and facials. The salon was not in use at the time of writing this report.

The site visit indicated significant potential to provide training in a number of productive activities associated with a local rural economy. Production of food, ceramics and textiles could be key activities. Only two women work at the centre on a full-time basis. Training for dairy production has been offered, but no production followed. According to the centre manager, funding is needed to cover the cost of supplies, electricity and daily allowances for trainees. Despite these constraints, the manager indicated his current priority was to expand the space for food production in the kitchen.

The findings indicate the local branch of JWQTS lacks effective leadership. Detecting any sense of direction or a prioritization of needs or

**Figure 36** Food production kitchen at JWQTS



Source: Author.

**Figure 37** Pottery room at JWQTS



Source: Author.

**Figure 38** Carpet looms at JWQTS



Source: Author.

fund-raising plan proved challenging. The manager conveyed the impression that all challenges would be addressed if funding were available. With a well-thought-out strategic plan, assets could be used to raise the necessary financing. But lacking a dynamic leadership that responds to community needs and generates community buy-in, the JWQTS centre would still be challenged to maintain a sustainable existence.



### 3. Discussion and analysis

The findings of the second field visit indicate Al-Ash'ary is a compelling site for undertaking rural development activities. The area is endowed with livestock resources that can benefit from a more disciplined value chain. With targeted assistance, opportunities exist for local entrepreneurs to scale up their productive capacities and adopt more value-adding activities. Marketing potential has not been fully exploited. The new white cheese is highly desired and making inroads in product development. Rural women have discussed the potential to harvest wool and hair from the vast livestock resources for processing and new product development.

Agricultural resources are developed, although the effects of water mismanagement and climate change are being felt. Water irrigation could benefit from better management to halt aquifers being depleted. More efficient methods, such as drip irrigation, need to be fully adopted.

Natural resources aside, human potential in Al-Ash'ary appears its best asset. Rural women are playing key leadership roles in local government, civil society organizations and business development. They are involved in the value chain of agricultural and livestock production processes, including downstream activities, such as light manufacturing and marketing. Despite many limitations, women are adding value to their community and contributing to generating higher household income. This bodes well for the sustainability of rural development projects in the community.

In Al-Jawhara, Al-Ash'ary has one of the most dynamic CBOs in the region, characterized by a resourceful and trusted leader and by community buy-in. These qualities were on display at all times. Unlike other CBOs in Al-Ash'ary, Al-Jawhara is known not to focus on serving the needs of a narrow community, clan or sub-clan. It caters to the needs of all community members, regardless of familial

affiliations. The same cannot be said of other organizations.

Al-Jawhara remains constrained, however, by low production capacity, high production costs and quality control. Targeted interventions can address these challenges.

Capacity constraints can be addressed by accelerating the assembly of the food production centre in the CBO's new building space. This will depend on current efforts to raise the necessary funding for construction to be completed as quickly as possible. Moreover, a business plan must be developed indicating what products will be prepared and how they will be marketed. Additional equipment may be required for some product lines. A training plan for equipment use and maintenance must be prepared and implemented to ensure operational excellence.

The equipment list, shown in [table 16](#), indicates that electrical power will be required for almost all equipment. Electricity consumption is expected to be high and may be the highest operating expense. Installing a distributed solar PV power system to supply electricity to the food production centre would be desirable to reduce costs and increase profit. In anticipation of installing solar PV panels, the surface area of the roof has been determined to assess whether it can accommodate the required load. In total, 447 m<sup>2</sup> of surface area is available. Further inquiries should be made to determine the proportion of surface area available for PV installation. Less space is expected due to the presence of water tanks on the roof, as shown in [figure 26](#).

The high cost of irrigation water pumping makes a convincing case for introducing RE as a source of electric power. This would contribute to a significant reduction in the CBO's monthly electricity costs, allowing more funds to be shifted towards capacity-building or more productive activities. Investment in irrigation water efficiency, however, must precede those in RE.



It was stipulated that many homes in Al-Ash'ary have small solar PV systems installed on their rooftops, though CBO members indicated that their households have not experienced any change in their electricity bills. Some have even experienced higher bills. Different interpretations were offered, although no one had followed up with the local power distribution company. A source at the Ministry of Energy and Mineral Resources was requested to diagnose the problem and evaluate residents' claims. According to the ministry source, the systems were donated by the Royal Court of Jordan. The capacity of each household unit was only 40 kW. Lacking awareness about their capability, however, residents felt empowered to buy air conditioning units and electric space heaters. Their electricity consumption may also have been influenced. The outcome was higher demand and consumption, overwhelming any cost advantage of having PV panels.

In a crowded field, the quality of rural food takes on primary importance. So far, the quality of products marketed by Al-Jawhara cannot be ascertained as they are not subject to any food standards. That is true for dairy products as much as for jams, pickled vegetables and herbal recipes. Products must be evaluated. Marketing focus groups can be a starting point.

There is a need to develop new products with compelling value-adding propositions. This puts a premium on training and capacity-building. Investment in new products and product quality affect how they are branded, packaged, marketed and priced. Once these questions are addressed and goals defined, an assessment of the internal capabilities needed to meet these goals can be prepared. Al-Jawhara's members have demonstrated motivation and a willingness to learn, evidenced by their high rate of participation in many value-chain activities, as shown in [tables 14](#) and [tables 15](#). It is also demonstrated by the production of white cheese for the first time following completion of the required training. Sheared sheep wool

may provide unique opportunities for new product development in partnership with other organizations. UNDP in March 2019 signed a three-year, \$2.6 million agreement with the Ministry of Environment to improve the value chain of sheared sheep wool, a logical entry point for Al-Jawhara members.

A differentiation strategy is needed in order to compete in a crowded field. This is particularly pertinent given the Government has agreed to donate land in a prime location in Amman for a permanent bazaar marketing rural products from across Jordan. Rurally produced food as well as handicrafts, ceramics and personal-care products sourced from all regions of the country will be displayed for sale. Quality, branding and packaging will be key to differentiation. Current product packaging and presentations at Al-Jawhara, such as those shown in [figure 32](#) and [figure 36](#), will need to be re-evaluated.

The Badia continues to be threatened by the degradation of rangelands, driven by unsustainable grazing practices. This is further aggravated by climate change. Communities dependent on livestock rearing continue to be threatened by the lack of plant cover and sustainable grazing grounds. The Government is implementing a United Nations-financed rangeland rehabilitation programme in different parts of the Badia but it is a slow process; the area of degraded land is overwhelmingly large and exceeds current capacity for rehabilitation. Regions such as Al-Ash'ary must learn to contend with these facts and develop mechanisms for adaptation and resilience. The Municipality of Al-Ash'ary must build partnerships with other local CBOs to enhance community resilience. CBOs in turn must take climate change risks into account in their strategies and plans. In the future, limits may have to be placed on livestock to protect biodiversity and accommodate the carrying capacity of grazing grounds.

[Table 17](#) shows a SWOT analysis for Al-Jawhara and Al-Ash'ary, based on these findings.

**Table 17** SWOT analysis for Al-Jawhara and Al-Ash'ary

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• CBO well established in the community and enjoys active community buy-in;</li> <li>• CBO has dynamic leader, who is young, resourceful and thinks outside the box;</li> <li>• CBO women members active in entrepreneurial productive activities and have aptitude to learn and expand their businesses;</li> <li>• CBO's farm provides raw materials and income from sale of produce;</li> <li>• CBO owns its own building;</li> <li>• CBO regular participant in bazaars in Amman and has loyal clientele;</li> <li>• CBO has industrial-scale kitchen equipment (donated by the Royal Court).</li> </ul>	<ul style="list-style-type: none"> <li>• Food production capacity remains low (pending completion of new food production centre);</li> <li>• Quality of food products not been tested;</li> <li>• Packaging and branding do not offer competitive differentiation in crowded field;</li> <li>• Funds needed to complete construction of the additional building space for the industrial kitchen not yet available (efforts underway to address this).</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Potential high for RE projects to reduce production costs of electricity, in combination with the region's high solar irradiation profile;</li> <li>• Area rich in natural resources (water, agriculture, livestock);</li> <li>• Potential high for more efficient irrigation methods to reduce water costs;</li> <li>• Proximity to potential markets in Ma'an, Aqaba, Petra (high tourist traffic), and north part of Saudi Arabia (e.g. Tabuk), that have not yet been exploited;</li> <li>• Rural product bazaar in Amman provides potential new permanent marketing outlet;</li> <li>• Market demand for jameed and white cheese in urban centres remains high;</li> <li>• CBO has support of mayor, regional governor and Directorate of Agriculture;</li> <li>• Road access excellent.</li> </ul>	<ul style="list-style-type: none"> <li>• Competition from other rural dairy and food producers;</li> <li>• Grazing land degradation threatens sustainability of livestock rearing, limits growth in livestock numbers and forces dependence on high cost feed;</li> <li>• Agricultural activities vulnerable to changing weather patterns;</li> <li>• Aquifer water depletion not yet under control.</li> </ul>

## B. Batir and Rakin

### 1. Introduction

The Governorate of Al-Karak has seven districts, the largest of which is Qasabat Al-Karak.

Administratively, Batir and Rakin belong to this district. They are not municipalities but each has a local council. The two towns are served by the Municipality of Al-Karak, and are represented on its council. Batir has a population of 4,000 and occupies an area of 50,000 m<sup>2</sup>, while Rakin has a population of 12,000 and covers 150,000 m<sup>2</sup>.

Inhabitants in Batir belong primarily to one tribe, Al-Ma'aytah. In Rakin, the main tribe is Al-Habashneh. Inter-tribal relations are described as friendly.

The municipality serves 14 areas and allocates their budgets based on requests by the local council. Budgets are allocated for road construction and maintenance, street lighting, municipal waste collection and transport, and other basic services. The municipality is where households apply for permits to operate home-based businesses. According to the local council of Batir, the number of women applying is small. The council spent 50,000 JD (\$70,500) on local services in 2018, as stated by the town's representative

Management of the municipality's local development unit has not been stable, and it was not possible to obtain data on poverty rate, unemployment or other meaningful socioeconomic indicators. According to CBO members in Batir and Rakin, women's educational attainment is high, with more than 80-90 per cent of college-age women holding university degrees. The rate has been attributed to proximity of the towns to a university campus and an advantageous government admissions system. In the governorate, unemployment rates are high for males and females. Food, housing and transport expenditures account for 39.9 per cent, 20.3 per cent and 16.8 per cent, respectively, of a household's income<sup>161</sup>.

According to CBO leaders, the primary sources of income include employment in the public sector, which accounts for 60 per cent of total jobs, with the public security services subsector accounting for 30 per cent. Of those with a job, most supplement their income with farming and livestock rearing. Agricultural and livestock productivity has declined over the past few years due to changing rain patterns, land degradation and high feed prices, according to public officials in Batir. The area of cultivated land has shrunk and livestock ownership has declined.

There are 20 large owners in the area, with collectively 10,000 head of livestock. The average rate of ownership is 150-500 head per owner. Many households own 3-5 head of livestock. Milk is used to make dairy products for household needs, with the surplus sold to supplement household income. Many women heads of households run home-based production kitchens, obtaining income from the sale of jameed and ghee.

According to Mr. Kamal Al-Ma'aytah, Batir's representative in the municipality, the town does not have its own bakery and there are no restaurants, barbers, supermarkets or salons. There are two small stores that serve the area, and residents often drive to Rakin and surrounding areas to buy groceries. As a result, the town's population has declined over the past few years. Driven by the low level of services and the area's weak development status, the youth prefer to move to more urbanized centres, where job prospects are better.

Mazen Al-Dhmoor, of the Directorate of Agriculture in Al-Karak, confirmed the region's decline in livestock was a result of reduced rainfall and unsustainable grazing practices that have decimated natural plant cover. Although the directorate manages rangeland rehabilitation programmes, he indicated that there are insufficient resources to rehabilitate grazing land to the extent required. According to the director, rehabilitation programmes take time and are not always successful. Like its sister directorate in Shoback, the Al-Karak directorate offers extension services for farmers and training workshops, although agency officials indicated that the amount of assistance barely meets their needs.

## 2. CBOs in Batir and Rakin

Batir has four CBOs and one agricultural cooperative association, while there is one CBO in Rakin. This report focuses on Jam'iat Shabbat Batir Al-Khayriah and Jam'iat Sayyidat

Rakin Al-Khayriah. The model used for assisting women in both CBOs is almost identical. The CBO activities are detailed as follows.

***Jam'iat Shabbat Batir Al-Khayriah:***

established in 2010, Shabbat Batir has 60 members, all of whom are women, though only 35 were up to date with their dues. The CBO offers training, financing and marketing programmes to help rural women improve their living conditions. Led by Seham Al-Ma'aytah, it has moved out of a rented space to a caravan in her private yard, as shown in [figure 39](#). Having spent 9,000 JD (\$12,700) on rent since it was established, the leadership felt the need to control costs. The services offered by the CBO are outlined below.

**Financing:** the CBO administers a revolving loan programme to finance productive activities for members. Interest-free loans up to 1,000 JD (\$1,400) per applicant are available, with a grace period of two to four months. The CBO directly purchases production inputs to prevent misuse for personal consumption purposes. About 12,000 JD (\$17,000) in loans has been given out to 40 beneficiaries. They are expected to pay back the principal plus a service fee of 50 JD (\$70). Applicants must have a monthly income of less than 350 JD (\$500). Loans have been used to purchase livestock or poultry, produce dairy products (jameed and ghee), cultivate fruit trees and start a beekeeping business. According to Ms. Seham Al-Ma'aytah, the programme has helped raise income levels for most applicants.

**Figure 39** Caravan housing the CBO Jam'iat Shabbat Batir



Source: Author.

**Marketing:** Shabbat Batir offers its members opportunities to market a variety of home-made products at seasonal fairs and bazaars organized in urban centres such as Amman, Ma'an, Jerash and Aqaba. Beneficiaries are frequently those who have obtained CBO loans. A member often accompanies the president to these locations where marketed products include dairy goods, jams, pickled vegetables, herbal recipes and baked products, such as shrak. The CBO does not receive fees for marketing the products. The CBO also engages in networking, connecting members with commercial outlets interested in purchasing home-made products.

According to Ms. Seham Al-Ma'aytah, the CBO-marketed products often sell out at bazaars. Orders are placed by word of mouth, many times by the town's large network of relatives living in Amman and other urban centres. Relatives also spread the word within their urban social networks, which helps generate more sales.

**Providing a training and production centre:**

Shabbat Batir owns a small kitchen, erected next to the caravan headquarters. It provides space for training and for producing dairy goods, namely jameed, ghee and butter, with equipment donated to the CBO in 2014 by the Ministry of Planning and International Cooperation. A one-time 500 JD (\$700) cash donation was made at the time for buying raw milk. The kitchen provides a 100 kg milk fat separator, refrigerator, freezer, dough maker, mixer and an electronic weighing scale, as shown in [figure 40](#) and [figure 41](#).

Raw milk is purchased at a rate of 1 JD/kg (\$1.40). During the high season, the CBO brings in 50 kg of raw milk daily for processing, producing 9 kg of jameed and 9 kg of ghee. Jameed and ghee are sold at a rate of 10 JD/kg (\$14), butter at 7 JD/kg (\$9.9). White cheese is produced to order but less often because it sells for less.

**Figure 40** Milk heating machine at Shabbat Batir



Source: Author.

The CBO hires two women for the season at a monthly rate of 150-200 JD (\$210-280). They are offered training and use of the kitchen in return for producing jameed and ghee from raw milk. The positions are available only to women, who qualify through having a low income. Those hired are not expected to return the following year, ensuring that training opportunities remain available for other members of the community. There is every expectation that trainees will gain valuable experience, qualifying them to start dairy production activities at home. This is often the case.

Ms. Seham Al-Ma'aytah outlined the most common training and production challenges as follows:

- Electricity blackouts cause disruption, particularly during raw milk processing;
- High electricity costs force profits down, with the monthly bill during peak production reaching 70 JD (\$100), compared with 15 JD (\$21) at other times. Ms. Seham Al-Ma'aytah covers the cost herself because the kitchen is on her property;
- Low skill levels among trainees can cause entire batches of milk to be lost;
- Low-quality training can affect product quality;

**Figure 41** Dairy kitchen at Shabbat Batir



Source: Author.

- Trainees often require transport, placing additional logistical and financial demands on the CBO.

According to the president, the most pressing problem is accessing finance to rent or buy a space for the CBO and expand dairy production.

Ms. Fiham Al-Ma'aytah was a Shabbat Batir trainee, making jameed and other products in the kitchen. A mother of three, she was determined to build on her CBO training, and converted her mother-in-law's room into a production kitchen, offering her mother-in-law a room in the family house. She bought three milk separating machines but could not afford a freezer. To keep her butter from spoiling, she coats it with a mix of herbs, as shown in [figure 42](#). She uses a ledger for recordkeeping, as shown in [figure 43](#). Working alone with basic

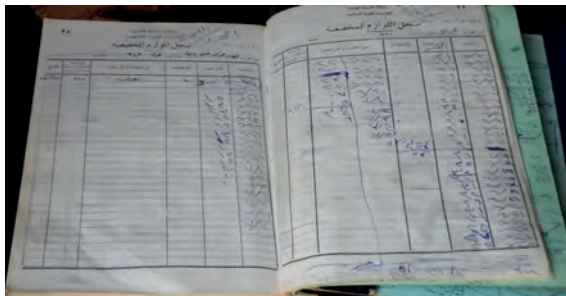
**Figure 42** Butter coated with herbs for better storage in Ms. Fiham Al-Ma'aytah's kitchen



Source: Author.



**Figure 43** Bookkeeping of dairy orders by Ms. Fiham Al-Ma'aytah



Source: Author.

equipment, she is able to process 2,000 kg of raw milk during the high season at a rate of 30 JD/100 kg (\$42/100 kg), bringing in 600 JD (\$850) in revenue. Her higher electricity costs during the production season, which account for a larger portion of her monthly expenses, are a major concern. Her other priority is to remodel the kitchen to improve lighting, division of space and equipment set-up. In addition to making jameed, ghee and butter, Ms. Fiham Al-Ma'aytah tends to her garden, most of which is planted with olive trees. She owned livestock but, without the time to attend to them, her kitchen and the household chores, she sold them. With the income generated from the sale of her products, Ms. Fiham Al-Ma'aytah has supported her three daughters through college and paid back debts accumulated by her husband. Two of her daughters are university graduates, while the third is in her third year at law school.

**Training:** Shabbat Batir holds workshops for all community members regardless of CBO membership. Trainers are affiliated with a number of organizations, including the Ministry of Planning and International Cooperation, the Directorate of Agriculture, the Ministry of Social Development, the Danish Council and the Innovation Centre of Mo'tah University. Training usually covers the production of dairy goods, pickled vegetables and jams, though soap manufacture and copper forming have been offered. [Figure 44](#) shows samples of the products made at the CBO, including jameed, soap and formed copper objects.

**Figure 44** Jameed, soaps and formed copper made at Shabbat Batir



Source: Author.

**Figure 45** Soap-making equipment at Shabbat Batir



Source: Author.

Olive oil has been used to produce soap scented with wild herbs, though manufacture has been abandoned due to marketing challenges and problems selling the soap in large volumes. Ms. Seham Al-Ma'aytah indicated the CBO is determined to re-start manufacture, having learned from the failure of earlier efforts. The Royal Society for the Conservation of Nature is to offer production and marketing assistance. [Figure 45](#) shows the tools used for soap-making at the centre.

Batir's three other CBOs and the agricultural cooperative association do not include improving the socioeconomic conditions of women within their mandate.

***Jam'iat Sayyidat Rakin Al-Khayriah:*** established in 1991, Sayyidat Rakin has 60 members, all of whom are women. It has had at least twice that number but, problematically, once members avail themselves of the CBO's revolving loan programme, they will likely stop paying their membership dues.

The CBO rents a space at a monthly rate of 80 JD (\$110). Like Shabbat Batir, Sayyidat Rakin seeks to improve socioeconomic conditions for low-income women in the community, providing finance, capacity-building workshops, food production training and marketing assistance.

The loan programme is similar to the one offered by Shabbat Batir. Unlike other programmes, however, Sayyidat Rakin allows loans to be used for college tuition, schooling and home renovations. The amount given per applicant is 700-1000 JD (\$1,000-1,400). Most loans are used to assist in productive activities, such as installing drip irrigation systems, cultivating vineyards, growing herbal and medicinal plants, beekeeping and buying livestock. Sayyidat Rakin participates in food shows and bazaars, where members' food products are marketed and sold. The CBO does not charge fees for this service, with all sale proceeds going to producers.

Complementing the loan scheme, capacity-building programmes in beekeeping, gardening, rearing livestock and poultry, and food production (dairy goods, jams, pickled vegetables) are also offered. With financial support from the Jordanian Hashemite Fund for Human Development, the CBO helped 12 households build storage tanks to collect rainwater for irrigating their home gardens. Water pumps were also provided. This creates a sense of food security for the household.

Sayyidat Rakin offers training in literacy, professional video production and computer use. It owns video production equipment that is available for rent. Use of the equipment by CBO members at social gatherings provides them with an opportunity to earn income, however modest. The CBO is unique in raising awareness about the political participation of women in elections according to its president Wisal Al-Rahayfa and treasurer Sara Al-Rahayfa. Ms. Sara Al-Rahayfa's background as a former municipal council member has enabled her to use the CBO's platform to champion women's political rights.

Sayyidat Rakin also owns a basic kitchen, shown in [figure 46](#), for producing jameed, ghee and butter. At the height of the milk production season, the CBO hires two to three low-income women in temporary positions for training and production. [figure 47](#) shows jameed and ghee produced at the CBO, awaiting customer pickup. The dairy training programme is identical to that offered by Shabbat Batir.

**Figure 46** Dairy kitchen at Sayyidat Rakin



Source: Author.

**Figure 47** Jameed and ghee produced by Sayyidat Rakin



Source: Author.

**Figure 48** Dairy-making room at Ms. Sameera's house



Source: Author.

Sameera Salem Al-Ja'afrah took part in the production workshops organized by Sayyidat Rakin and later converted part of the first floor of her house into a production kitchen, as shown in figure 48. She buys raw milk at the preferential price of 0.8 JD/kg (\$1.13/kg) from male relatives who own 5,000 head of livestock. Over the 2019 spring season, Ms. Al-Ja'afrah processed 2,200 kg of raw milk, producing 150 kg of jameed and 98 kg of ghee. Secondary products have included butter and white cheese. The produce is sold to relatives, and through their social networks, and at bazaars in Amman, Jerash and Irbid, and other urban centres. Her income, combined with her husband's pension, supports a family of five.

The CBO displayed a higher level of political awareness than encountered elsewhere. The leadership spoke of the impediments affecting women's access to political office. Among the barriers, they said, was a lack of economic means to support women's candidacies and election campaigns. Male dominance in a rural community is believed to play a role, too, where the prospect of being represented by a woman in the municipal council, governor council or parliament makes some uneasy. A third barrier was women being unaware of laws, particularly those relating to political rights and elections.

### 3. Discussion and analysis

Rural women in Batir and Rakin are fully invested in the value chain of agricultural and

livestock production processes. Making the most of what they have – as demonstrated by Ms. Fiham and Ms. Sameera – they have generated additional income for their households by being entrepreneurs, mothers and housekeepers all at once.

Shabbat Batir and Sayyidat Rakin are pillars within their communities, providing much-needed finance, training and marketing assistance to members, all of whom are rural women. Endowed with livestock resources, Batir and Rakin have been able to source raw milk locally for the production of jameed, ghee, butter and cheese. Other entrepreneurs are engaged in food production enterprises but they, too, are hampered by capacity and financial constraints.

Electricity costs are higher during the production season and the ability to expand volumes is constrained by the capacity of machines and kitchen space, and the lack of finance. The capability of Shabbat Batir and Sayyidat Rakin to train a greater number of women is also limited by the lack of resources. Innovative thinking on how to reach new markets and customers is missing.

Like most dairy production enterprises, the operations in Batir and Rakin could benefit significantly from RE to lower production costs. The economic feasibility to increase production is demonstrated by the lack of product inventory. A marketing strategy targeting potential customers, such as institutional buyers, has not been explored but could boost orders and revenues.

There are logistical challenges. The CBOs do not have permanent headquarters. The roof of a caravan, where Shabbat Batir is based, would not be appropriate for solar PV panels. Both are looking to change their location if and when funding is available. Further, the scale of food production is not sufficient to justify a RE project. Or put another way, it would be a better use of

resources to undertake such a project in a centrally located, larger-sized kitchen that can contribute to increased production and a diversified line of products, while training and employing many more members of both communities all year round.

Well-established in their respective areas, the CBOs play a key enabling role. Both are able to deliver programmatic assistance to women but are challenged to expand the scope of that assistance. The lack of a steady or expanding source of income is one hindrance. And, while leaders are dedicated to serving their communities and their management is observed to be robust, the skills needed to mobilize more resources, build enduring partnerships with outsiders, and develop new approaches are absent. The leaders of Shabbat Batir and Sayyidat Rakin rely on tried

and tested methods but given the complexity of the challenges, from raising funding and new homes for their organizations, to expanding the scope and scale of opportunities for their members, it is necessary to explore new strategies and learn from the experience of CBOs in other parts of Jordan.

The most popular programme at both CBOs is the revolving loan programme. Indeed, some members stop paying their dues once they avail themselves of a loan. Although this is a concern, it remains limited and should not raise serious doubts about long-term commitment in future CBO activities, such as those proposed under this project.

Based on these findings, a SWOT analysis for Shabbat Batir and Sayyidat Rakin is shown in [table 18](#).

**Table 18** SWOT analysis for Shabbat Batir and Sayyidat Rakin

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• CBOs well established in their communities and well managed;</li> <li>• CBO members active in entrepreneurial productive activities and interested in expanding their businesses;</li> <li>• Product marketing by CBOs and community members successful;</li> <li>• CBOs regular participants in bazaars in urban centres and always sell out.</li> </ul>	<ul style="list-style-type: none"> <li>• Dairy production capacity remains low due to limited machine capacity and kitchen space;</li> <li>• Product line undiversified, with production limited mostly to jameed and ghee;</li> <li>• Leadership at CBOs not adequate for the challenges;</li> <li>• Funds needed to relocate CBOs to their own spaces are lacking.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Potential high for RE projects to reduce production costs of electricity;</li> <li>• Area rich in livestock resources;</li> <li>• Rural product bazaar in Amman provides potential new permanent marketing outlet;</li> <li>• Market demand for jameed, ghee and white cheese in urban centres remains high;</li> <li>• Sales to previously unserved customers presents possible additional revenue streams;</li> <li>• CBOs have support of municipal officials and regional Directorate of Agriculture;</li> <li>• Road access excellent.</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive grazing and land degradation threaten sustainability of livestock rearing, limit growth in livestock numbers and force dependence on high-cost feed;</li> <li>• Agricultural activities vulnerable to varying and reduced rainfall;</li> <li>• Rural-to-urban migration from Batir.</li> </ul>



## 9. Capacity-building Assessment



## 9. Capacity-building Assessment

Based on the discussion and SWOT analyses, a summary of capacity-building needs for the CBOs in Al-Ash'ary and in Batir and Rakin is shown in [table 19](#).

One observation not addressed is the lack of standardized hygiene and food safety practices in home-based production kitchens; for example, the use of gloves or masks was not evident. For the most part, home-based food production is part of the informal economy. Small, home-based business

owners avoid having to apply for municipal permits to minimize registration fees, which are considered high. But without undergoing a permitting process, they are not recognized by public institutions, and water and food safety inspections are not conducted by the relevant agency or authority. CBOs must recognize the need for certification by the Jordan Food and Drug Administration (JFDA). This will require their production facilities to apply for the required permits and successfully conclude food safety inspections.

**Table 19** Projects and capacity-building needs, Al-Ash'ary and Batir and Rakin

Area	Category	Projects	Capacity-building activities
Al-Ash'ary	Operations: food production	Procurement of food production equipment	On-job training: operation of food production equipment; maintenance of food production equipment.
	Product development strategy		On-job management training: managing existing product lines – planning and scheduling; developing new product lines.
	Energy strategy	Procurement of solar PV system	On-job training: operation of solar PV system; maintenance of solar PV system.
	Government regulations and standards		Technical assistance and on-the-job training: applying for a municipal permit; establishing hygiene and food safety practices; applying for inspection certificate from JFDA.
	Marketing strategy		Technical assistance and on-the-job training: expanding current market segments; identifying and targeting unserved customer segments (institutional buyers); product quality – meeting customer expectations; branding; packaging; pricing; market channels; social media strategies.
	Irrigation strategy	Procurement of drip irrigation system	On-the-job training: operation of drip irrigation system; maintenance of drip irrigation system.
Batir and Rakin	Marketing strategy		Technical assistance and on-the-job training: expanding current market segments; identifying and targeting unserved customer segments (institutional buyers); product quality – meeting customer expectations; branding; packaging; pricing; market channels; social media strategies.



## 10. Conclusions and Recommendations

## 10. Conclusions and Recommendations

Based on the findings of the site visits and SWOT analysis, Al-Ash'ary presents a compelling site for undertaking project activities. Al-Jawhara was the most dynamic CBO visited in the region. Selection is based on the following:

- Al-Ash'ary is less developed than other areas and more rural, making it the most vulnerable. Although it has a high poverty rate, women demonstrated an ability to generate value and additional income from limited entrepreneurial activities. It has the most to benefit from RE, entrepreneurial development and rural development investment;
- The Al-Jawhara CBO is well-reputed locally and regionally, enjoys community buy-in and support, and has a resourceful woman president who has demonstrated qualities that would serve the project well. This also bodes well for the sustainability of projects anchored by the CBO;
- Entrepreneurial productive activities have been identified to be at a scale that positions them to benefit significantly from EE and RE systems, with the potential to lower production costs significantly;
- From an entrepreneurial perspective, there is potential to increase the capacity of current productive activities and develop new value-adding products;

- Weaknesses and threats are not structurally challenging and can be overcome by targeted interventions;
- Local governing institutions in Al-Ash'ary, Ma'an and Shoback have pledged their support for donor-organized development projects, and are willing to participate.

Batir and Rakin present a compelling site for undertaking smaller-scale project activities due to their smaller productive activities and capacity constraints within their facilities, some of which are rented. The introduction of RE systems to individual community members engaged in home-based food production is worth considering after further verification of the size of their activities.

The more practical intervention would be to equip the Jam'iat Shabbat Batir Al-Khayriah-owned caravan with a suitable RE system supported by EE measures. Homes carrying out food production activities would be similarly considered. It is not recommended that RE systems and other equipment be provided to rented buildings, to ensure the systems remain for the parties for whom they were intended. Project interventions will also focus on capacity-building to enhance the marketing abilities of the community by expanding the urban client base and targeting potential customers, with a focus on institutional buyers. It is also proposed to build capability in digital marketing, such as social media for advertising and selling products.

# Annex

**Table A.1** List of interviewees during site visits to four rural areas

Name	Position	Organization
<b>Interviewees from Al-Ash'ary, Ma'an</b>		
Ahmad Al-Mara'yah	Mayor	Municipality of Al-Ash'ary
Jamileh Al-Jazi	President	Jam'iat Al-Jawhara Al-Khayriah
Fatima Al-Mara'yah	President	Jam'iat Thatt Al-Nitaqayn
Khaled Hisham	Director	JWQTS
Maher Dhmoor	Manager	Ministry of Energy and Mineral Resources
Saleh Al-Jazi	President	Al-Jadwa Agricultural Cooperative Association
Ahmad Al-Rafay'ah	Director	Directorate of Agriculture, Shoback
Majid Al-Rifa'i	District Deputy Governor	Executive Council of Governorate
Tharafeh, Umm A'affash, Umm A'inad	Members	Jam'iat Al-Jawhara Al-Khayriah
<b>Interviewees from Batir and Rakin, Al-Karak</b>		
Kamal Al-Ma'aytah	Representative, Batir	Municipality of Al-Karak
Seham Al-Ma'aytah	President	Jam'iat Shabbat Batir Al-Khayriah
Wisal Al-Rahayfah	President	Jam'iat Sayyidat Rakin Al-Khayriah
Sara Al-Rahayfah	Treasurer	Jam'iat Sayyidat Rakin Al-Khayriah
Fiham Al-Ma'aytah	Member	Jam'iat Shabbat Batir Al-Khayriah
Sameera Salem Al-Ja'afrah	Member	Jam'iat Sayyidat Rakin Al-Khayriah
Mazen Al-Dhmoor	Director	Directorate of Agriculture, Al-Karak
<b>Interviewees from Bal'ama, Mafrq</b>		
Najah Al-Faraj (Umm Zain)	President	Jam'iat al-Irtiqat Al-Khayriah
<b>Interviewees from Deir Youssef, Irbid</b>		
Rabee' Al-Omari	President	Jam'iat Deir Youssef Al-Khayriah

# Endnotes

1. Jordan, Department of Statistics, 2018a.
2. Jordan, Department of Statistics and ICF, 2018.
3. Jordan, Department of Statistics, 2015.
4. Jordan, Department of Statistics, 2018b.
5. Jordan, Higher Population Council, 2017.
6. Jordan, Economic Policy Council, 2018.
7. United Nations, 2017.
8. Jordan, Economic and Social Council, 2018.
9. Jordan, Economic and Social Council, 2018.
10. Jordan, Economic Policy Council, 2018.
11. Central Bank of Jordan, 2018.
12. United Nations, 2017.
13. Jordan, Ministry of Planning and International Cooperation, 2015.
14. Jordan, Economic and Social Council, 2018.
15. Jordan, Economic and Social Council, 2018.
16. القدر، 2019.
17. World Bank – Systematic Country Diagnostic, February 2016, page 5. Cited in United Nations Country Team Common Country Assessment of the Hashemite Kingdom of Jordan, February 12, 2017.
18. Jordan, Department of Statistics, 2018b.
19. Jordan, Economic and Social Council, 2018.
20. Central Bank of Jordan, 2017.
21. Central Bank of Jordan, 2018.
22. Central Bank of Jordan, 2017.
23. Jordan, Department of Statistics, 2018c.
24. World Food Programme, 2019.
25. Jordan, Department of Statistics, 2017a.
26. Jordan, Economic and Social Council, 2018.
27. Jordan, Department of Statistics, 2017a.
28. Jordan, Economic and Social Council, 2018.
29. Jordan, Department of Statistics, 2017a.
30. Jordan, Economic and Social Council, 2018.
31. Jordan, Economic and Social Council, 2019a.
32. Ibid.
33. United Nations Development Programme, 2018.
34. Ibid.
35. Ibid.
36. World Economic Forum, 2018.
37. Jordan, Ministry of Higher Education and Scientific Research, 2015.
38. United Nations, 2017.
39. Jordan, Department of Statistics, 2018b.
40. UNICEF, undated.
41. United Nations, 2017.
42. Jordan, Ministry of Higher Education and Scientific Research, 2015.
43. Jordan, Department of Statistics, 2018b.
44. Jordan, Department of Statistics, 2019a.
45. Jordan, Department of Statistics, 2018b.
46. Jordan, Ministry of Planning and International Cooperation, 2011.
47. Ibid.
48. Ibid.
49. Ibid.
50. Jordan, Department of Statistics, 2012.
51. Jordan, Department of Statistics, 2019b.
52. Jordan, Economic Policy Council, 2018.
53. Jordan, Department of Statistics, 2012.
54. Jordan, Department of Statistics, 2012.
55. United Nations Development Programme; Jordan, Department of Statistics; Jordan, Ministry of Planning and International Cooperation, 2012.
56. United Nations, 2017.
57. القدر، 2019 ب.
58. The Jordan Times, 2019a.
59. القدر، 2019 ب.
60. The Jordan Times, 2019b.
61. The Jordan Times, 2019 a; ب، 2019 القدر.
62. Mahmoud, Figueroa and Breisinger, 2018.
63. Ibid.
64. Jordan, Department of Statistics, 2018b.
65. United Nations Development Programme, 2013.
66. Ibid.
67. Jordan, Ministry of Higher Education and Scientific Research, 2015.
68. International Labour Office, 2018.
69. United Nations Development Programme (2013). The Informal Sector in the Jordanian Economy. p.34-35. Cited by UN Women, 2018.
70. Jordan, Ministry of Planning and International Cooperation, 2016a.
71. The Jordan Times, 2018.
72. Jordan, Economic and Social Council, 2019b.
73. United Nations, 2017.
74. Jordan, Ministry of Water and Irrigation, 2017.
75. Jordan, Ministry of Environment, and UNDP, 2017.
76. Jordan, Ministry of Water and Irrigation, 2018.
77. Jordan, Ministry of Environment, and UNDP, 2016.
78. Jordan, Ministry of Environment, 2015a.
79. United Nations Development Programme, 2013.
80. Jordan, Ministry of Environment, and UNDP, 2016.
81. Jordan, Ministry of Environment, and UNDP, 2016.
82. Mahmoud, Figueroa and Breisinger, 2018.
83. World Food Programme, 2019.
84. European Commission, Assessment of the Agricultural Sector in Jordan, volume 1, (April 2012), p.17. Cited in UN Women, 2018, p.1.
85. World Food Programme, 2019.
86. Ibid.
87. Jordan, Ministry of Agriculture, 2016.
88. Jordan, Department of Statistics, 2018d.
89. Jordan, Ministry of Agriculture, 2013.
90. Jordan, Ministry of Agriculture, 2013.
91. Jordan, Ministry of Environment, 2015b.
92. United States Agency for International Development, undated a.
93. Mahmoud, Figueroa and Breisinger, 2018.
94. Jordan, Department of Statistics, 2017c.
95. United States Agency for International



- Development, undated b.
96. KNOEMA, 2018.
97. Addison, 2014.
98. Arinat, 2016.
99. Chatelard, 2011.
100. Arinat, 2016.
101. Chatelard, 2011.
102. Qartaj, 2015.
103. United States Agency for International Development, undated c.
104. Jordan Trail, 2017.
105. National Electric Power Company, 2017.
106. Jordan, Economic and Social Council, 2018.
107. National Electric Power Company, 2017.
108. Jordan, Economic Policy Council, 2018.
109. Government of Jordan, 2019.
110. Jordan, Department of Statistics, 2018e.
111. Wheeling schemes allow solar PV systems owners to export electricity to the grid, while matching the self-generated electricity with the electricity they consume from the grid. In a wheeling scheme, the solar PV system is located off-site.
112. Jordan, Economic and Social Council, 2018.
113. The Jordan Times, 2019c.
114. وزارة الطاقة والثروة المعدنية، 2020 أ.
115. وزارة الطاقة والثروة المعدنية، 2020 ب.
116. National Electric Power Company, 2018.
117. الغد، 2019 ج.
118. Ibid.
119. Energy and Minerals Regulatory Commission, 2018.
120. National Electric Power Company, 2018.
121. Energypedia, 2018.
122. Atamanov, Jellema and Serajuddin, 2017.
123. Jordan, Department of Statistics, 2017d.
124. Atamanov, Jellema and Serajuddin, 2017.
125. National Electric Power Company, 2018.
126. Enefit (undated a).
127. National Electric Power Company, 2018.
128. Enefit (undated b).
129. Jordan, Ministry of Environment, and UNDP, 2017.
130. Jordan, Economic and Social Council, 2018.
131. Organization for Economic Co-operation and Development, 2016.
132. Ibid.
133. Jordan, Ministry of Energy and Mineral Resources, 2018.
134. Almasri, Alshamali, and Chevillard, 2019.
135. Zawati, 2019.
136. Zafar, 2019.
137. Jordan, Ministry of Energy and Mineral Resources, 2018.
138. The Jordan Times, 2019 d.
139. National Energy Research Center, 2019.
140. Ibid.
141. German Jordanian University, 2018.
142. National Electric Power Company, 2018.
143. ESCWA, 2018.
144. Ibid.
145. Brussels Invest & Export, 2015.
146. National Electric Power Company, 2018.
147. Jordan, Department of Statistics, 2018b.
148. Jordan, Ministry of Energy and Mineral Resources, 2018.
149. الغد (2019).
150. Almasri, Alshamali and Chevillard, 2019.
151. Mediterranean Association of National Agencies for Energy Management, 2019.
152. Jordan, Ministry of Water and Irrigation, 2016.
153. Al-Smairan, Alayyash and Shatnawi, 2019.
154. The Jordan Times, 2019e.
155. EDAMA, 2019.
156. Jordan, Ministry of Agriculture, 2019.
157. Jordan, Ministry of Agriculture, 2019.
158. Khreis, 2019.
159. Jordan, Ministry of Planning and International Cooperation, 2016.
160. Jordan, Department of Statistics, 2018b.
161. Jordan, Department of Statistics, 2019c.
162. Jordan, Ministry of Planning and International Development, 2017a.
163. Jordan, Ministry of Planning and International Development, 2017b.

# Bibliography

- Addison, Erin (2014). "The handicrafts market in Jordan", for UNESCO empowerment of rural women projects, 2014.
- Almasri, Reem, Abdallah Alshamali, and Naomi Chevillard (2019). "Decentralized solar in Jordan" (EDAMA, Friedrich-Ebert-Stiftung and SolarPower Europe, 2019). Available at [https://www.fes-mena.org/fileadmin/user\\_upload/pdf-files/publications/Decentralizd\\_Solar\\_in\\_Jordan-min.pdf](https://www.fes-mena.org/fileadmin/user_upload/pdf-files/publications/Decentralizd_Solar_in_Jordan-min.pdf).
- Al-Smairan, Mohammad, Saad Alayyash, and Rania Shatnawi (2019). "Socio-economic effects of solar home systems in Jordan Badia: a case study in Rawthat Albandan village", *International Journal of Sustainable Development and Planning*, vol. 14, No. 3, September 2019. Available at [https://www.researchgate.net/publication/335777575\\_Socio-economic\\_effects\\_of\\_solar\\_home\\_systems\\_in\\_Jordan\\_Badia\\_-\\_A\\_case\\_study\\_in\\_Rawthat\\_Al-Bandan\\_village](https://www.researchgate.net/publication/335777575_Socio-economic_effects_of_solar_home_systems_in_Jordan_Badia_-_A_case_study_in_Rawthat_Al-Bandan_village).
- Arinat, Mahmoud (2016). "The status of handicrafts in Jordan: challenges and prospects". *Dirasat: Human and Social Sciences*, vol. 43, supplement 5 (2016). Available at <https://dirasat.ju.edu.jo/HSS/Article/FullText/10020?volume=43&issue=1>.
- Atamanov, Aziz, Jon R. Jellema, and Umar Serajuddin (2017). "Energy subsidies reform in Jordan: welfare implications of different scenarios," in *The Quest for Subsidy Reforms in the Middle East and North Africa Region*, Paolo Verme and Abdlekrim Araar, eds (Springer, 2017). Available at [https://www.researchgate.net/publication/316312427\\_Energy\\_Subsidies\\_Reform\\_in\\_Jordan\\_Welfare\\_Implications\\_of\\_Different\\_Scenarios](https://www.researchgate.net/publication/316312427_Energy_Subsidies_Reform_in_Jordan_Welfare_Implications_of_Different_Scenarios).
- Brussels Invest & Export (2015). "The energy sector in Jordan", 2015. Available at <https://silo.tips/download/the-energy-sector-in-jordan>.
- Central Bank of Jordan (2017). *Annual Report 2017* (Amman, Jordan). Available at <http://www.cbj.gov.jo/EchoBusV3.0/SystemAssets/5c395f60-ea7f-4da5-8897-d046f33b75f4.pdf>.
- Central Bank of Jordan (2018). *Annual Report 2018* (Amman, Jordan). Available at <http://www.cbj.gov.jo/EchoBusV3.0/SystemAssets/8c90c6af-fa44-4aa7-b2ce-2ec90cada8cc.pdf>.
- Chatelard, G. (2011). "An assessment of handicraft design in Jordan: situation analysis and recommendations for stimulating local creativity" (Amman 2011).
- EDAMA (2019). "Recommendations for energy sector strategy". Available at <https://edama.jo/wp-content/uploads/2019/11/1-ورقة-توصيات-حول-استراتيجية-قطاع-الطاقة.pdf>.
- Enefit (undated a). "Oil shale fired power plant". Available at <https://www.enefit.jo/en/project/power-plant>.
- Enefit (undated b). "Shale oil production plant". Available at <https://www.enefit.jo/en/project/production-plant>.
- Energy and Minerals Regulatory Commission (2018). *Annual Report, 2018*. Amman. Available at [http://www.emrc.gov.jo/echobusv3.0/systemassets/annual\\_rep2018-1.pdf](http://www.emrc.gov.jo/echobusv3.0/systemassets/annual_rep2018-1.pdf).
- Energypedia (2018). "Jordan energy situation: electricity prices", 10 July 2018. Available at [https://energypedia.info/wiki/Jordan\\_Energy\\_Situation#Introduction](https://energypedia.info/wiki/Jordan_Energy_Situation#Introduction).
- German Jordanian University (2018). "The opening of biogas production in local communities in Jordan", *GJU News*, 14 May 2018. Available at <http://www.gju.edu.jo/news/opening-biogas-production-local-communities-jordan>-8801.
- Government of Jordan (2019). *On the Path to Renaissance* (Amman 2019). Available at <https://www.your.gov.jo/Government-Priorities-.pdf>.
- International Labour Office (2018). "Jordan: young women's employment and empowerment in the rural economy – country brief" (Geneva 2018). Available at [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/documents/publication/wcms\\_622766.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_622766.pdf).
- Jordan, Department of Statistics (2012). *State of the Poverty Report in Jordan 2012* (Amman). Available at [http://www.dos.gov.jo/dos\\_home\\_a/main/Analasis\\_Reports/poverty\\_rep/poverty\\_report\\_2010.pdf](http://www.dos.gov.jo/dos_home_a/main/Analasis_Reports/poverty_rep/poverty_report_2010.pdf).
- Jordan, Department of Statistics (2015). *General Population and Housing Census 2015*. Available at [http://dosweb.dos.gov.jo/wp-content/uploads/2017/08/Census2015\\_Eng.pdf](http://dosweb.dos.gov.jo/wp-content/uploads/2017/08/Census2015_Eng.pdf).
- Jordan, Department of Statistics (2017a). "Employment in Establishments", Data Bank. Available at <http://dosweb.dos.gov.jo/labourforce/employment-in-establishment/tables-of-employment-in-establishment/> (accessed on 20 April 2019).
- Jordan, Department of Statistics (2017b). *Jordan Statistical Yearbook 2017*, Amman. Available at <http://dosweb.dos.gov.jo/databank/Yearbook2017/YearBook2017.pdf>.
- Jordan, Department of Statistics (2017c). *Agricultural Statistical Bulletin 2017* (Amman). Available at [http://dosweb.dos.gov.jo/wp-content/uploads/2017/08/agr\\_strat2017.pdf](http://dosweb.dos.gov.jo/wp-content/uploads/2017/08/agr_strat2017.pdf).
- Jordan, Department of Statistics (2017d). "Household expenditures and income survey 2017–2018". Available at [http://dosweb.dos.gov.jo/ar/economic/expenditures-income/expend\\_tables/](http://dosweb.dos.gov.jo/ar/economic/expenditures-income/expend_tables/).



- Jordan, Ministry of Planning and International Cooperation (2016). *Executive Development Programme 2016-2018* (Amman). Available at <http://www.mop.gov.jo/EchoBusV3.0/SystemAssets/pdf/MOP-pdf/20%البرنامج%20%2018-202016%20%للأعوام%20%التنفيذي%20%التنموي.pdf>.
- Jordan, Ministry of Planning and International Cooperation (2018). "Jordan response plan for the Syria crisis 2018-2020: executive summary (Amman). Available at <http://www.jrp.gov.jo/Files/JRPExecutiveSummaryFinal.pdf>.
- Jordan, Ministry of Planning and International Development (2016). "Programmes of the Directorate of local development and productivity enhancement". Available at <http://www.mop.gov.jo/EchoBusV3.0/SystemAssets/pdf/LDEP/20%الانتاجية%20%وتعزيز%20%المحلية%20%التنمية%20%مديرية.pdf> (accessed on September 30 2019).
- Jordan, Ministry of Planning and International Development (2017a). *Ma'an Governorate Development Programme 2017-2019*, Amman. Available at <https://mop.gov.jo/EchoBusV3.0/SystemAssets/pdf/gov%20map2017-2019.pdf>.  
برنامج تنمية محافظة معان
- Jordan, Ministry of Planning and International Development (2017b). *Karak Governorate Development Programme 2017-2019*, Amman. Available at <http://mop.gov.jo/EchoBusV3.0/SystemAssets/pdf/gov%20map/2017-3-2030%الكرك.pdf>.
- Jordan, Ministry of Water and Irrigation (2016). "Energy efficiency and renewable energy in the water sector policy Amman, available at <http://www.mwi.gov.jo/sites/en-us/Documents/Policies/Energy%20Efficiency%20and%20Renewable%20Energy%20Policy%203.3.2016.pdf>.
- Jordan, Ministry of Water and Irrigation (2017). "Jordan water sector – facts and figures 2017 (Amman). Available at <http://www.mwi.gov.jo/sites/en-us/Hot%20Issues/Jordan%20Water%20Sector%20Facts%20and%20Figures%202017.PDF>.
- Jordan, Ministry of Water and Irrigation (2018). "Water sector policy for drought management 2018" (Amman). Available at <http://www.mwi.gov.jo/sites/en-us/Hot%20Issues/National%20Drought%20Policy.pdf>.
- The Jordan Times (2018). "Razzaz vows to boost decentralisation councils' role", 31 July 2018. Available at <http://www.jordantimes.com/news/local/razzaz-vows-boost-decentralisation-councils'-role>.
- The Jordan Times (2019a). "Razzaz launches EU-funded social protection, integration programme", 25 April 2019. Available at <https://www.jordantimes.com/news/local/razzaz-launches-eu-funded-social-protection-integration-programme>.
- The Jordan Times (2019b). "Jordan launches complementary national welfare support programme 'Takaful'", 31 May 2019. Available at [http://www.jordantimes.com/news/local/jordan-launches-complementary-national-welfare-support-programme-%E2%80%98takaful%E2%80%99?fbclid=IwAR1IPTN8\\_ouourXPelQ8fIH3oRD4\\_0zrlCglomms0tr9UxoV9ld3zKY4kQI](http://www.jordantimes.com/news/local/jordan-launches-complementary-national-welfare-support-programme-%E2%80%98takaful%E2%80%99?fbclid=IwAR1IPTN8_ouourXPelQ8fIH3oRD4_0zrlCglomms0tr9UxoV9ld3zKY4kQI).
- The Jordan Times (2019c). "Zawati reaffirms freeze on renewable energy projects 'temporary'", 30 January 2019. Available at <http://www.jordantimes.com/news/local/zawati-reaffirms-freeze-renewable-energy-projects-'temporary'>.
- The Jordan Times (2019d). "Electricity generation project inaugurated at Ghabawi landfill", 2 July 2019. Available at <http://www.jordantimes.com/news/local/electricity-generation-project-inaugurated-ghabawi-landfill>.
- The Jordan Times (2019e). "Investment in renewable energy to exceed \$4b mark", 22 April 2019. Available at <https://www.jordantimes.com/news/local/'investment-renewable-energy-exceed-4b-mark'>.
- Jordan Trail (2017). "What is the Jordan Trail?". Available at <https://jordantrail.org/about/>.
- Khreis (2019). "Spending 20 million dinars on productivity-enhancing programs", *Addustour*, 1 December 2019. Available at <https://www.addustour.com/articles/1117635-خريس-انفاق-20-مليون-دينار-على-برامج-تعزيز-الانتاجية>.
- KNOEMA (2018). "Jordan – Contribution of travel and tourism to GDP as a share of GDP", World Data Atlas. Available at <https://knoema.com/atlas/Jordan/topics/Tourism/Travel-and-Tourism-Total-Contribution-to-GDP/Contribution-of-travel-and-tourism-to-GDP-percent-of-GDP?origin=ar.knoema.com> (accessed on August 20, 2019).
- Mahmoud, Mai, Jose Luis Figueroa and Clemens Breisinger (2018). "The role of agriculture and agro-processing for development in Jordan", International Food Policy Research Institute, Working Paper 05 (January 2018). Available at [https://www.researchgate.net/publication/324983680\\_The\\_Role\\_of\\_Agriculture\\_and\\_Agro-processing\\_for\\_Development\\_in\\_Jordan](https://www.researchgate.net/publication/324983680_The_Role_of_Agriculture_and_Agro-processing_for_Development_in_Jordan).
- Mediterranean Association of National Agencies for Energy Management (2019). "300 Solar Water Pumps for Jordanian Farmers", News, 24 May 2019. Available at <https://www.Medener.Org/En/300-Solar-Water-Pumps-For-Jordanian-Farmers/>.
- National Electric Power Company (2017). *Annual Report 2017* (Amman). Available at [http://www.nepco.com.jo/store/docs/web/2017\\_ar.pdf](http://www.nepco.com.jo/store/docs/web/2017_ar.pdf).
- National Electric Power Company (2018). *Annual Report 2018*. Amman, Available at [http://www.nepco.com.jo/store/docs/web/2018\\_en.pdf](http://www.nepco.com.jo/store/docs/web/2018_en.pdf).
- National Energy Research Centre (2019). "Bio Energy Projects". Available at <http://www.nerc.gov.jo/Pages/viewpage.aspx?pageID=244> (accessed on 15 September 2019).
- Organization for Economic Co-operation and Development (2016). *OECD Clean Energy Investment Policy Review of Jordan*, Green Finance and Investment, Paris. Available at [https://read.oecd-ilibrary.org/finance-and-investment/oecd-clean-energy-investment-policy-review-of-jordan\\_9789264266551-en#page45](https://read.oecd-ilibrary.org/finance-and-investment/oecd-clean-energy-investment-policy-review-of-jordan_9789264266551-en#page45).
- Qartaj (2015). "Handicrafts in the Tunisian economy", 25 November 2017. Available at <https://www.qartaj.com/blog/>

- crafts-culture-handmade-expertise-tunisia/.
- UN Women (2018). *Women's Participation in the Agricultural Sector, Rural Institutions and Community Life* (Amman 2018). Available at [https://reliefweb.int/sites/reliefweb.int/files/resources/reach\\_jor\\_unw\\_agriculture\\_report\\_final\\_unw\\_format.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/reach_jor_unw_agriculture_report_final_unw_format.pdf).
- UNICEF (undated). "Education: inclusive and quality education for every child". Available at <https://www.unicef.org/jordan/education>.
- United Nations (2017). *The United Nations Country Team Common Country Assessment of the Hashemite Kingdom of Jordan*. Available at <https://jordan.un.org/sites/default/files/2020-04/CCA-%20Feb122017.pdf>.
- United Nations Development Programme (2013). *Jordan Poverty Reduction Strategy: Final Report – 2013* (Amman). Available at [http://www.jo.undp.org/content/jordan/en/home/library/poverty/publication\\_2.html](http://www.jo.undp.org/content/jordan/en/home/library/poverty/publication_2.html).
- United Nations Development Programme (2018). "Human Development Indices and Indicators: 2018 Statistical Update. Briefing note for countries on the 2018 Statistical Update – Jordan". Available at <http://hdr.undp.org/sites/default/files/Country-Profiles/JOR.pdf>.
- United Nations Development Programme; Jordan, Department of Statistics; Jordan, Ministry of Planning and International Cooperation (2012). *Thinking Differently About the Poor – Findings from Poverty Pockets Survey in Jordan 2012* (Amman). Available at [https://www.undp.org/content/dam/jordan/docs/Poverty/Jordan\\_Poverty%20Pocket%20Report.pdf](https://www.undp.org/content/dam/jordan/docs/Poverty/Jordan_Poverty%20Pocket%20Report.pdf).
- United Nations Economic and Social Commission for Western Asia (2018). *Case Study on Policy Reforms to Promote Renewable Energy in Jordan* (Beirut 2018). Available at <https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/policy-reforms-promote-renewable-energy-jordan-english.pdf>.
- United States Agency for International Development (undated a). "Home-based businesses", Local Enterprise Support Project. Available at <https://jordanlens.org/activity/home-based-businesses>. Accessed on August 2018.
- United States Agency for International Development (undated b). "Honey and beekeeping", Local Enterprise Support Project. Available at <https://jordanlens.org/activity/honey-beekeeping>.
- United States Agency for International Development (undated c). "Experiential tourism", Local Enterprise Support Project. Available at <https://jordanlens.org/activity/experiential-tourism>.
- World Bank (2019). World Development Indicators. Available at <https://databank.worldbank.org/reports.aspx?source=world-development-indicators>.
- World Economic Forum (2018). *The Global Gender Gap Report 2018*. (Geneva). Available at [http://www3.weforum.org/docs/WEF\\_GGGR\\_2018.pdf](http://www3.weforum.org/docs/WEF_GGGR_2018.pdf).
- World Food Programme (2019). "Draft Jordan country strategic plan (2020–2022)" (Rome, 2019). Available at <https://docs.wfp.org/api/documents/WFP-0000106351/download/>.
- Zafar, Salman (2019). "Waste to Energy in Jordan", Blogging Hub, 18 September 2019. Available at <https://www.cleantechloops.com/biomass-energy-jordan/>.
- Zawati, Hala (2019). Energy Minister, "Recommendations for a Clean Energy Strategy", Power Breakfast meeting, Amman, Jordan, 3 December 2019.
- الأردن. على خطى النهضة – أولويات عمل الحكومة للعامين 2020-2019. <https://www.your.gov.jo/Government-Priorities-.pdf>. عمّان.
- الأردن، البنك المركزي الأردني (2018). التقرير السنوي 2017. <https://www.cbj.gov.jo/EchoBusV3.0/SystemAssets5/c395f60-ea7f4-da5-8897-d046f33b75f4.pdf>. عمّان.
- الأردن، البنك المركزي الأردني (2019). التقرير السنوي 2018. <https://www.cbj.gov.jo/EchoBusV3.0/SystemAssets8/c90c6af-fa44-4aa7-b2ce2-ec90cada8cc.pdf>. عمّان.
- الأردن، المجلس الاقتصادي والاجتماعي (2018). تقرير حالة البلاد 2018. <http://www.esc.jo/Documents/e13b3d5a5999-4286--9a71-e26c2feb06bc.pdf>. عمّان.
- الأردن، المجلس الاقتصادي والاجتماعي (2019). اللامركزية: التشخيص والسيناريوهات المقترحة، نيسان/أبريل 2019. عمّان. <http://www.esc.jo/Documents/b9917614-514e-4127-992b-3973c8f9ed15.pdf>.
- الأردن، المجلس الاقتصادي والاجتماعي (2019). تعزيز الأداء الاقتصادي والاجتماعي للمنشآت الصغيرة والمتوسطة... نحو نموذج اقتصادي جديد 2019. <http://www.esc.jo/Documents/e41e80cf3-f32-4043-a6ae-de2f3579edbc.pdf>. عمّان.
- الأردن، دائرة الإحصاءات العامة (2012). تقرير حالة الفقر في الأردن استناداً لبيانات مسح نفقات ودخل الأسرة 2010. عمّان. [http://www.dos.gov.jo/dos\\_home\\_a/main/Analasis\\_Reports/poverty\\_rep/poverty\\_report.2010\\_.pdf](http://www.dos.gov.jo/dos_home_a/main/Analasis_Reports/poverty_rep/poverty_report.2010_.pdf).
- الأردن، دائرة الإحصاءات العامة (2019). 15.7% من سكان المملكة الأردنيين هم من الفقراء، أيار 30، 2019. عمّان. [http://dosweb.dos.gov.jo/ar/poverty/201905\\_](http://dosweb.dos.gov.jo/ar/poverty/201905_)
- الأردن، شركة الكهرباء الوطنية المساهمة العامة (2017). التقرير السنوي 2017. [http://www.nepco.com.jo/store/docs/web/2017\\_ar.pdf](http://www.nepco.com.jo/store/docs/web/2017_ar.pdf). عمّان.
- الأردن، هيئة تنظيم قطاع الطاقة والمعادن (2019). التقرير السنوي 2018. [http://www.emrc.gov.jo/echobusv3.0/systemassets/annual\\_rep2018-1.pdf](http://www.emrc.gov.jo/echobusv3.0/systemassets/annual_rep2018-1.pdf). عمّان.
- الأردن، وزارة التخطيط والتعاون الدولي (2017). البرنامج التنموي لمحافظة /برنامج تنمية محافظة\_\_ [https://mop.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page\\_\\_محافظة\\_2017-2019.pdf](https://mop.gov.jo/ebv4.0/root_storage/ar/eb_list_page__محافظة_2017-2019.pdf). عمّان.
- الأردن، وزارة التخطيط والتعاون الدولي (2017ب). البرنامج التنموي لمحافظة الكرك 2017-2019. آذار/مارس 2017، عمّان. [https://mop.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page\\_\\_البرنامج\\_التنموي\\_لمحافظة\\_الكرك\\_2017-2019.pdf](https://mop.gov.jo/ebv4.0/root_storage/ar/eb_list_page__البرنامج_التنموي_لمحافظة_الكرك_2017-2019.pdf).
- الأردن، وزارة التخطيط والتعاون الدولي (2019). البرنامج التنموي التنفيذي لمحافظة الكرك 2016-2018. عمّان. [https://www.mop.gov.jo/ebv4.0/root\\_](https://www.mop.gov.jo/ebv4.0/root_)



- البرنامج\_التنموي\_التنفيذي\_2016-2018 storage/ar/eb\_list\_page/2016-2018.pdf.
- الأردن، وزارة الزراعة (2016). وثيقة الاستراتيجية الوطنية للتنمية الزراعية 2025-2016. عمان. [http://www.moa.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/\\_الوطنية\\_للتنمية\\_الزراعية\\_2025-2016\\_\(1\)\\_1.pdf](http://www.moa.gov.jo/ebv4.0/root_storage/ar/eb_list_page/_الوطنية_للتنمية_الزراعية_2025-2016_(1)_1.pdf).
- الأردن، وزارة الطاقة والثروة المعدنية (2018). التقرير السنوي 2018. عمان. [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page56/dcb683-2146-4dfd8-a15-b0ce6904f501.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page56/dcb683-2146-4dfd8-a15-b0ce6904f501.pdf).
- الأردن، وزارة الطاقة والثروة المعدنية (2020أ). زواتي: الاستدامة والاعتماد على الذات أبرز محاور استراتيجية قطاع الطاقة، تموز/يوليو 2020. [https://memr.gov.jo/Ar/NewsDetails/\\_الاستدامة\\_الاعتماد\\_على\\_الذات](https://memr.gov.jo/Ar/NewsDetails/_الاستدامة_الاعتماد_على_الذات).
- الأردن، وزارة الطاقة والثروة المعدنية (2020ب). الاستراتيجية الشاملة لقطاع الطاقة للأعوام (2020-2030)، تموز/يوليو، 2020. [https://memr.gov.jo/EBV4.0/Root\\_Storage/AR/EB\\_Info\\_Page/Strategy2020.pdf](https://memr.gov.jo/EBV4.0/Root_Storage/AR/EB_Info_Page/Strategy2020.pdf).
- الدستور (2019). خريس: إنفاق 20 مليون دينار على برامج تعزيز الإنتاجية، <https://www.addustour.com/articles/1117635-خريس-انفاق-20-مليون-دينار-على-برامج-تعزيز-الانتاجية>.
- الغد (2019أ). المبيضين: موانئ العقبة جاهزة للتعامل مع الواردات العراقية Available at <https://alghad.com/> فور تدققها ، شباط/فبراير 12، 2019. المبيضين-موانئ-العقبة-جاهزة-للتعامل-م-./
- الغد (2019ب). اسحاقيات: تركيزنا الحالي على «التمويل الأجنبي» ومنتظر اسحاقيات-نوصيات اللجنة، تشرين الثاني/نوفمبر 3، 2019. <https://alghad.com/> اسحاقيات-تركيزنا-الحالي-على-التمويل-ال-.
- الغد (2019ج). هيئة الطاقة: تخفيض الفاقد الكهربائي يوفر 29 مليون دينار هيئة-الطاقة-/- <https://alghad.com/> آذار/مارس 16، 2019. تخفيض-الفاقد-الكهربائي-يو-./
- الغد (2019د). زواتي: تركيب خلايا شمسية من فليس الريف بخدم 7 آلاف أسرة زواتي-/<https://alghad.com/> كانون الثاني/يناير 23، 2019. تركيب-خلايا-شمسية-من-فليس-الريف-يخ-./



