A National Green Growth Plan for Jordan

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Foreword

Amidst unprecedented economic and environmental challenges facing our world, green growth is not a choice but the only way forward for Jordan and the rest of the counties around the globe. As Jordan joins the global community in this collective shift, the Government of the Hashemite Kingdom of Jordan has initiated the development of the National Green Growth Plan for Jordan (NGGP) to form a roadmap with key building blocks that places the country on a sustainable, green growth path.

Firmly based on existing national plans and documents, such as Jordan's Vision 2025 and Nationally Determined Contributions (NDCs), the NGGP will serve as a reference to guide green growth projects and align green policies and investments to work for national development goals. It also presents the results of a Cost-Benefit Analysis that has been conducted for 24 green growth projects in Jordan aiming at identifying evidence based recommendations on project financing options.

The NGGP is the result of a wide consultative effort. Over a period of two years, extensive engagement of Ministries, environmental agencies and the private sector resulted in the formation of a group of green growth experts and supporters. The Ministry of Environment has been working with these stakeholders from 2014 – 2016 to develop strategic guidance on green growth planning and implementation. In total, more than 100 national and international experts from various industries and sectors have provided comments and recommendations at all stages of the development of the NGGP until its approval by the Jordanian Cabinet.

Over the past decade, the Government of Jordan has demonstrated its commitment to transition towards a green economy. This is apparent in the increasing number of government initiatives and funds dedicated to renewable energy, water conservation, green homes, ecotourism, waste recycling and clean transportation. The Jordanian Government is content to see that institutions for environmental research and education offer new environmental degrees, courses and school curricula. All this demonstrates our country's boundless potential towards green growth implementation and raises confidence in the future of green growth for Jordan.

The Ministry of Environment is looking forward to collaborating with national and international partners over the coming years, supporting government agencies and particularly private sector stakeholders to implement key recommendations of this document. Ultimately, it will be public and private sector partners working together in mobilizing the political will and necessary investments that are needed for the NGGP to succeed. I would like to express my sincere gratitude to all those who participated in the development of the National Green Growth Plan, including the German Federal Ministry for the Environment (BMUB), the Global Green Growth Institute (GGGI) and dedicated stakeholders.

Dr. Yaseen M. Khayyat
Minister of Environment

Acknowledgement

The preparation of the National Green Growth Plan (NGGP) required a vast amount of expertise, research, knowledge exchange and dedication. The NGGP would not have been possible without the support of all the individuals and organizations, who worked together as one team throughout the whole development process. In this regard, we would like to express our deepest appreciation to those who have worked on the NGGP during the past two years.

The NGGP was produced under the leadership of H.E Dr. Yaseen Khayyat, the Minister of Environment and benefited significantly from the effective directions of H.E. Eng. Ahmad Al Qatarneh, the Secretary General of the Ministry of Environment. Tremendous support was provided by the Director of the Green Economy Unit, Dr. Jihad Alsawair. Acknowledgment goes also to H.E. Eng. Raouf Dabbas for his efforts extended throughout the process.

Appreciation goes to all the entities from the public and private sectors who were integral to the success of this report, as they generously provided the project team with their knowledge and expertise, those were namely, The Prime Ministry, the Ministry of Energy and Mineral Resources, Ministry of Water and Irrigation, Ministry of Planning and International Cooperation, Ministry of Agriculture, Ministry of Municipal Affairs, Ministry of Transport, Ministry of Tourism and Antiquities, Ministry of Public Works and Housing, Ministry of Industry and Trade, Ministry of Finance, Greater Amman Municipality, Aqaba Special Economic Zone Authority, the Jordan Chamber of Industry, Jordan Chamber of Commerce, Amman Chamber of Commerce, Association of Banks in Jordan, Jordan Development Zones Co., Jordan Investment Commission, Higher Council for Science and Technology, Royal Scientific Society, Department of Statistics, Water Authority, Jordan Valley Authority, International Finance Corporation, USAID, GIZ, EDAMA Association and Jordan Renewable Energy and Energy Efficiency Fund.

Furthermore, special acknowledgment goes to German Federal Ministry of Environment (BMUB) for their support to the development of the NGGP, as well as the Global Green Growth Institute (GGGI) for their important assistance throughout the project.

Lastly, special thanks to all institutions and individuals who participated in meetings, workshops, surveys etc. for providing valuable information and feedback during the drafting process. Their contribution has significantly enriched the content of this report.

Project Team

List of Abbreviations

ACI	Amman Chamber of Industry
ADFD	Abu Dhabi Fund for Development
AFD	Agence Francaise de Developpement
AFEX	Arab Future Energy Index
ASEZA	Aqaba Special Economic Zone Authority
BAU	Business as Usual
BRT	Bus Rapid Transit
CAPEX costs	Capital Costs
CBA	Cost Benefit Analysis
CBJ	Central Bank of Jordan
CBOs	Community Based Organizations
CEFC	Clean Energy Finance Corporation
CIFs	Climate Investment Funds
COP	Conference of Parties
CSF	Critical Success Factors
CSP	Concentrated Solar Power
CSR	Corporate Social Responsibility
CTF	Clean Technology Fund
DAC	Development Aid Committee
DFATD	Department of Foreign Affairs Trade and Development
EBRD	European Bank for Reconstruction and Development
EDCO	Electricity Distribution Company
EDP	Executive Development Program
EE	Energy Efficiency
EIB	European Investment Bank
EPC	Engineering, Procurement and Construction
ESCO	Energy Service Company
ESMS	Environmental and Social Management
ESS	Environmental and Social Safeguard
EU	European Union
EU DEVCO	European Union International Development and Cooperation
EU NIF	European Union Neighbourhood Investment Facility
EV	Electric Vehicles
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FiT	Feed in Tariffs
GAM	Greater Amman Municipality
GCC	Gulf Cooperation Council
GCF	Green Climate Fund
GDF	Governorates Development Fund
GDP	Gross Domestic Product
GEEREF	Global Energy Efficiency and Renewable Energy Fund
GEMS	Green Energy Market Securitization
GGGI	Global Green Growth Institute
GHG	Green House Gases
GIB	Green Investment Bank
HHI	Herfindahl Hirschman Index
ICF	International Climate Fund
IDECO	Irbid District Electricity Company
IEA	International Energy Agency
IFC	International Finance Corporation
IMF	International Monetary Fund
INDC	Intended Nationally Determined Contributions
IPPs	Independent Power Producer
IRENA	International Renewable Energy Agency
JEDCO	Jordan Enterprise Development Corporation
JEF	Jordan Environment Fund
JEPCO	Jordanian Electric Power Company
JLGC	Jordan Loan Guarantee Corporation
JorSEFF	Jordan Sustainable Finance Facility
JREEEF	Jordan Renewable Energy and Energy Efficiency Fund
JRP	Jordan Response Plan
JV	Joint Venture
KFW	Kreditanstalt für Wiederaufbau, German government-owned development Bank
LCOE	Levelized Cost of Energy
LED	Light Emitting Diodes
MEMR	Ministry of Energy and Mineral Resources
MENA	Middle East and North Africa
MOENV	Ministry of Environment
MOMA	Ministry of Municipal Affairs
MOPIC	Ministry of Planning and International Cooperation
MOT	Ministry of Transport
MOU	Memorandum of Understanding
MRF	Material Recovery Facility

List of Abbreviations

MSW	Mixed Solid Waste
MWI	Ministry of Water and Irrigation
NAMAs	Nationally Appropriate Mitigation Actions
NBAD	National Bank of Abu Dhabi
NCARE	National Center for Agricultural Research and Extension
NDA	National Designated Authority
NEPCO	National Electric Power Company
NGGP	National Green Growth Plan
NGO	None Governmental Organization
NYCEEC	New York City Energy Efficiency Corporation
O&M	Operation and Maintenance
OECD	Organisation for Economic Co-operation and Development
OPEX costs	Operation costs
PPA	Power Purchase Agreement
PPP	Public Private Partnerships
PSF	Private Sector Facility
PV	Photo Voltaic
QAIA	Queen Alia International Airport
R&D	Research and Development
RDF	Refuse Derived Fuel
RE	Renewable Energy
REEL or REEEL	Renewable Energy and Energy Efficiency Law
RO	Reverse Osmosis
SDGs	Sustainable Development Goals
SEEF	Egypt Sustainable Energy Financing Facility
SEM	Sustainable Energy Marketplace
SMEs	Small to Medium Enterprises
SWH	Solar Water Heating
UAE	United Arab Emirates
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	U.S. Agency for International Development
WACC	Weighted Average Cost of Capital
WWTP	Waste Water Treatment Plant

Contents

Foreword *ii*

List of Abbreviations *iv*

Executive Summary 2

1 Jordan's Green Growth Opportunity 10

2 Sectoral Green Growth Opportunities 34

3 Scaling Up the Green Growth Opportunity 62

4 Cross-Cutting Policies and Governance for Green Growth 76

5 Financing Green Growth in Jordan 94

6 An Implementation Agenda for Green Growth in Jordan 130

Conclusion: The Way Forward to Green Growth 140

Executive Summary

This National Green Growth Plan (NGGP) seeks to understand what prevents Jordan from implementing the goals established in Jordan's current plans and strategies, and offers suggestions in the context of green growth for other aspirations that will help to futureproof Jordan's Vision.

This NGGP applies green growth to Jordan as a practical approach that builds upon existing government strategies, primarily Vision 2025, and demonstrates pathways to achieving them in a sustainable way. This is reflected by a focus on shifting existing interventions towards implementation, defining not "what should be done" but rather "how it can be done well". This manifests in the usage of rigorous, quantitative appraisal of selected sectoral opportunities and providing a clear timeline for implementation. With this in mind, Part 1, Jordan's growth trajectory, begins by introducing the concept of green growth in relation to Jordan's existing country context, observing current trends and some of the potential costs of inaction. Part 2, Sectoral green growth opportunities, is evidence based and analytical. It is a proof of concept for using consistent methodologies that account for economic externalities and go beyond financial considerations in investment and policy decision-making. In line with this focus on implementation, Part 3, Scaling up the green growth opportunity, focuses on scaling up these green growth opportunities and identifying the key barriers and policy enablers to implementing Jordan's Vision. Part 4, Cross-cutting policies and governance for green growth, outlines the finance mechanisms which will be required to implement green growth. Part 5, Financing mechanisms for green growth, pulls these items together into a coherent implementation agenda to begin Jordan's journey towards green growth.

Introducing green growth

Green growth is defined as 5 interlinking outcomes which each impact upon the others, in positive and negative ways:

- Sustained economic growth highlights the importance of Jordan's economic growth, being sufficiently robust and diverse to support broadbased people-centered development
- Social development highlights growth for the benefit of all segments of society and wellbeing improvements for Jordan
- Ecosystems services highlights growth which sustains natural capital which can provide a continuous flow of benefits
- Resilience highlights growth which builds capacity for maintaining or restoring economic, financial, social, and environmental stability in the face of shocks
- Greenhouse gas emission reductions and avoidance highlights the importance of sustainable, green growth to contribute to global and national efforts to mitigate climate change

The green growth opportunity in Jordan is clear. The benefits of pursuing green growth can far outweigh the costs of implementation, with Jordan's national circumstances (e.g. lack of fossil fuels and water resources) making it unusually well positioned to seize opportunities. Furthermore, there is clear political support for renewables – a key strand to greening several sectors – and other green growth themes in Jordan's Vision 2025.

A Green Growth Vision for Jordan

Behind the National Green Growth Plan is a clear vision for Jordan as a country with an expanding and sustainable economy that creates jobs, income for its citizens, and is resilient to external shocks and instability in the region. A country of economic opportunity for everyone that provides decent work and living conditions based on an environmentally sustainable economic growth model.

Jordan's growth trajectory

A number of key trends exist in Jordan, primarily around Jordan's reliance on external resources through turbulent regional events, enduring social barriers to progress, a history of plans and strategies struggling at the implementation stage, the complex and unpredictable challenge of the refugee crisis and the remittances from Jordanians heading abroad to earn which constitute 20% of GDP. Furthermore, continuing the trend in the carbon intensity of GDP so far this century to 2030 would mean Jordan's emissions grow by roughly 2% a year. There is a clear opportunity for Jordan to decouple economic growth from emissions, as has been achieved by countries of similar sizes such as Croatia and Ireland – both countries that are benchmarked peer countries in Jordan's development strategy Vision 2025. To build the case for green growth, a number of potential costs associated with Jordan's current growth trajectory have been identified:

1. Continued reliance on external sources leading to energy insecurity, disruption and energy budget challenges
2. Inequitable growth restricted to select urban areas due to inadequate connectivity across Jordan
3. Rising GHG emissions due to fossil fuel-intensive growth trajectory
4. Widespread freshwater shortages due to over-abstraction and salinization of water
5. Missed opportunity to show regional leadership through new green growth engines, including energy efficiency
6. Ongoing talent loss to other economies (particularly female graduates) due to lack of employment prospects

Sectoral green growth opportunities

A number of key strategies developed in Jordan include a range of opportunities in each of the 6 priority green growth sectors. Moving these towards implementation is crucial to avoid the costs outlined above, particularly since many opportunities have high scalability potential across Jordan. To build the case for implementation, Cost Benefit Analysis (CBA) has been conducted on 4 priority projects per sector. Following an extensive stakeholder engagement process led by the Jordanian Ministry of Environment, more than 20 CBAs were identified and agreed with the responsible line Ministries and key sector stakeholders. The CBAs account quantitatively for impacts across the 5 outcomes of green growth such as local air pollution, water pollution spill over economic activity or time savings. These 24 projects do not constitute a comprehensive list of opportunities but rather an indication of the sorts of opportunities which could begin to catalyse change if implemented at scale in Jordan. As a result of subsequent government consultations, eight illustrative green projects were chosen. These projects represent national

development priorities and require relatively large investments.

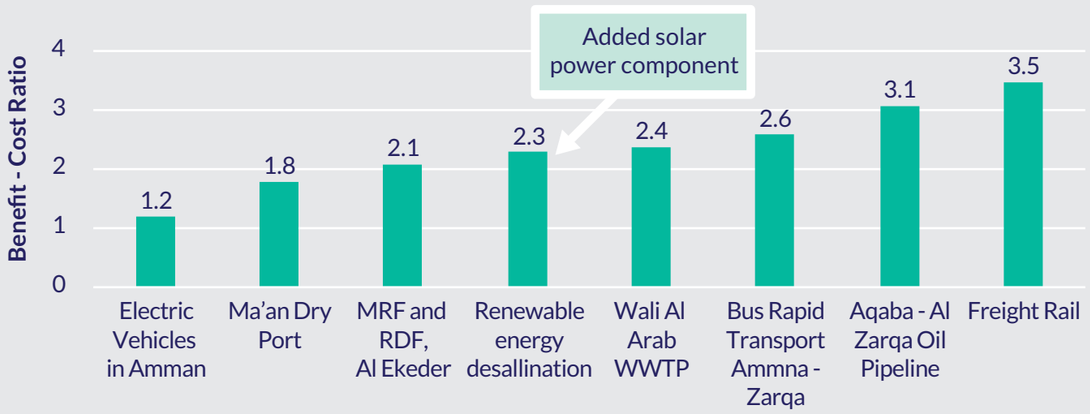
A number of priority projects have been selected for green growth appraisal in agreement with key government ministries. This selection was driven by intensive stakeholder engagement with ministries and other key stakeholders. The projects do not aim to constitute a complete list of green growth projects in Jordan, but to illustrate both the wider costs and opportunities generated by investments and to demonstrate the contribution (or lack thereof) of projects to green growth. Initially, a long list of project options was drawn up for each sector, drawing upon key documents such as Vision 2025 and the INDC as well as sector-specific strategies. These projects were then screened by sector experts for their economic and political feasibility and green growth potential. From this, 24 specific opportunities were identified across the six sectors and appraised using cost-benefit analysis. As a result of subsequent government consultations, eight illustrative green projects were chosen. These projects represent national development and investment priorities. They are described in detail below. The results for all 24 projects are shown in annex I.

The evidence in the graph below demonstrates that across the 6 sectors, investments in interventions will reap social, environmental and economic benefits that far outweigh the initial investment. The CBA analysis used to develop these cost-benefit ratios can be applied to invest options in the future and inform Jordan's decision-making around green growth.

Scaling up the green growth opportunity

Opportunities exist to cluster green growth interventions listed above together to maximise their impact and improve the likelihood of them becoming embedded. This is because sectoral interventions often have positive and negative impacts external to that specific sector; for instance, poor waste management could lead to leachate contamination, with highly negative impacts on agriculture and water resources. To this end, 3 clusters are proposed to demonstrate how interventions could be scaled up in unison.

Results from Cost-Benefit Analysis for 8 green growth interventions (the higher the ratio, the more beneficial the project's impact)



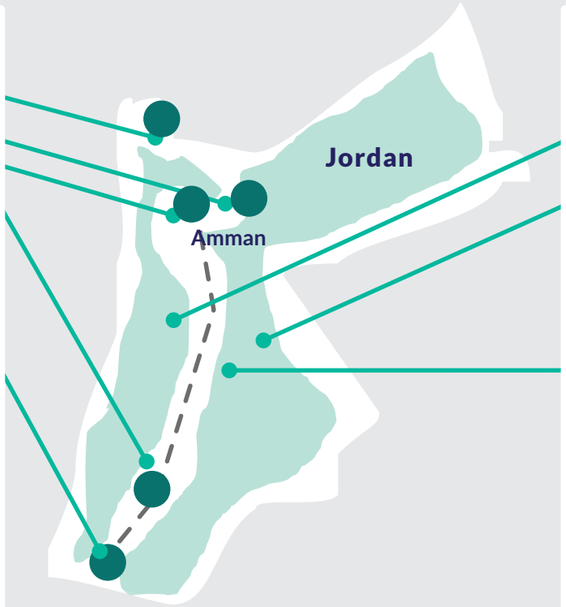
Green Growth clusters

Cluster 1:
Green Growth Corridor

The green growth corridor is focused on NEPCO's Green Corridor project which runs along the backbone of Jordan between Aqaba and Amman. This provides a framework for a number of inter-locking projects. The focus is on improving Jordan's energy resilience as well as providing new economic growth opportunities along the route. Acknowledging the long term need to move away from fossil fuels to provide baseload energy, solar technologies such as Concentrated Solar Power (CSP) is recommended for exploration along the route.

Cluster 2:
Smart Urban

The urban cluster aims to transform Jordan's urban areas into green cities that are attractive to both investors and residents through a series of flagship green growth projects. The cluster selects a group of interven-tions which can be used to publicise the urban area as 'green' to potential investors while also creating an improved urban space to live in.



Key

- Rural Area
- Urban area
- Green Growth Corridor

Cluster 3:
Rural resilience

The rural resilience cluster aims to strengthen rural communities and their surrounding ecosystems by diversifying incomes, ensuring resource availabili-ty and reducing environmental impacts. Job provision is an important aspect of this rural cluster to encourage equitable distribu-tion of the refugee inflows across the kingdom. Tourism is also introduced, on the basis that the other interven-tions can help to boost the perceived stability of the area – this is of crucial impor-tance given current challenges in the tourism sector around interna-tional perceptions of Jordan's safety.

The clusters do not constitute exhaustive lists of projects for inclusion, but rather are a proof of concept of the potential gains which could result from implementing green growth interventions in a coordinated fashion.

Clustering interventions from across the sectors together provides a vision of the cumulative green growth impact that could be achieved if a number of projects were implemented in unison. However, many of these ideas have been in circulation for a number of years now, yet have not yet come to fruition at scale. A series of high level barriers have therefore been identified through close stakeholder consultation and a survey to explain the difficulties around implementation at scale that exist across sectors:

1. Electricity/transport infrastructure deficiencies
2. Inadequate legislation and enforcement that enables green growth
3. Short termism in planning
4. Overlap of ministry's responsibilities and lack of coordination between ministries towards common goals
5. Perceived and actual strain placed by refugees on economy
6. Lack of capacity, technical skills and data required to design and implement green growth projects
7. Lack of adequate financing mechanisms to incentivise the private sector to instigate green growth
8. Lack of funding perceived as key barrier by ministries
9. Low public trust in governmental commitment to strategies
10. Lack of knowledge transfer and communication between the public and private sector

Policy solutions to green growth barriers

To address these barriers to green growth, four 'driving principles' for green growth have been developed. These can be considered the 'must haves' for green growth:

1. Transparent governance processes and enforcement of legislation
2. Mechanisms to incentivise green growth, such as finance for green projects
3. Integrated planning processes that value societal impacts
4. Behaviour shifts and capacity building

These high level principles have been selected to ensure they are flexible and can be adapted to meet future barriers and issues. However each driving principle must be underpinned by more specific action. Examples of such policies actions over the short and medium term are provided on the following page, the green growth implementation agenda for Jordan.

Financing mechanisms for green growth

A key component of Jordan's green growth strategy is the availability of finance for projects. Currently, the majority of funding is provided by concessionary lending from development banks, as well as donor aid grants. As the cost of green technologies have become cheaper, the economics of many green growth interventions have changed, and there is now significant opportunities for Jordan to attract more private financing to help bridge the gap between the Kingdom's green growth objectives, and the availability of existing finance.

Over 20 green growth project categories were assessed at a detailed level, including the most suitable types of financing available for consideration. Further, current facilities both in Jordan (such as Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) and the Jordan Environment Fund (JEF)) and internationally (including commercial and concessional finance) were assessed, and 12 key recommendations have been made:

1. Establish a dedicated Green Finance team
2. Pursue direct access to international climate funds, especially the GCF, with accreditation following a readiness assessment for Jordanian entities
3. Continue Development of Jordan Environment Fund (JEF) with focus on funding project origination, feasibility studies and better proposal development
4. Continue Development of Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) – consider expansion of scope to energy efficiency, transport (e.g. EVs), ESCOs and funding Technical Assistance Capability
5. Consider establishment of a new Jordan Green Growth Fund to facilitate private Debt & Equity Finance for Medium (50-250m) & large (>$250m) Projects
6. Set up urban and infrastructure investment advisory facility
7. Conduct structured risk analysis and de-risking study for private finance of green growth projects in Jordan - each project type
8. Launch continuous private sector green finance engagement programme and working groups to evolve sector knowledge and provides a forum for project presentations and matchmaking
9. Improve credit lines to ESCOs
10. Establish nation-wide programme management for green government building scheme and financing
11. Develop central and publicly accessible Online portal for Green Project Finance in Jordan
12. Consider phasing out withholding tax on interest for foreign debt or earmarking (recycling) such tax revenues into further green project

A high level implementation agenda for green growth

The diagram overleaf draws on Part 2, Sectoral green growth opportunities and Part 4, Cross-cutting policies and governance for green growth, to set out the high level implementation agenda for green growth. It displays the way in which sectoral opportunities can be scaled up, policy frameworks can be updated in line with the driving principles and the headline indicators that can be used to track progress.

Planning institutional responsibilities for green growth now, such as the Higher Green Economy Steering Committee, can ensure strategic decision-making takes place on a cross-sectoral basis outside of individual ministries. The proposed governance structure establishes the green economy at the heart of the delivery model, with the Green Economy Unit responsible for gathering inputs from a range of stakeholders. The Green Economy Unit feeds these inputs through a feedback loop with a Technical Expert Advisory Group to the Higher Green Economy Steering Committee which holds the relationship with the Prime Ministry. This governance structure aims to fast-track the implementation of projects and initiatives.

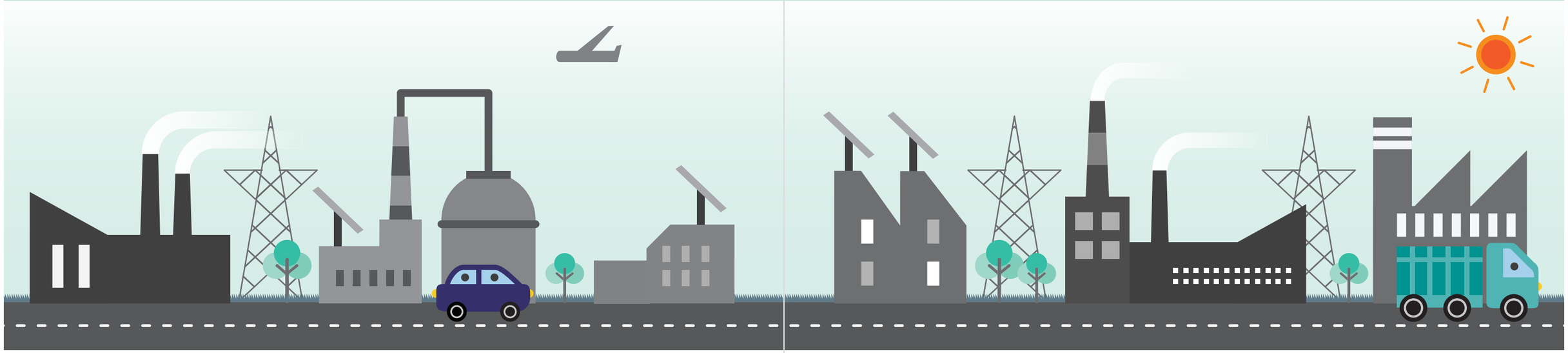
Targeted communication is needed to help mainstreaming of green growth into national and sub-national planning in Jordan and to prepare the implementation of actions and approaches identified in this NGGP. The communication strategy should focus initially on the policy recommendations up until 2025 in line with Vision 2025. The strategy can be revised periodically to reflect lessons learned and possible future changes in the priorities of the NGGP.

This NGGP lays out the first steps on the pathway towards implementing green growth; now Jordan must take these steps.

High level implementation agenda for delivering green growth. This implementation agenda is a non-exhaustive list of policy considerations that could be taken to accelerate Jordan's trajectory towards green growth over the next 10 years. The recommendations have an economy-wide thematic focus. More detail on the economic-wide policy considerations can be found in part 4, Cross-cutting policies and governance for green growth.

Planning priorities for green growth	2015	Short term recommendations	2020	Medium term recommendations	2025
1. Transparent governance processes and enforcement of legislation	**1.1** Monitor and ensure compliance	**1.1S** Penalty increases for non-compliance		**1.1M** Establish sectoral compliance committees **1.1.M** Launch compliance awareness campaign **1.1M** Royal endorsement of legislation	Identify new barriers develop policy solutions guided by the driving principles
	1.2 Review and introduce new legislation	**1.2S** Conduct legislation review and present recommendations		**1.2M** Compliance tax rebate scheme **1.2M** Set up non-compliance amnesty group **1.2M** Streamline inhibiting legislation	
	1.3 Improve transparency of ministry activities	**1.3S** Set up open-source ministry review platform **1.3S** Ministry spending audit review		**1.3M** Targeted response to issues identified by platform **1.3M** Ministry spending audit programme **1.3M** International procurement standards	
2. Mechanisms to incentivise green growth	**2.1** Reward-based incentives	**2.1S** Design project measurement framework		**2.1M** Link career progression to project outputs/outcomes	
	2.2 Shift towards FDI	**2.2S** Review PPP law and make recommendations		**2.2M** Develop innovative PPPs	
	2.3 Incentivise business with refugees	**2.3S** Targeted tax holidays **2.3S** Develop tax holiday criteria		**2.3M** Update tax holidays in response to refugee situation	
	2.4 Develop private sector finance databas	**2.4S** Set up green funding website		**2.4M** Update green funding website **2.4M** Align green funding website with CBA database	
	2.5 Incentivize climate resilient development	**2.5S** Urban and infrastructure investment advisory facility		**2.5M** Climate risk and resilience disclosure requirements	
	2.6 Establish institutions to incentivize green growth	**2.6S** Pilot cross-sectoral clean investment fund		**2.6M** Establish clean investment fund	
3. Integrated planning processes that value societal impacts	**3.1** Embed CBA across ministries	**3.1S** Establish cross-sectoral database **3.1S** Establish cost-benefit analysis		**3.1M** Roll out CBA training **3.1M** Streamline CBA data requirements	Identify new barriers develop policy solutions guided by the driving principles
	3.2 Embed clustering	**3.2S** Develop green growth spatial development plans		**3.2M** Mandate project alignment with spatial plans	
	3.3 Align project planning to budgets and commit to plans	**3.3S** Change budgeting cycles from 3 up to 5 years **3.3S** Align pipeline with budgeting cycles		**3.3M** Review fulfillment of budget commitments **3.3M** Budget enforcement programme	
	3.4 Define ministry responsibilities	**3.4S** Project management process reform		**3.4M** Project management best practice training **3.4M** Project manager incentive scheme	
	3.5 Develop infrastructure and jobs for refugees	**3.5S** Reallocate humanitarian funding towards green growth		**3.5M** Reassess refugee infrastructure demand	
4. Behaviour shifts and capacity building	**4.1** Shift planning focus away from individuals	**4.1S** Introduce requirement of business case for policy/project change		**4.1M** Long term planning leadership programme	
	4.2 Build capacity to access and utilise donor funds	**4.2S** CBA training workshops		**4.2M** CBA training for donor fundraisers	
	4.3 Develop CSR culture	**4.3S** Organise high profile CSR events		**4.3M** Expand CBA analysis to private sector	
	4.4 Public engagement	**4.4S** Pilot green growth communications strategy		**4.4M** Launch public green growth communications strategy	
	4.5 Corruption awareness	**4.5S** Government corruption awareness campaign		**4.5M** Public/private corruption awareness campaign	
	4.6 Strategic R&D	**4.6S** Establish R&D fund **4.6S** Targeted relationship building with technical universities		**4.6M** Form private sector skills supply/demand committee **4.6M** Launch scholarships and innovation centres **4.6M** Launch Erasmus scheme	

1 Jordan's green growth opportunity



1.1 The green growth context in Jordan

Jordan tells a fascinating and complex story for a country of its size, underpinned by a range of economic opportunities, challenges and untapped potential that befits its rich history. The country has achieved consistent GDP growth averaging 5.4% over the last decade.[1] This achievement is all the more remarkable considering the prevailing economic and social instability in the territories surrounding Jordan throughout this period. Furthermore, 50% of its population is under the age of 24, providing a unique demographic dividend that the government intends to build on as part of its economy-wide strategy.[2] As such, Jordan is well positioned to capitalise on being one of the most politically and economically stable countries in the region.

However Jordan also faces entrenched development challenges. Growth is inequitably distributed across the region and there is a mismatch of skills and job opportunities that leaves a high number of Jordanians unemployed, seeking work abroad or in informal employment - job informality among youth reaches above 50 percent in Jordan.[3] Despite early signs of change, Jordan remains reliant on expensive and carbon-intensive fossil fuels for energy and is increasingly water-scarce. Previous policy attempts at addressing some of these complex challenges have struggled in implementation, but the rewards of getting Jordan's growth pathway right are substantial for the nation's economy, people and environment.

1 International Monetary Fund. 'Country GDP data and forecasts', 2016
2 Government of Jordan. 'Jordan 2025: A National Vision and Strategy', 2015 p.22
3 International Labour Organisation. World Employment Social Outlook, 2015. Accessed 30th March 2016 *http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_337069.pdf* p.52

Why green growth?

Green growth is an approach for achieving a number of simultaneous objectives that brings Jordan closer to its sustainable development ambition. It maximises the impact of Jordan's existing plans, builds on them and offers solutions to overcome barriers to implementation. It provides an approach to

Jordan's Vision 2025 and the National Green Growth Plan

In 2015, Jordan published its Vision 2025 strategy. This is an economy-wide document developed by the Ministry of Planning and International Cooperation in close consultation with a wide range of stakeholders across the Jordanian government. It provides the starting point for green growth in this NGGP as an ambitious and forward-thinking document that already has high-level political support. To strengthen the integration of green growth into government strategies, the NGGP aligns its priorities and objectives with development goals that have already been established by the Jordanian government in the Vision 2025.

The NGGP seeks to understand what prevents Jordan from implementing those goals, and offers suggestions for other aspirations that will help to protect Jordan's Vision into the future. The NGGP has a conceptual focus that reflects previous strategies prioritizing economic development and environmental sustainability in Jordan. However the NGGP builds upon existing research around Jordan's green growth potential; it is an innovative means of achieving the existing growth goals of Jordan in a manner that takes into account the factors that impact on the country's economic, social and environmental development in the longer term.

sustainable and equitably-distributed increases in economic growth and standards of living. At the same time, it aims to curb pollution, address energy security and improve infrastructure using resources more efficiently. Furthermore, it values the natural assets which may be overlooked by economic decision-making but are fundamental to long term growth.

It also recognises a global transition that is underway. Carbon markets were acknowledged at the COP21 as an important instrument in the public and private sector to meet mitigation targets, new investments in renewables have over-taken fossil fuels globally since 2010 and a new legal international climate regime was agreed in Paris in 2015 that requires national action. Finally, there has been a growth in investors and regulators looking to value environmental and social impact, and protect against climate risk exposure.

This NGGP applies green growth as a practical approach that builds upon existing government strategies and demonstrates pathways to achieving them in a sustainable way. This is reflected by a focus on shifting existing proposals towards implementation, defining not "what should be done" but rather "how it can be done well". With this in mind, Part 2 is evidence based and analytical. It is a proof of concept for using consistent methodologies that account for economic externalities and go beyond financial considerations in investment and policy decision-making, including sectoral policy considerations. In line with this focus on implementation, Part 3 focuses on scaling up these green growth opportunities and Part 4 identifies the key barriers and policy enablers to implementing Jordan's Vision. Part 5 outlines the finance mechanisms which will be required to implement green growth. Part 6 draws these components together into a coherent implementation agenda to begin Jordan's journey towards green growth.

The challenge of green growth

Obstacles to green growth include difficulties associated with changing behaviours towards natural resource exploitation, along with the persistence of established investment patterns and the commercial interests they create. In Jordan for instance, this may result in a focus upon investing in environmentally and socially degradatory models of tourism or transport on the basis that they are the safest bets for quick and reliable returns. More broadly, there are institutional barriers to recognising new economic models as well as a need to carefully manage the transition to new models of growth and trade-offs in the short term. This provides a particular challenge as decision-making in Jordan is often oriented towards immediate results rather than longer term investments.

Part of the reason for short-termism is the regional instability that surrounds and unavoidably has an impact upon Jordan. Its geography and recent political history affects its economy more than most countries.[4] The instability of its neighbours has a profound impact on international perceptions of Jordan as well as the country's growth trajectory. Jordan has been severely impacted by the Syrian refugee crisis. For example, Jordanian authorities estimate that there are 1.3 million Syrian refugees in Jordan, or about 20 percent of Jordan's population, as a result of the recent armed conflicts in the region, especially Syria and Iraq. Iraq is Jordan's largest trading partner and the destination of some 20 percent of its exports. There have been significant disruptions to these exports as well as to tourism in Jordan. This regional instability makes more forward-looking policy decisions favoured by investors –and green growth - a real challenge to take.

4 Ramachandran, S. 'JORDAN: Economic Development in the 1990s and World Bank Assistance', World Bank Operations Evaluation Department, 2004. Accessed 30th March 2016 Chttp://www.oecd.org/countries/jordan/36488608.pdf p.1

1.2 The opportunity of green growth in Jordan

Despite the clear challenges, the benefits of pursuing green growth can far outweigh the costs of adjustment.

New models of growth provide opportunities for government, business and society overall. Jordan's unique national circumstances make it unusually well positioned to seize these opportunities and make this transition.

There are substantial green growth opportunities across the key priority sectors. In the context of traditional economic models, Jordan's lack of fossil fuel resources has been perceived as a significant barrier to growth.[2] However the International Energy Agency forecasted in November 2015 that globally renewables will become the largest single source of power generation by the early-2030s and will account for more than half of all forecasted growth.[3] With Jordan free from national fossil fuel assets and an accompanying reliance upon them, there is a significant opportunity for Jordan to become a regional leader in renewables energy generation. A co-benefit will be greater energy and economic security – with a range of social benefits – as well as environmental benefits. Into the longer term, having an established renewable energy industry could lead to servicing growing export markets as other countries seek cleaner energy sources to meet carbon reduction commitments under the new global climate agreement. Viewed through a green growth lens, Jordan's vast tracts of sun-bleached and windswept land have the potential to look resource-rich if renewables are price-competitive.

Political support for transitioning towards renewables is already enshrined in key documents such as Jordan's Vision 2025. As such the green growth opportunity in Jordan already has strong footing for delivery in the energy sector. However ambition can, and must, be driven higher and broader. Renewable energy unveils onto a range of cross-sectoral and symbiotic opportunities. Greening the energy supply opens the door for low-carbon transport options such as electric vehicles cars which will stimulate growth in key areas. Similarly, micro-

The purpose of the NGGP

Both the challenge and the opportunity of green growth is finding a way to articulate the range of co-benefits and avoided costs derived from green growth interventions undertaken in unison across sectors. This message needs to reach a diverse set of private and public sector stakeholders who are too often isolated from each other in their decision-making. That is what this NGGP sets out to do.

This NGGP aims to facilitate the transition towards a green growth trajectory by pointing cross-sector, multidiscipline opportunities. This involves quantitative analysis of project examples which may pave the way for bolder green growth decision-making in the future. The NGGP's purpose is not to provide a ready-made, step-by-step blueprint or plan and the projects and policy recommendations included do not constitute an exhaustive list of exactly what needs to be done. Rather, the document is aligned with Vision 2025's demand for focus on the importance of achieving effective and disciplined implementation, with an emphasis on developing solutions to barriers throughout.

The purpose of the NGGP (contd.)

With this in mind, this high level NGGP is intended to guide an overall approach to green growth that is focused on identifying and appraising projects to aid consistent implementation across sectors. This is achieved by applying specific criteria to ensure that impacts which are seemingly intangible but nonetheless of high importance important, such as GHG emissions, are taken into consideration. These considerations are then embedded into appraisal of investments for both the public and private sector. Ways to create the enabling conditions to accelerate green growth across sectors are articulated using selected examples from across Jordan's economy.

grid energy can be used to power new water abstraction and desalinisation facilities as well as provide new income sources for marginalised communities. Making the case for investing in these projects individually can be challenging. However, when presented as groups of interlinked opportunities, the potential for Jordan to flourish under green growth becomes clear.

Embedding green growth considerations into investment appraisal will help to ensure that decisions taken now do not negatively impact Jordan in the long run. From a governance perspective, green growth thinking also provides a forum for discussion between sectors and ministries. The sectors in Jordan are interlinked and rely on other sectors for crucial inputs. Nonetheless, their differing priorities are rarely considered together since decision making is often cost-driven and taken in isolation.

1.3 The key sectors of Jordan's economy

This NGGP focuses on 6 priority sectors that provide coverage of key green growth issues and opportunities for Jordan. They include sectors identified as high-potential growth areas, such as tourism, and sectors that threaten to inhibit Jordan's development if not properly managed, such as the water sector.

Energy

The energy sector is traditionally characterized by its relative high fossil fuel energy mix compared to many neighbouring countries. While Jordan does possess natural gas fields such as the Al-Reesha field, it has historically been reliant on GHG-intensive imported fossil fuel sources for energy. The total emissions from the energy sector were 20,938Gg (gigagrams) CO2 eq. which has constituted 72.9% of Jordan's total GHG emission.[5] Renewable energy has been identified as a key solution that could fit Jordan's country context, and a number of projects are currently under development. Under Jordan's updated energy strategy, renewable energy targets are set to reach 10% of Jordan's energy in 2020. Jordan's Vision 2025 aims at achieving 11% in 2025. Nonetheless, fossil fuels look likely to remain the baseload energy supplier for the foreseeable future.[6] At a high level, the Energy sector's key challenges remain around the resilience of the sector through its exposure to external price fluctuations and the economic consequences of this, which is recognised in Vision 2025, along with the GHG intensity of generation.

Transport

Transport is a vital sector for the Jordanian economy, but also the second largest contributor to total emissions in Jordan with 4,706Gg CO2 eq. There has been significant investment in recent years in the road network which provides the key mode of transport in the economy. The transport sector has seen a gradual process of liberalisation, opening the market to private operators and private investors. Jordan's principal international transport hubs, the Queen Alia Airport in Amman and the seaport in Aqaba, have both enjoyed substantial growth, with the Queen Alia airport welcoming a record 7 million passengers in 2015.[7] Nonetheless, significant challenges remain around making the case for investment in largescale infrastructure projects which require significant capital expenditure. Most significantly, the proposed rail network connecting the north and south of Jordan has repeatedly stalled despite clear economic and environmental advantages compared with relying on the road network. Vision 2025 sets targets around increasing the scale of public transport infrastructure as well as its quality, targeting an increase from a forecasted 1.15 buses per thousand people in 2017 to 1.25 in 2025.[8]

Water

The water sector presents a crucial challenge to Jordan. Jordan has one of the lowest levels of water availability per capita in the world with less than 145 m3. The Vision 2025 document emphasises the imbalance between water demand and available resources. This is due to a number of reasons, such as low natural supply and persistant droughts, overconsumption, over-pumping and losses during distribution. Efforts to address these problems have encountered a number of complex issues, such as local ownership of water resources and difficulties articulating issues around water scarcity to individuals for whom the groundwater wells appear an infinite and free resource. Nonetheless, the government has invested in projects to take action in the sector, such as wastewater treatment facilities, dams and the $800m plan for a 'Red-Dead' sea canal providing drinking water to neighbouring countries.[9]

Agriculture

Much like the energy sector, Jordan is heavily reliant on foreign imports for its food. A key issue arising in the Agriculture sector is that while it only provides 19% of the Kingdom's food requirements[10] and employs only 1.8% of Jordan's workforce[11], it withdraws 65% of Jordan's precious freshwater resources.[12] While agriculture as an industry is likely to be water intensive, this still presents a key challenge given Jordan's water security concerns. The 2012 Employment Strategy acknowledges this and recognises the need for the agriculture sector to become more resource efficient but this trend is yet to establish itself.[13] Beyond these challenges, armed conflicts in Syria and Iraq have negatively affected Jordan's cross-border trade of agricultural products. The influx of Syrian refugees is placing a significant additional strain on food resources which is difficult to anticipate. The agriculture sector is also a significant employer of undocumented foreign workers. Nonetheless, the sector remains a key part of Jordan's plans going forward, with Vision 2025 targeting an increase in the rate of agricultural exports from 18% in 2014 to 24% in 2025.

5 UNFCCC. 'Jordan's Third National Communication', 2014
6 International Energy Agency. World Energy Outlook, 2015
7 Bates, J. 'Exceptional second half to the year leads to 2015 traffic rise at Queen Alia', Airport World, January 2016. Accessed 30th March 2016 http://www.airport-world.com/news/general-news/5420-jordan-s-queen-alia-international-airport-reports.html
8 Government of Jordan. 'Jordan 2025'
9 Suleiman, A. 'Jordan, Israel agree $900 million Red Sea-Dead Sea Project', Reuters, February 2015. Accessed 30th March 2016 http://www.reuters.com/article/us-mideast-economy-water-idUSKBN0LU23Z20150226
10 Ministry of Planning and International Cooperation. 'Jordan 2025'
11 World Bank. 'World Bank Open Data' accessed 30th March 2016 http://data.worldbank.org/
12 World Bank. 'World Bank Open Data' accessed 30th March 2016 http://data.worldbank.org/
13 Government of Jordan. 'Jordan's National Employment Strategy 2011-2020'. Accessed 30th March 2016 http://www.ilo.org/wcmsp5/groups/public/---arabstates/---ro-beirut/documents/meetingdocument/wcms_313611.pdf

Waste

In 2014, Jordan disposed of approximately 2.1 million tons of municipal solid waste (MSW) in 20 landfills across the Kingdom.[14] Given the projected 2.2% increase in population and the influx of Syrian refugees and tourists, inadequate solid waste management is expected to become an increasing problem and may become a serious threat to the environment.[15] This is all the more likely given that only the Al Ghabawi landfill site in Amman is lined; the other landfills represent significant hazards to the environment and public health as well as missed revenue and employment opportunities through harnessing the energy potential of waste. Vision 2025 establishes a target to reduce waste to landfill from a forecasted 80% in 2017 to 60% in 2025.

Tourism

Tourism has been identified as a key growth industry for Jordan, with Vision 2025 targeting an expansion of tourism from providing 8% of employment in Jordan to 16%. Jordan's natural and cultural riches constitute an asset base akin to being blessed with the extensive mineral resources that the country lacks. However investments in the sector must also be carefully considered, in part since this sector's performance is also closely linked to the instability in the region, and international perceptions of this instability. Numbers of foreign visitors declined from 8.2 million in 2010, prior to the Arab Spring uprisings, to 5.3 million in 2014.[16] Recent numbers indicate that the trend continues. In 2015, visitor numbers struggled to recover despite efforts by the government and tourism associations to reverse the decline. The Petra Hotel Association reported that 10 of 38 hotels in Wadi Musa (the town adjacent to the world renowned tourist destination of Petra) have shut, contributing to the loss of about 1,500 jobs in the tourism sector.[17]

1.4 Introducing the dimensions of green growth

Jordan's Vision 2025 sets out how Jordan has traditionally emphasised responsible resource management given its limited natural resource base. It recognises that under today's economic climate and political pressures it is as important as ever to monitor a set of interdependent indicators and details these in the Vision's annex. This emphasis on interdependencies aligns well with the green growth principles that different sectors and priorities will have a range of knock-on effects beyond the main outcome that is desired. Green growth is concerned not only with the rate of economic growth but also with its quality; the ability of growth to deliver multiple economic, social, and environmental benefits that improve the quality of people's lives across all segments of society.

5 dimensions of green growth have been identified which crystallise this principle of interdependent priorities across Jordan's economy. They provide the definition of green growth in this NGGP. These can all be identified in different parts of Jordan's Vision 2025, but green growth aims to present them as an easily identified dashboard of priorities. These are listed in Figure 1.1.

14 Sweepnet. 'Country Report on the Solid Waste Management in Jordan, April 2014. Accessed 30th March 2016http://www.moenv.gov.jo/AR/EnvImpactAssessmentStudies/Documents
15 International Monetary Fund. 'Country GDP data and forecasts', 2016
16 Porter, L. "No business' for Petra stallholders as Jordan suffers tourism drought', Telegraph, 29th April 2015. Accessed 30th March, 2016 http://www.telegraph.co.uk/travel/des4na4ons/middleeast/jordan/11570484/No-business-for-Petra-stallholders-as-Jordan-suffers-tourism-drought.html
17 Porter, L. 'Petra: 'nobody in sight' as visitor numbers halve', Telegraph, 30th March 2015. Accessed 30th March, 2016 http://www.telegraph.co.uk/travel/destinations/middle-east/jordan/articles/Petra-nobody-in-sight-as-visitor-numbers-halve/

1 **Sustained economic growth** highlights the importance of Jordan's economic growth, being sufficiently robust and diverse to support broad-based development which is focused on Jordanian citizens. It emphasizes the importance of being able to deliver this both today and into the long-term. With the right policies and enabling conditions, this growth can leapfrog the resource-intensive and environmentally unsustainable model of industrial development pioneered by the majority of advanced economies.

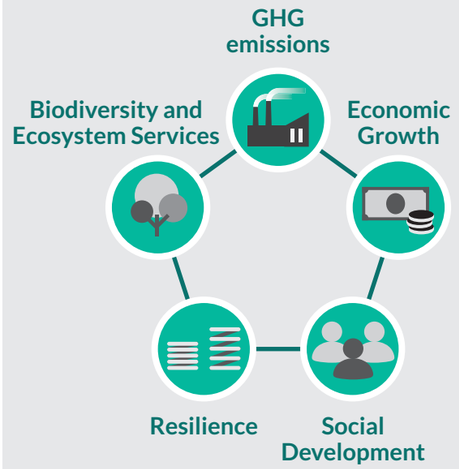
2 **Social development** highlights growth for the benefit of all segments of society, all children, women, and men, in areas across all local economies, including not only the affluent and well connected but also poor and marginalized groups. Well governed, accountable institutions and people-oriented policies that empower communities are critical for achieving this. This outcome is correlated with the quality of economic growth and the environment. Countries with high levels of inequality are likely to benefit greatly from green growth interventions as the poor are hit the most by environmental degradation.

3 **Resilience** highlights growth which builds capacity for maintaining or restoring economic, financial, social, and environmental stability in the face of shocks. Examples include adapting to the physical impacts of a changing climate with new climate-proofed infrastructure, diversifying economic sectors, bolstering food and energy security and managing currency and trade stability. Countries that are more exposed to the physical and resource impacts of climate change are likely to benefit more from green growth interventions.

4 **Biodiversity and ecosystems services** highlights growth which sustains natural capital, that is, the stocks of natural resources which can supply a continuous flow of benefits in the form of ecosystem services. These services, such as the provision of clean water and productive soil that facilitates food security, provide essential contributions to economic growth and human wellbeing but are often omitted from decision-making as they are not valued as inputs to economic production. Green growth seeks to redress these market failures by valuing ecosystem services.

5 **Greenhouse gas emission reductions and avoidance** highlights the importance of low-carbon growth to contribute to global and national efforts to mitigate climate change and minimize future adverse impacts on local and international society. Countries with higher greenhouse gas emissions intensity have greater opportunities for cost-effective emissions reduction and more urgent need for assistance. A reduction in greenhouse gas emissions will usually go hand in hand with improved local air quality, through reduction in air pollutants. Improving performance on other local pollution, for example water and soil pollution, is also important for improving health outcomes and quality of life for Jordan.

Figure 1.1 The five interlinking desired outcomes of green growth



A number of international organisations, such as the World Bank Group, UNEP and the OECD have defined green growth. Below are two such examples:

> "Green growth is growth that is environmentally sustainable. It is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of environmental management in preventing physical hazards and excessive commodity price volatility"
>
> ***- World Bank***

> "Green growth means fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. To do this, it must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities"
>
> ***- OECD***

Green Growth drivers in Korea (contd.)

The Republic of Korea was one of the first countries to explicitly adopt low carbon green growth as the country's new development vision. This was expressed in the National Strategy for Green Growth and Five Year Plan for Green Growth, 2009 – 2013 where the strategy aims to shift the country to quality-oriented growth that is more dependent on new and renewable energy sources. Green growth drivers have been placed at the heart of Korea's vision for the next 60 years with a focus on promoting eco-friendly new growth engines, enhancing the quality of life for its citizens and contributing to international efforts to combat climate change.

1.5 The desired outcomes of green growth in Jordan

Concern for specific green growth outcomes can already be recognised in a number of Jordanian strategy documents. However, mapping Jordan's current priorities and concerns onto the 5 green growth outcomes demonstrates the co-benefits and inter-dependencies across Jordan's economy, as well as the complex chains of events which may result from green actions.

Sustained growth for the Jordanian economy

Economic growth lies at the heart of Jordan's plans, and it has already set out some ambitious targets. However given its central importance, it also runs the greatest risk of being prioritised at the expense of the other four priorities listed here. A key observation in the Vision 2025 document is that while Jordan achieved high economic growth from 2002-2008, neither poverty or unemployment were reduced.[18] Similarly, Jordan's economic growth has also been in part responsible for some of the key challenges that it now focuses, namely water scarcity and an overreliance on external resources. The technology potential and human capital now exists in Jordan to shift Jordan away from these risk-laden growth drivers towards a green economic growth trajectory.

Maintaining and enhancing Jordan's biodiversity and ecosystems services

There are a number of key opportunities for Jordan to capitalise on resources that are currently underutilised. For instance, 19 of Jordan's 20 landfill sites are currently uncapped allowing methane that could be harnessed for energy generation to escape into the atmosphere. They are also unlined, allowing the escape of leachates that can damage biodiversity by contaminating water resources. Similarly, safeguarding biodiversity via marine parks in Aqaba will secure the appeal of this major tourist destination; this must be taken into account in future investment decisions in light of promoting economic expansion.

Inclusive and equitable growth for Jordan's population

Jordan's most pressing social issue is the huge influx of refugees currently entering the country. There are also issues around growth being overly focused on specific geographic areas, primarily the urbanised areas of the North around Amman and Aqaba in the South. Opportunities are often few and far between for Jordanians living outside these focus areas. Educated women also make up an important demographic of the population that has high potential to make significant contributions to economic growth if social norms can be sufficiently shifted.

Reducing GHG Emissions from Jordan

Reducing GHG emissions in Jordan goes hand-in-hand with the national priority of reducing reliance on external fossil fuels, and hence can be seen as a co-benefit of the green growth outcome of environmental resilience. However, specifically targeting GHG emissions reductions – as Jordan has done with a conditional INDC commitment to reduce emission by 14% on BAU by 2030 - could also result in benefits to Jordan.[19] Jordan has an opportunity to become a regional innovator and leader in these technologies, with significant implications for Jordan's regional and international reputation. The 2013 Arab Future Energy Index (AFEX) showed that Jordan has made progress in this regard. It ranked second in the Arab region for its transition towards renewable energy to date, although renewables still only accounted for 2% of energy generation in 2015.[20] Under the new legally-binding global climate regime countries will be able to purchase carbon credits in order to achieve their Nationally Determined Contributions. Jordan is well placed to capitalise on this through low-carbon development, stating an ambition of "increasing the level of involvement in carbon market business" in its INDC.[4] However the IMF cautions that GHG-related policies (e.g.: carbon pricing) should be designed carefully, since the macroeconomic consequences of policies to abate climate change can be wide-ranging across sectors. For instance, in the US, heavy investment in biofuels at the expense of other crops drove international food prices up.[21] This builds the case for considering the impact of policies upon all of the green growth dimensions in a Jordanian context before implementation.

Ensuring Jordan's environmental and economic resilience into the future

Jordan's INDC observes that climate change is anticipated to affect sustainable development, economic growth and society through significant decreases in rainfall as well as significant increases in temperature, humidity and extreme weather events.[22] This is most likely to manifest in water shortages; an issue already considered high priority. As stated above, energy security is also a priority which is fundamental to the green growth outcome of sustained economic growth. The importance of resilience can be seen across sectors; for instance the Ministry of Tourism has recognised that boosting internal tourism is an important way of ensuring that growth in the sector is economically resilient and less exposed to the regional instability which is affecting Jordan's tourist footfall (and energy reliability).

18 Government of Jordan. 'Jordan 2025'
19 Hashemite Kingdom of Jordan. 'Intended Nationally Determined Contribution', UNFCCC, 2015. Accessed 30th March 2016 http://www4.unfccc.int/submissions/INDC/Published%20Documents/Jordan/1/Jordan%20INDCs%20Final.pdf p.3
20 Information provided by Mr. Wijdan Rabbadi, Commissioner and Secretary General at the Energy & Minerals Regulatory Commission
21 International Monetary Fund. 'Climate Change and the Global Economy', 2008. Accessed 30th March 2016 https://www.imf.org/external/pubs/ft/weo/2008/01/pdf/c4.pdf p.1
22 Hashemite Kingdom of Jordan. 'INDC' p.3

Resilience in the Jordan Response Plan

One of the core themes in the JRP is resilience, with a focus on striving to foster the resilience and effectiveness of Jordan's service delivery system in the areas of education, energy, health, justice, municipal services, social protection, and water and sanitation. The document observes the impact that the refugee influx is having on priority green growth sectors. For instance, 19 per cent of solid waste is currently not going to landfill due to capacity shortages, with 91% of this attributed to the impact of the additional solid waste produced by Syrian refugees. Similarly, it is observed that the refugee crisis has significantly exacerbated existing water security issues. While immediate response measures have an important part to play, many of the JRP's recommendations are well-aligned with this NGGP, such as crop and livestock diversification, intensification and promotion of climate-smart agriculture as a response to food security issues. Green growth can help to implement and develop the JRP in response to an unpredictable future.

1.6 Drivers of green growth

Some of the key components for success in achieving green growth are common across a number of developed and developing countries. These include:

- Efficient use and utilization of local knowledge of natural resources and ecosystem services; their continued availability is critical to long run economic prosperity and quality of life.
- Private and public investment in low-carbon climate-resilient infrastructure; this underpins modern economic growth.
- Mix of policies and incentives that shift production and consumption patterns
- Stimulation of innovation and private sector investment in new and adaptive technologies and business models; these deliver productivity improvements essential for sustained economic growth.
- Focus on human capital: to provide a skilled and educated workforce needed for an economy less dependent on resource extraction, and fostering better social outcomes.
- Address existing market failures in pursuit of economic, social and environmental goals; as economic growth is catalysed by more efficient allocation of resources.

The targets in both Vision 2025 and Jordan's INDC recognize the value of a number of these green growth drivers, demonstrated below.

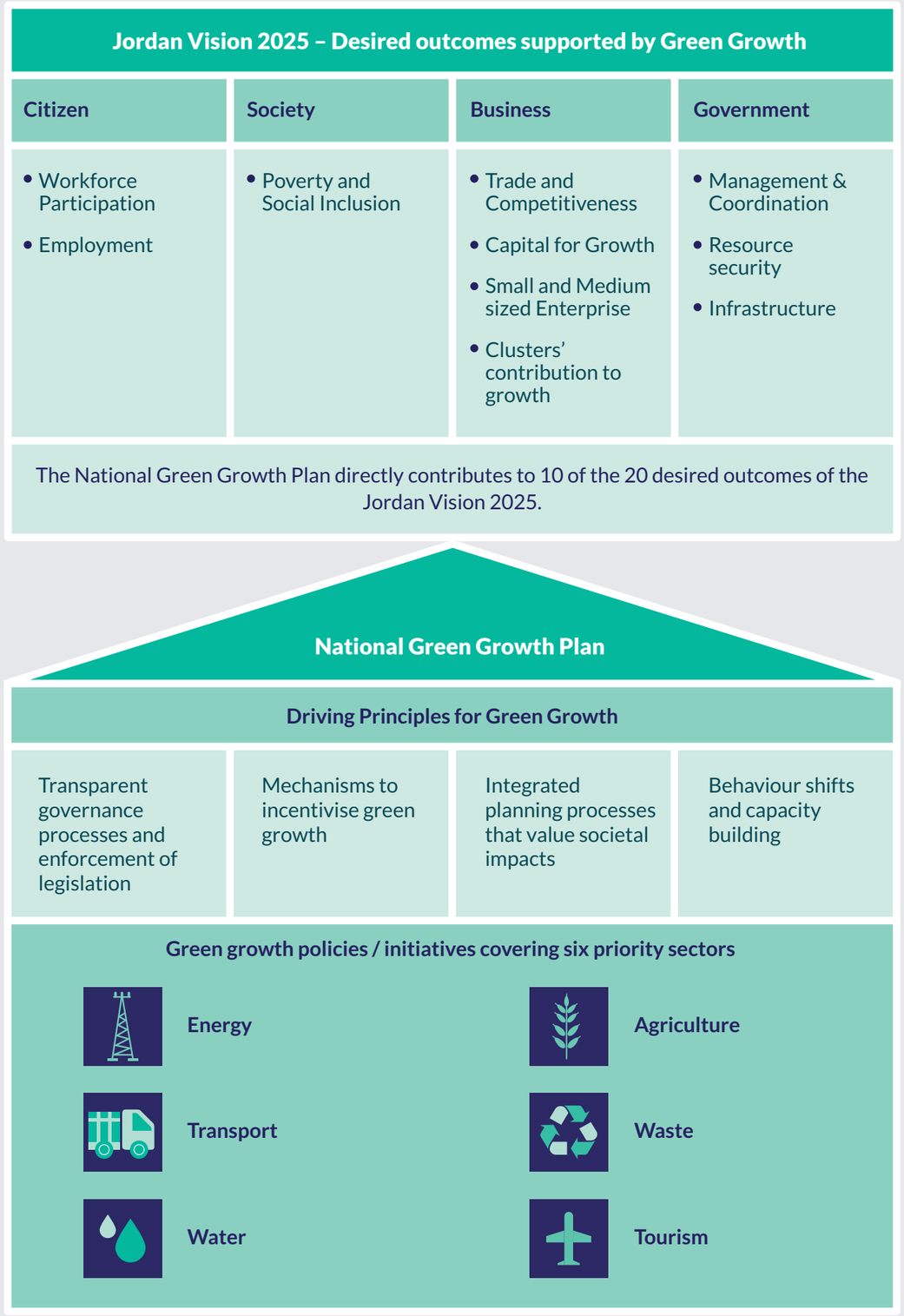
Examples of drivers of green growth in Vision 2025's targets

- Tracking forested area with targets to increase coverage
- Reducing the energy required to provide a cubic meter of billed water
- Increasing connectivity to sewerage
- Trying to increase the proportion of natural gas and renewables in the energy mix, and produce more energy domestically
- Reducing how much energy is required for each dollar of GDP
- Improving the treatment of waste and amount that is recycled
- Reducing poverty, food poverty and trying to improve the GINI* coefficient, Human Development Index and Social Progress measures of inequality and social welfare whilst also providing for refugees
- Improving employment rates especially among women

* Measure of the deviation of the distribution of income among individuals or households within a country from a perfectly equal distribution. A value of 0 represents absolute equality, a value of 100 absolute inequality.

Examples of drivers of green growth in Jordan's INDC targets

- Commitment to low carbon infrastructure through its target to reduce GHGs by 14% by 2030 compared to business as usual, 1.5% of which being unconditional and an extra 12.5% conditional on international support
- Increasing the proportion of renewable energy to 10% of the energy mix and improving energy efficiency by 20% by 2020
- Combatting desertification to improve biodiversity and ecosystem services in Jordan
- Strategic adaptation to climate change plans demonstrate a protection of green growth drivers such as the water sector, health of citizens, protection of biodiversity and the agriculture sector
- Social strategies to provide for refugees and alleviate poverty
- Education and skills programs to improve the opportunities and productivity of the workforce

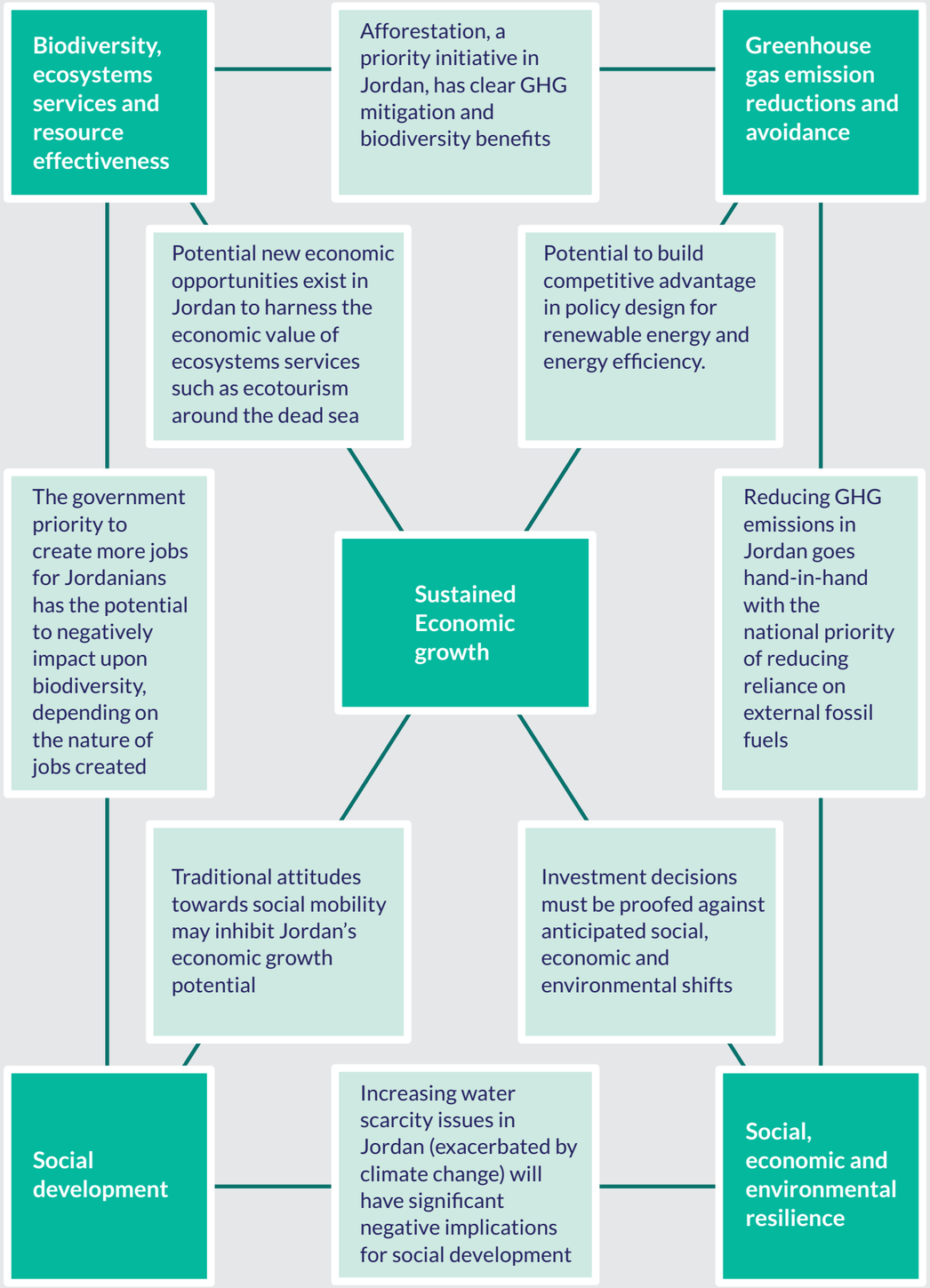


1.7 Viewing Jordan through a green growth lens

Figure 1.2 provides examples of some of the interlinkages between the green growth outcomes in Jordan. This is not a comprehensive list of interlinkages between the outcomes, but illustrates some of those relationships which may be of significance. Some of these linkages are positive opportunities to be exploited, such as ecotourism as a chance to generate new revenue streams and employment opportunities while safeguarding biodiversity. However, viewing Jordan's economy through this framework also uncovers significant threats, such as the danger that government investment decisions are not futureproofed in the light of a changing climate and an uncertain regional political horizon.

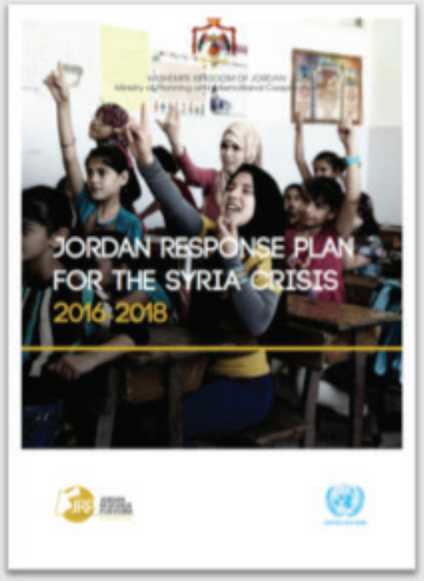
This has significant implications for policymaking, since it illustrates the breadth of impacts that can occur in areas that may not conventionally be taken into consideration. Viewing decisions through this 'green growth' lens can ensure that the priorities of the Vision 2025 document alongside other key documents such as the INDC can be consistently applied across sectors. Economic growth lies at the centre of this series of interrelationships, and is both required to fuel continuing attention being paid to the other 4 priorities but also needs the other 4 priorities to be taken into consideration for economic growth to be sustained.

Figure 1.2 Examples of relationships and interlinkages between the 5 green growth outcomes



Using the green growth outcomes as a lens in policy design and project appraisal leads to questions being asked which are of crucial importance but may not be front of mind for decision makers. This is demonstrated in figure 1.3 which shows the sets of questions that result from considering a specific policy aimed at addressing the refugee crisis through a green growth lens. The purpose of this is not necessarily to debate whether the initiative should be implemented. Rather, it is to ensure that the initiative's implementation contributes as much as possible to Jordan's green growth plans.

Figure 1.3 Screening the Jordan Response Plan against the 5 green growth outcomes



RES 1.3 To expand higher education opportunities for vulnerable Jordanian and Syrian youth

Economic Growth	Are the vulnerable youth receiving education opportunities that match to skills demand in growing industries?
Social Development	What processes will be in place to ensure that it is the vulnerable individuals targeted by the JRP who are actually the beneficiaries of this initiative?
Resilience	How will the resources required for education impact upon the water and energy security of the areas in question?
Biodiversity & Ecosystem Services	Where exactly will these opportunities be provided? How can impacts such as land use and waste be minimised?
GHG emissions	How much GHG emissions does the energy produce that is used to support the locations where new higher education opportunities are offered?

1.8 Jordan's key trends

Relying on external resources through ongoing regional turmoil

Jordan's economic history has been through a number of different phases, and has shown remarkable resilience by negotiating a series of varied challenges up to the present day. Little growth was experienced through 1990s, in large part due to its significant exposure to the fluctuating oil prices caused by the first Gulf War (1990-1991). [23] Jordan's fuel mix has traditionally been reliant on imported oil. While this showed signs of decreasing in the first 10 years of the new millennium, regional instability and attacks on gas supplies has led to oil use rebounding and continuing to rise. Jordan's Energy Minister, in mid-2014, announced that the government expects to commission about 1,800MW of solar and wind power capacity by 2018. Of these, power purchase agreements have already been signed for 300MW of solar power projects and 200MW of wind power projects.[24] IEA forecasts suggest that renewables will account for around 7% of the fuel mix in 2030, with oil and natural gas continuing to dominate in line with government plans to prospect for shale oil.[25] The 7% share of renewables may seem a relatively small proportion, but this is based on business-as-usual performance. The opportunity for Jordan is considerably larger than this percentage and Jordan could become a regional leader in developing renewable technology if it makes the right decisions in the coming years. Recent steps by the government demonstrate their commitment to seize this opportunity. Jordan's latest energy strategy update sets renewable energy targets at 10% of Jordan's energy needs in 2020 and the country is on track to outperform business-as-usual forecasts.

Social progress – but enduring barriers

Jordan has made substantial progress in a number of key areas related to social development over the last 30 years, such as reducing the percentage of the population living under $3.10 a day from 19% in 1992 to 2% in 2010.[26] Similarly, life expectancies have risen from 66 years in 1980 to 74.4 in 2014. Figure 1.4 also demonstrates that the GINI coefficient of inequality has also decreased, which signifies some reductions in inequality. The index was 36.42 in 1997 and 33.66 in 2010 – demonstrating that despite overall improvements, Jordanian society's structure and its accompanying inequalities have only improved marginally. This is reflected by the emphasis placed by Vision 2025 on reducing the influence of Wasta, the cultural norm that emphasises the importance of social networks and can be a significant inhibitor to social mobility.[27]

Well-made plans struggling with execution

Throughout the 20th century, Jordan has seen a series of intervention programmes aimed at restructuring the economy and stimulating growth, most notably from the IMF and the World Bank in the early 1990s.[28] This has been cited as a key driver in the strong growth that Jordan saw throughout the late 90s and early 2000s. Since then, a number of other development agencies and institutions have attempted to develop plans and solutions to Jordan's unique country context and to ensure its position as one of the most stable economies in this turbulent region remains secure. This has resulted in a high volume of plans and strategies and a pipeline of projects and initiatives. There are examples of success in this area, such as the Ministry of Agriculture's measures in the 1980s to boost productivity and output. However, this has all too rarely translated into tangible progress for Jordan. For instance, many projects have been launched in the last few decades to restore the Badia rangelands in North-Eastern Jordan.[29] Though some restoration projects were successful, most failed to achieve the needed restoration levels. As a result, people who were intended to benefit from previous interventions often lost confidence in the interventions succeeding.

Heading abroad to earn

Remittances from Jordanians working abroad form a key part of the economy, making up 10% of GDP in 2014.[30] While remittances do contribute towards Jordan's GDP directly support families and may stimulate spending within Jordan, domestic earning is preferable as a basis for economic growth. Current trends around remittance earnings encourage spending without increased investment, which is likely to be unsustainable into the longer term.

Figure 1.4 Jordan's key trends

Source: World Bank, 2015

23 Ramachandran, S. 'JORDAN: Economic Development in the 1990s and World Bank Assistance'
24 PwC, Eversheds. 'Developing renewable energy projects: A guide to achieving success in the Middle East', January 2016. Accessed 30th March 2016 https://www.pwc.com/m1/en/publications/documents/eversheds-pwc-developing-renewable-energy-projects.pdf
25 International Energy Agency. World Energy Outlook, 2015
26 World Bank. 'World Bank Open Data'
27 Government of Jordan. 'Jordan 2025'
28 Ramachandran, S. 'JORDAN: Economic Development in the 1990s and World Bank Assistance'
29 USAID. Water reuse and environmental conservation project. CONTRACT NO. EDH–I–00–08–00024–00 ORDER NO. 04
ZARQA IWTP - Assessment of treatment alternatives/feasibility study, January 2013
30 World Bank. 'Migration and Remittances Factbook 2016' accessed 22nd September 2016 http://go.worldbank.org/QGUCPJTOR0
31 Carrion, D. 'Syrian Refugees in Jordan: Confronting Difficult Truths'. Chatham House, September 2015. Accessed 30th March 2016
https://www.chathamhouse.org/sites/files/chathamhouse/field/field_document/20150921SyrianRefugeesCarrion.pdf

Refugees in Jordan

Jordan's population has already been increased by Syrian refugees by 8%.[31] This is a complex and unpredictable input to Jordan's national context which is difficult to make assumptions regarding the economy. It is placing significant strain on Jordan's health and education sectors as well as leading to a burgeoning informal employment sector. With regional instability likely to continue for the foreseeable future, it is crucial that Jordan accounts for this uncertainty by building the resilience and adaptive capacity of its sectors to deal with unexpected shifts. Jordan also needs to make plans that account for this key demographic and conceive it as an economic opportunity rather than a barrier to growth wherever possible. This is a common theme throughout the analysis.

1.9 Jordan's future trajectory

Jordan has the power to choose between a number of different growth trajectories into the future which will be dictated by its policy and investment decisions now. According to the IMF, Jordan's GDP per capita was $5,543 in 2014. This is forecast to rise to $7,779 in 2030 in real terms, a substantial increase that, if well managed, should necessitate further social improvements. However, this growth rate is likely to be reliant upon a substantial rise in energy consumption and GHG emissions over this period (see Figure 1.6). Comparison is therefore drawn with Ireland, Switzerland and Croatia. These countries are presented in the Vision 2025 document as benchmarks against which to measure Jordan due to similarities such as population size, business environment and natural resource base.

Table 1 Vision 2025: Benchmark Peer countries

Countries	Population Size 2013	GDP 2012 ($ Billion)	GDP Per Capita ($)	GDP Per Capita (PPP, 2012)	Total Natural Resources Rents (as % of GDP)	Geographic Size (1000 sq km)
Georgia	4, 5	15, 7	3, 489	6, 808	0.90%	69
Tunisia	10, 8	45, 7	4, 231	10, 797	7, 40%	155
Jordan	6, 3 *	31, 0	4, 921	11, 539	2, 8%	89
Bulgaria	7, 3	51	6, 986	16, 041	2, 80%	109
Uruguay	3, 4	49, 9	14, 676	18, 280	2, 50%	175
Croatia	4, 3	59, 2	13, 767	20, 961	1, 60%	56
Hungary	9, 9	124, 6	12, 586	22, 635	0, 90%	91
Lithuania	3	42, 3	14, 100	24, 356	1, 00%	63
Finland	5, 4	247, 4	45, 815	39, 199	1, 40%	304
Ireland	4, 6	210, 6	45, 783	43, 834	0, 10%	69
Switzerland	8	631, 2	78, 900	53, 191	0, 00%	40
Singapore	5, 3	267, 5	52, 170	72, 724	0, 00%	0, 7

Source: Vision 2025, page 21
*6,53 million in 2015; total population, including refugees, is estimated at 9,53 million, according to the Population & Housing Census on Dec. 11, 2015. Department of Statistics. Accessed 18 December 2016. http://www.dos.gov.jo/dos_home_e/main/Demograghy/Methodology.pdf

While their economies are more advanced and the country contexts are not identical, both Ireland and Switzerland can be viewed as countries whose growth models Jordan could aspire to replicate. Both are forecasted to achieve steady growth while continuing their trend of declining GHG emissions.

Croatia's recent decline in emissions relates to the global financial crisis and their emissions are forecasted to rise from 2015-2030, but at a rate of only 0.3% a year. As such Croatia can be seen as a middle ground for Jordan's aspirations between the current GHG-intensive trajectory and Switzerland and Ireland's decoupled growth. The forecasted rates of GDP growth for these countries are admittedly not as high as Jordan's. However these trends suggest it may be possible for Jordan to follow suite and decouple the economic and social development demanded by its people from the emissions which may cause global harm via GHG emissions leading to climate change – if it makes the right investment decisions now.

Jordan has already demonstrated awareness of the risks of becoming locked into a carbon intensive growth trajectory by submitting its INDC to the UNFCCC in 2015 and ratifying the Paris Climate Agreement in 2016. This shows a national commitment to reduce GHG emissions and this commitment positions Jordan well to respond to green growth priorities. Many of the initiatives mentioned in the INDC, such as biogas from waste, Bus Rapid Transit and afforestation, are quantitatively appraised in this NGGP with a view to facilitating the shift towards implementation. Nonetheless, while implementation is crucial, Jordan must also explore means of accelerating its climate ambition further in order to decrease its GHG emissions. By facilitating these first steps towards implementation and showing that they can be compatible with economic growth, this NGGP aims to build the case for economic growth with less GHG emissions into the 21st century.

Figure 1.5 Jordan's INDC ambition in comparison with its peers. GDP growth trajectories are forecasted after 2015 using data from the IMF.

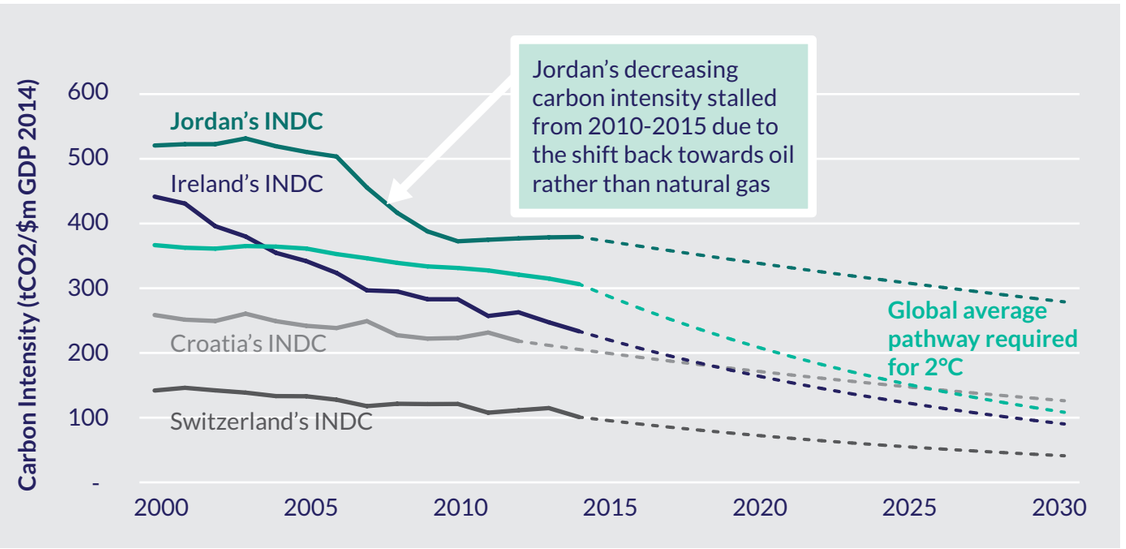


Figure 1.6 Comparison of the relationship between GDP growth and emissions under a business-as-usual scenario for Jordan and its peer countries selected in Vision 2025.

1.10 The costs of inaction in Jordan

Green growth will require investment. This investment must recognise that the value generated by some measures may not be immediately realised. Making the case for pursuing green growth therefore depends in part on recognising the substantial costs associated with maintaining the status quo. Green growth offers an alternative path to prosperity without these dire side effects while unlocking substantial new opportunities. With this in mind, a series of 'cost' scenarios have been developed to reflect the potential risks associated with Jordan continuing business as usual.

Continued reliance on external sources leading to energy insecurity and disruption and government budget challenges

Importing about 97% of energy requirements as fossil fuels with total cost of 18% of GDP has become increasingly costly and unsustainable given regional instability, and this trend is likely to continue without intervention. The increase in electricity and primary energy demand (5-7%/year) poses an additional challenge. Jordan lost between $4-5 billion as a result of oil stoppages such as attacks on the Arab Gas pipeline in 2013 which forced the government to provide financial support to utilities.[32] It will remain challenging for Jordan to move towards a more independent growth model and attract investment in industry while remaining so exposed to external shocks. This will also manifest as a social cost for Jordanians, with energy price volatility hitting the pockets of Jordan's poor the hardest.

Inequitable growth largely restricted to selected urban areas due to inadequate connectivity across Jordan

The development gap between governorates is identified by Vision 2025 as a key challenge.[33] Transport demand, both passenger and freight, is also growing rapidly, due to a growing population and the economic development within the country and in the region. This growth is concentrated on parts of the transport networks, nearby the main urban areas of Amman, Zarqa, Irbid and Aqaba and along the key corridors. As a consequence, parts of the networks are under pressure, and supply falls below demand. Without interventions the situation is likely to worsen and at the end of the next decade, the system may not be able to perform as needed to support Jordanian economy. Furthermore, lack of investment in energy and transport infrastructure will lead to economic activity focused on those few urban areas where existing infrastructure can support growth. This may lead to comparative social deprivation in other areas across Jordan.

Rising GHG emissions due to fossil fuel-intensive growth trajectory

Jordan's current emissions of CO2 from fossil fuel consumption are around 21MtCO2e. [34] These emissions impose economic costs on future generations in Jordan and globally. The future global costs of current greenhouse gas emissions, through the negative effects of climate change on future economic activity, can be approximated using an estimate for the "social cost of carbon". Estimates imply a future economic cost to Jordan's yearly CO_2 emissions of $2.3bn, or 6% of Jordan's GDP in 2015. [34] However, using global data for the future cost of climate change masks Jordan's unusually high vulnerability to damages from climate change at a local level. As Jordan ratifies the new global climate agreement, it will also have a legal obligation to report on, and accelerate, its efforts to reduce national GHG emissions, which will prove increasingly challenging to an economy reliant on fossil fuels.

Widespread freshwater shortages due to over-abstraction and salinization of water

The Jordanian Ministry of Water and Irrigation anticipates that Jordan's water demand will exceed the available water resources by more than 26% by 2025. Even with the completion of the Red Sea-Dead Sea Project, this deficit is projected to be at 6%.[35] Similarly, the FAO argues that available renewable water will never be enough to meet the escalating water demand. The water deficit for all uses is expected to grow from 224 million m3 in 1995 to 437 million

m3 in 2020 and will have to be met by mining groundwater.[36] The groundwater level has been in continuous decline since the 1980s, which has caused the drying out of major springs feeding the Azraq Oasis in the 1990s.[37] Other ecosystems, which provide high potential to bolster Jordan's appeal as a tourism destination and encourage longer term stays rather than short visits to tourist hotspots such as Petra and the Dead Sea, could also disappear under this worrying trend. The Jordan Vision 2025 aims to address this trend through initiatives such as reducing over-pumping at unlicensed wells, but the barriers to behavioural change are entrenched and will prove challenging to address.[38]

Missed opportunity to lead the clean energy industry boom regionally green growth engines

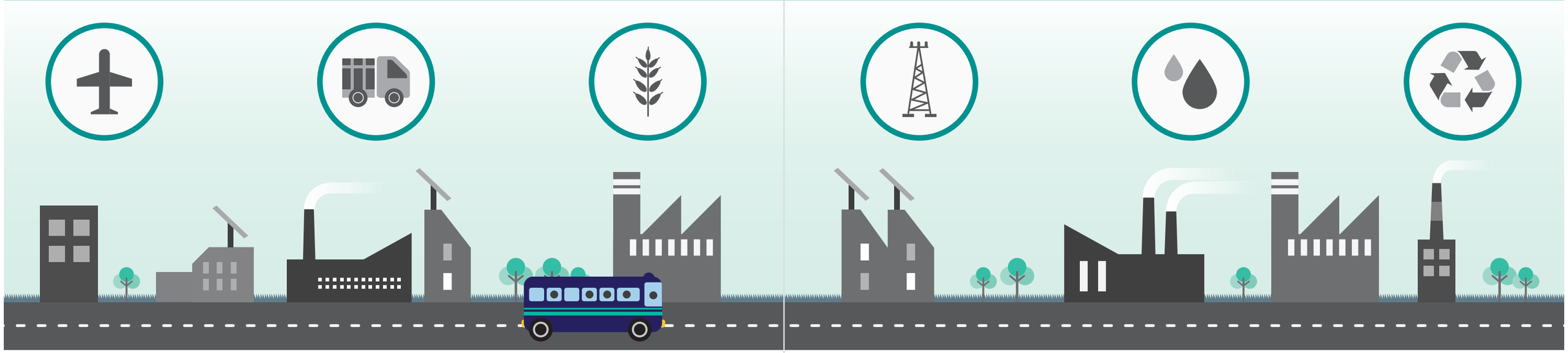
Jordan has one of the highest solar irradiance levels in the world of 4-7kWh per square metre coupled with more than 330 days of sunshine. This provides a high potential for the development of solar power in the country. Jordan also possesses high potential of wind energy resources with annual average wind speeds exceeding 7m/s (at 10m height) in some areas of the country.[39] This, coupled with its lack of conventional fossil fuel resources and political commitment to renewable energy, provides a golden opportunity to develop industries around clean technology development. However, Jordan is not the only country well-positioned to capitalise on this growing market. The UAE shares Jordan's abundant solar radiation as a renewable energy resource and announced in 2015 its commitment to invest $35 billion in clean energy by 2021.[40] If Jordan is not proactive and shrewd in policymaking now, it could quickly fall behind as the regional and global cleantech industry moves forward.

Ongoing talent loss to other economies (particularly female graduates) due to lack of employment prospects

Despite high growth rates, the Jordanian economy has created relatively few new skilled jobs, meaning many people of working age are still economically inactive or have emigrated. The majority of jobs created by growth to date have been low-paid, low-skilled jobs and have largely been taken by migrant workers due to the large proportion of skilled Jordanians. 70 percent of unemployed women have bachelor's degrees, a huge untapped resource.[41] Similarly, in 2011 9% of degree educated Jordanians were working abroad, 47% of whom were female.[42] This may reflect the comparative lack of job opportunities for qualified women in Jordan compared to the international job market. If new industries are not created, and educations systems tweaked to ensure employment prospects match the skills sets of graduates, then this talent loss will become increasingly entrenched. This could make it harder for Jordan to market itself to investors as being a business centre built upon a skilled Jordanian workforce.

32 Government of Jordan. 'Jordan's National Employment Strategy 2011-2020'. Accessed 30th March 2016 http://www.ilo.org/wcmsp5/groups/public/---arabstates/---ro-beirut/documents/meetingdocument/wcms_313611.pdf p.33
33 Government of Jordan. 'Jordan 2025' p.13
34 International Energy Agency. World Energy Outlook, 2015. International Monetary Fund. 'Country GDP data and forecasts', 2016
35 World Resources Institute, 'Ranking the World's Most Water-Stressed Countries in 2040', 26th August 2015. Accessed 30th March 2016 http://www.wri.org/blog/2015/08/ranking-world%E2%80%99s-most-water-stressed-countries-2040
36 Food and Agriculture Organisation of the United Nations, 'Aquastat: Jordan' 2008. Accessed 30th March 2016 http://www.fao.org/nr/water/aquastat/countries_regions/jor/index.stm
37 GIZ, 'The Azraq Dilemma: Past, Present and Future Groundwater Management', German-Jordanian Programme "Management of Water Resources", 2012. Accessed 30th March 2016 https://highlandwaterforum.files.wordpress.com/2012/08/2-1-azraq-dilemma.pdf
38 Government of Jordan. 'Jordan 2025' p.82
39 PwC, Eversheds. 'Developing renewable energy projects: A guide to achieving success in the Middle East',
40 Chemnick, J. 'Oil-rich UAE aims to stay an energy leader in post-Paris world', E&E Publishing, 17th February 2016. Accessed 30th March 2016 http://www.eenews.net/stories/1060032485
41 Albawaba News. 'Women in Jordan are more educated than ever — but they still aren't working', 8th March 2015. Accessed 30th March 2016 http://www.albawaba.com/news/women-jordan-are-more-educated-ever-%E2%80%94-they-still-arent-working-666136
42 Figures calculated from Migration Policy Centre, 'Migration Jordan Facts', April 2013. Accessed 30th March 2016 http://www.migrationpolicycentre.eu/docs/fact_sheets/Factsheet%20Jordan.pdf

2 Sectoral green growth opportunities



2.1 A green growth vision for Jordan

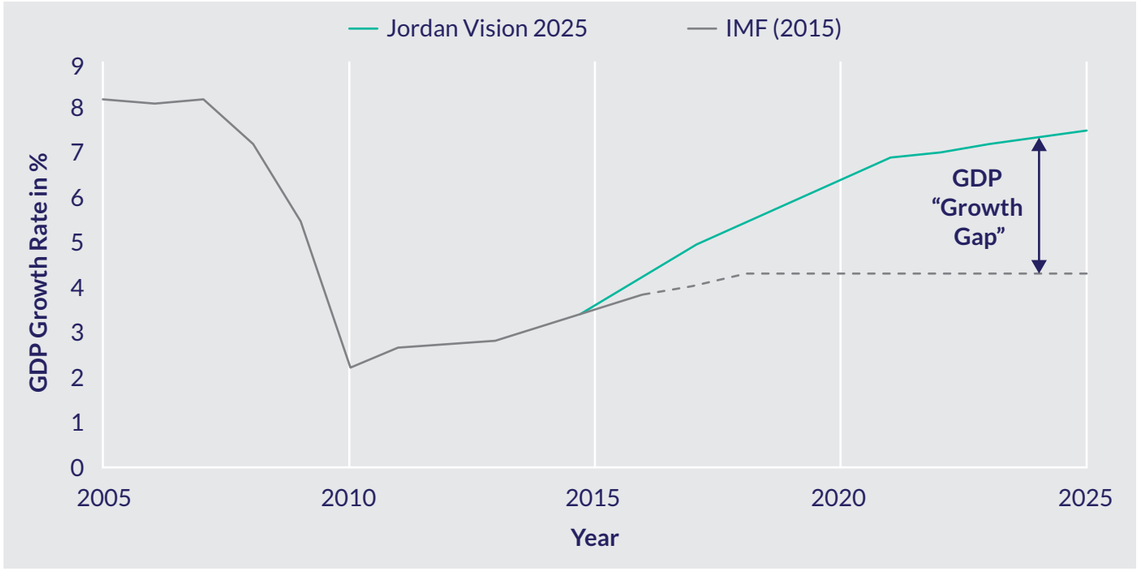
Behind the National Green Growth Plan is a clear vision for Jordan as a country with an expanding and sustainable economy that creates jobs, income for its citizen, and is resilient to external shocks and instability in the region. Jordan seeks to be a country of economic opportunity for everyone, providing decent work and living conditions based on an environmentally sustainable growth model.

Closely aligned with the Jordan Vision 2025, the Green Growth Vision will strengthen the country's strategic framework that emphasizes the creation of jobs and opportunities for its citizen, the promotion of economic growth and the protection of Jordan's environment and scarce conventional natural resources, including water and fossil fuels. The Green Growth Vision is unique in its approach to consider economic growth, social inclusion and environmental sustainability not as contradicting objectives, but as inherently interlinked with the potential to strengthen each other. The Green Growth Vision emphasizes green growth as a distinct, alternative development paradigm that is fundamental to facilitating the development goals set out in the Vision 2025.

The Opportunity of Green Growth – A long term Vision for Jordan

Ultimately, the National Green Growth Plan and Green Growth Vision aim to support the implementation of the Vision 2025. To guide Jordan's development, the Vision 2025 includes a wide range of sector and cross-sector performance targets. One of the key targets is to grow the country's economy at an average real growth rate of 5.7% per year between 2015 and 2025, with the 2025 target at 7.5% real GDP growth. Figure 2.1 below compares Jordan's forecasted real GDP growth until 2025 based on IMF forecasts with the Vision 2025 target. The comparison illustrates the magnitude of the challenge to close the growth gap between forecasted growth and the national target.

Figure 2.1 GDP growth target vs. forecast



Achieving the ambitious targets of the Vision 2025 will require more resources and energy inputs, which is predicted to further increase Jordan's emissions of greenhouse gases, reduce air quality and threaten the sustainability of its natural resources. Results from previous studies suggest that following a traditional growth scenario that ignores principles of environmental sustainability would severely threaten in particular water and energy security in Jordan and double GHG emissions between 2016 and 2030.

Traditional growth models also give rise to other environmental and societal challenges, such as loss of biodiversity, increased urban pollution and land degradation. They also have macroeconomic effects—forcing developing nations to spend wealth on escalating amounts of oil and petroleum imports and negatively impacting balances of payments. However, Jordan has the opportunity to be among the first countries in the Middle East to adopt a green growth model, one that takes advantage of its natural assets without depleting them, avoids costs of inaction on the country's key challenges and seizes opportunities to stimulate green growth despite regional instability.

Seizing the Opportunity for Green Growth

The Government of Jordan has recognized the importance of green growth and has played a leadership role in the development of the National Green Growth Plan. Given the rapid growth trajectory of the Jordanian economy, it is critically important to identify, assess and implement green growth opportunities as shown in the National Green Growth Plan using 8 projects.

Accounting for wider costs and benefits of green projects and initiatives, and internalizing them in decision making, is an important step towards ensuring social and environmental sustainability as well as economic progress. As demonstrated in the National Green Growth Plan, the appraisal of green growth projects and strategic initiatives against criteria that are consistent with Jordan's development priorities helps to understand both the wider costs and opportunities generated by investments. The economic appraisal used for the 24 (see annex for all 24 projects) for green growth interventions was designed to take a broader view of benefits and costs accruing to all stakeholders, whether social, economic, financial or environmental. This is essential to understand implementation barriers and market failure problems, and design economic incentives and market-based solutions to support green investments.

Because of their importance for Jordan's economic and social development and environmental sustainability, six sectors (energy, water, waste, transport, agriculture and tourism) will receive the highest priority to implement a specific set of actions. The implementation agenda described in the National Green Growth Plan will allow working towards Jordan's national targets, realizing in parallel other environmental, health and economic benefits of green growth. It will also help put Jordan on target to meet its international commitments to the UN'S Sustainable Development Goals and achieve its INDC, which were included in the list of projects considered for coast benefit analysis.

2.2 Opportunities to foster green growth

This section introduces the sectoral analysis. For 6 priority sectors, it discusses the current status and plans relating to Green Growth, identified strengths and opportunities and barriers. It also summarizes the results of the project analyses and discusses how these can be linked together. The six priority sectors have been selected to cover the key threats and opportunities for green growth in Jordan. For instance, water security and waste management are currently crucial concerns for Jordan, whereas tourism is a sector with high growth potential if developed in the correct way. With this in mind, identifying and implementing feasible projects that achieve the highest green growth impacts is the pathway to unlocking green growth in Jordan. Tangible results from project implementation and provision of support to projects will enable the government to continue to provide public services to Jordanians and refugees.

Existing strategies for green growth

A number of progressive and comprehensive government strategies have been developed in recent years which provide an excellent foundation upon which to base green growth. Vision 2025 is the central document, providing a set of goals for Jordan that are compatible with green growth. It focuses on the governance arrangements required to achieve these as well as suggested policies and indicators to measure progress. It is a highly ambitious document that will require a collective effort across sectors and government ministries to achieve.

Capital Investment Plans	2016-2018 Executive Development Program (EDP)	Jordan Response Plan
Jordan's INDC	Vision 2025	Jordan's NAMAs

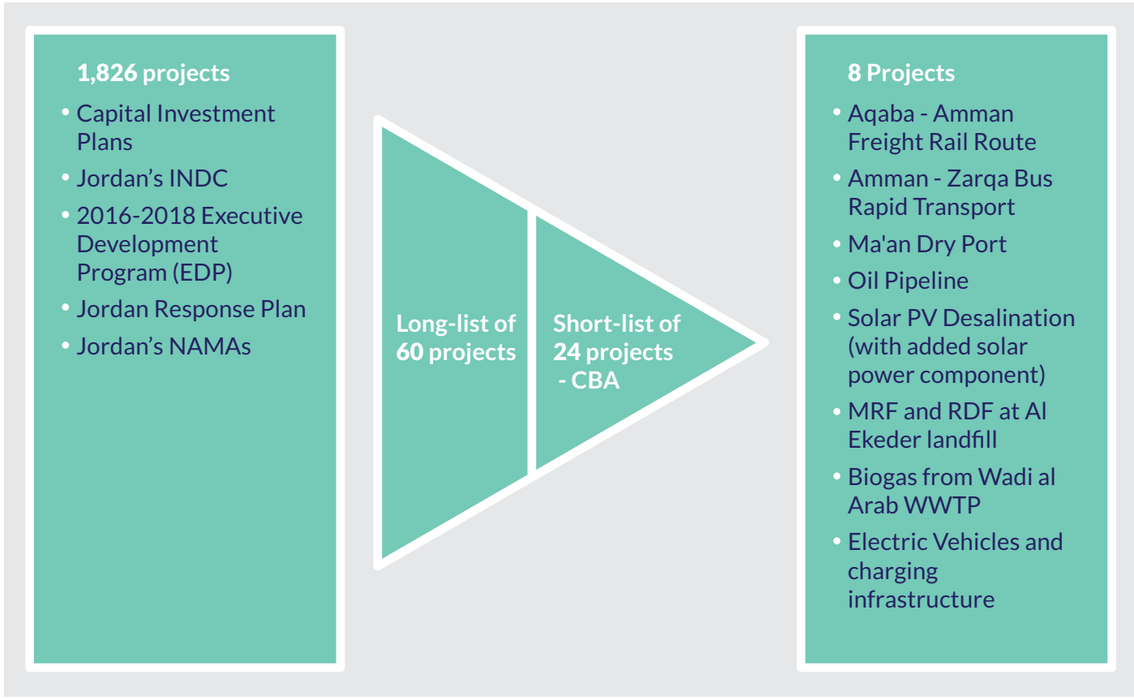
Documents such as the 2016-2018 Executive Development Program (EDP) provide the first stage in implementing the Jordan 2025 economic blueprint, comprising around 25 development sectors, and 1,826 capital projects. This forms the basis for determining priority projects and preparing the state budget.[1] Jordan's INDC and NAMAs specifically target low carbon growth, and also include lists of projects for consideration. This includes a number of the projects appraised in this NGGP, such as biogas generation and bus rapid transit. As such, there are a range of initiatives which can contribute towards green growth which are already in circulation in Jordan.

However, Jordan is no stranger to plans and strategies which have been presented with high hopes but have fallen short at the implementation stage. Innovative approaches will be required to build the case for investment and ensuring effective implementation of projects. While documents such as the INDC make recommendations for the types of projects which could help Jordan to achieve its national climate commitments under the Paris Agreement, there is not a clear plan for feasible implementation. Conversely, it must be ensured that implementation does not negatively impact other aspects of Jordan's asset base which may be seen to increase in value over time.

Project selection process

To this end, A number of priority projects have been selected for green growth appraisal in agreement with key government ministries. This selection was driven by intensive stakeholder engagement with ministries and other key stakeholders. The projects do not aim to constitute a complete list of green growth projects in Jordan, but to illustrate both the wider costs and opportunities generated by investments and to demonstrate the contribution of projects to green growth. Initially, a long list of project options was drawn up for each sector, drawing upon key documents such as Vision 2025 and the INDC as well as sector-specific strategies. These projects were then screened by sector experts for their economic and political feasibility and green growth potential. From this, 24 specific opportunities were identified across the six sectors and appraised using cost-benefit analysis. As a result of subsequent government consultations, eight illustrative green projects were chosen. These projects represent national development priorities and require relatively large investments. They are described in detail below. The results for all 24 projects are shown in annex I.

1 The Jordan Times. 'Cabinet endorses 2016-2018 development programme', 1st November 2015. Accessed 30th March 2016 http://www.jordantimes.com/news/local/cabinet-endorses-2016-2018-development-programme#sthash.MI19Ag74.dpuf



The table below shows the 24 interventions which were appraised to understand their potential to facilitate Jordan's transition towards green growth. It is not a comprehensive list, and some projects may have a broad green growth impact whereas others may have a narrower focus. Each opportunity is appraised quantitatively, with a summary of the potential impacts of the opportunity upon the 5 outcomes of green growth. All 24 projects are included in annex I. Eight projects are described in detail below. They illustrate how the analysis of wider economic benefits can help answer questions such as:

- Does the project offer net positive benefits and should it proceed?
- Are there opportunities to re-design this project to enhance green growth performance?
- Are there policies that might drive better outcomes for this and other projects?

Cost Benefit Analysis can fit into an existing appraisal process. By conducting a CBA before the decision to proceed with the project (alongside other assessments such as Strategic Environmental Assessment and Multi-Criteria Analysis), it is possible to assess whether and by how much, a project is contributing to social, economic and environmental outcomes.

The projects shown in the table below do not represent a complete list of green growth projects in Jordan. The projects aim to illustrate the wider costs and opportunities generated by investments and their contribution to green growth.

All illustrative green growth projects assessed with cost-benefit analysis

Sector	Project Assessed
Transport	Aqaba - Amman Freight Rail Route
	Electric Vehicles
	Amman - Zarqa Bus Rapid Transport
	Ma'an Dry Port
Energy	Eco-Villages Tafilah
	Oil Pipelines
	Fujeij Wind Farm
	Public Buildings Renewable Energy
Agriculture	Roadside Afforestation
	New Crop Variety Introduction
	Livestock Healthcare
	Drip Irrigation
Water	Biogas from Wadi al Arab WWTP
	Pump Efficiency Upgrades
	Solar PV Desalination
	Talal al-Dahab Dam Construction
Waste	Landfill Rehabilitation at Al-Aqaba
	Landfill gas collection and reuse at Al-Aqaba
	MRF and RDF at Al Ekeder landfill
	Industrial waste water treatment plant Al Halabat
Tourism	Eco Lodges
	Public Park (Dead Sea Development Zone)
	Zara Hot Springs (Dead Sea Development Zone)
	Aqaba Blue Flag Beaches

2.3 Using cost-benefit analysis to identify opportunities, inform policy options and drive decision-making in Jordan's priority sectors

To assess the sectoral opportunities identified above and produce consistently valued impacts, a consistent cost-benefit analysis methodology has been used. This has been used to value the positive and negative impacts of possible green growth interventions. Cost benefit analysis is a project and policy assessment tool that is distinctively focused upon achieving green growth outcomes. This tool assesses the performance of specific project or policy options in terms of meeting the desired green growth outcomes. This provides a practical methodology to assess projects and policies at micro level and to complement macroeconomic tools.

Cost Benefit Analyses (CBA) quantitatively weigh up the relative costs and benefits of a potential decision. This helps to capture the full impacts of policies and investments that conventional economic and political models often fail to account for, including the benefits of avoided damages. It is used by advanced economy governments and multilateral institutions for this reason, and is highly suited to decision-making in Jordan. Jordan does not currently require the consistent application of social CBA tools, but doing so for all public-private partnership investments would ensure greater attention to these broader costs and benefits to society.

The specific nature of the value added impact of conducting a CBA depends on the stage of development of the project. It can help to build

the case for implementing a well developed project with strong data available. Similarly, if a project is in the early stage of development, just estimating the costs and benefits of a project at a high level can help to design a project.

The examples in the remainder of this section demonstrate the versatility of project-level CBAs. These CBAs can become powerful tools with which to suggest alternative options, such as green growth scenarios, to the baseline position business as usual (BAU) scenarios. They can illustrate opportunities to enhance the project by minimizing green growth costs and maximizing benefits.

The key purpose of the CBA is to enable the design or redesign of individual projects to better achieve the desired green growth outcomes. For example, the benefit of a shift to renewable energy or the impact of a change in the route of a railway.

Tangible project-level CBA results such as these can provide substantive evidence to make the case for green growth to decision-makers. They can also dictate the size of investment needed to secure benefits over time. Their strength lies in that they identify the monetary values of public goods, environmental externalities and social returns associated with projects. An advantage of using CBA is that it allows for key decisions to be made before implementation. This plays a key role in mitigating risk in project development since costly errors can be anticipated and avoided. However beyond this, the tool can be used to draw policy implications across the five desired outcomes of Jordan's green growth. In particular, CBA can be used in four broad ways to drive green growth policy and planning:

1. As a justification for change in public policy; e.g. a change to the feed-in tariff for renewable energy.
2. As a tool for quantification of existing or proposed policy incentives; e.g. how does the monetary environmental impact compare to the economic impact?
3. As a tool for prioritization of green growth policies; e.g. should we invest in improving the country's transport or water infrastructure first?
4. As a validation mechanism before policies are enacted and implemented; e.g. can the advocated benefits of a policy be measured?

Specifically, it can be used by both government and business:

- To allocate resources to the projects or policies with the highest green growth performance;
- To re-design and optimize publicly-funded projects;
- To inform policy on barriers and enablers of green growth;
- To build a business case for projects with green growth benefits in order to attract private investment.
- To re-design and optimize their investment and operations to maximize value to the communities in which they operate;
- To Identify cost-saving ways of doing business.

In the context of the opportunities in this section, CBA is used to monetarily value the benefits of specific green growth interventions in Jordan, while taking into account their capital and operating expenditure. This can build the case for their implementation or redesign by presenting them in a financial language that multiple stakeholders can easily understand.

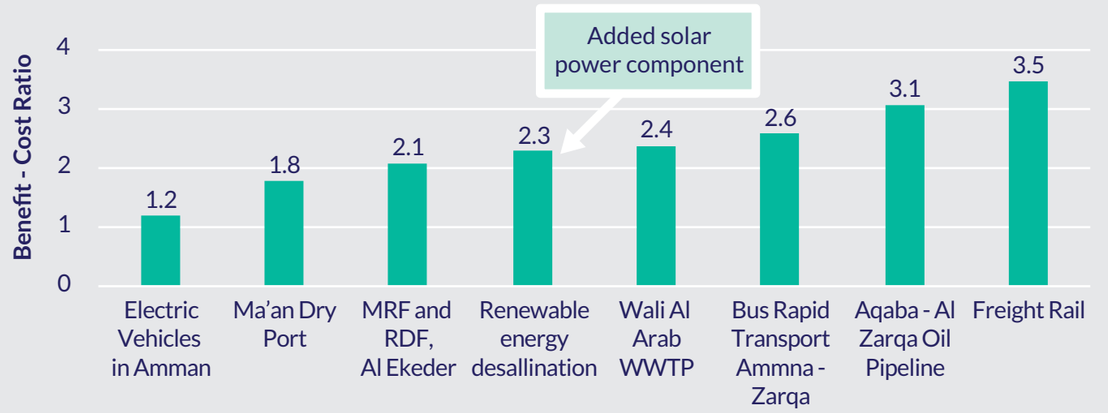
Financing mechanisms that can support the implementation of these projects are discussed in Part 5, Financing green growth in Jordan.

CBA as a means of calculating INDC contributions and planning future climate goals

CBA methodologies provide a consistent way of appraising projects for their contribution to Jordan's INDC. This will help as Jordan is expected to ramp up ambition, as it will be expected to do within the next 5 years under the Paris Climate Agreement. For instance, a major infrastructure project could be approved on the basis that it will result in a major GHG reduction due to a modal shift for instance. Making significant GHG cuts could help Jordan to emerge as a regional leader on the climate diplomacy stage. This could boost Jordan's international economic ties.

This usage of CBA to calculate the contributions of potential projects to targets can also be applied to other national goals, including the Sustainable Development Goals.

Figure 2.2 Results from Cost-Benefit Analysis (CBA) for 8 interventions (the higher the ratio, the more beneficial the project's impact)



2.4 Opportunities in the transport sector

Jordan has made significant investments in its two main gateways: Queen Alia International Airport (QAIA) and the Port of Aqaba. The $100m second phase of the QAIA expansion plan is due to be completed in 2017 and would increase capacity to 12m passengers per year, boosting the tourism and business sectors. The Port of Aqaba opened its $73m Liquefied Natural Gas terminal in 2015 to feed power stations and is continually developing the Aqaba Logistics Village to improve freight handling. Jordan now needs to improve its domestic network alongside its international gateways, with projects such as the national railway, dry ports, Bus Rapid Transit (BRT) and electric vehicle charging stations.

Current sector status and plans	Strengths and Opportunities for Green Growth	Barriers to Green Growth	Scaleability of initiatives within the sector
Jordan is updating its strategy for national infrastructure. The	Jordan's short term strengths are its relative political	The main gap to green growth is an over-reliance on road and	The national rail link and dry ports may need to be broken into phases

Current sector status and plans (contd.)	Strengths and Opportunities for Green Growth	Barriers to Green Growth	Scaleability of initiatives within the sector
2014 strategy set out priorities for QAIA, the Port of Aqaba, implementation of the Highways Master Plan and specific projects such as those featured here. In 2015, the Royal Court increased focus on Strategic Projects including major infrastructure developments and the Public Private Partnership Unit capacity on multimodal and public transport systems is to be developed. Jordan's INDC incorporates a number of transport initiatives, such as Bus Rapid Transit and Electric Vehicles.	stability compared to neighbouring transport hubs and its complete road network and international gateways. The low oil prices also offer a boost to transport businesses which is good for economic growth, but increases emissions. The projects outlined below offer green alternatives for increasing transport business. A medium term outlook of a well qualified Ministry and workforce, clear regulatory framework and technological infrastructure should support investment.	private transport. Strategic, multi-modal and public transport projects are planned but need funding and implementation expertise.	to reduce initial CAPEX costs, for example using freight rail to link the El Shidiya phosphate mine, Ma'an dry port (connecting with Iraq by road) and Port of Aqaba. Green financing opportunities may also help to secure funds for big CAPEX projects (see Part 5, Financing mechanisms for green growth,). In the longer term, connection to a GCC network would open up markets such as the UAE and Kingdom of Saudi Arabia. The Amman – Zarqa (30km) BRT model could be replicated on other routes such as Amman – QAIA (35km), similarly electric vehicles could be implemented in Zarqa, Irbid or as part of the Aqaba Special Economic Zone with the expansion of the charging station network.

Policy considerations	
Project linked	**1.A** EV charging or tax concession • Concessions could be offered on vehicle road tax for electric or low emission vehicles. Electricity at charge stations could also be subsidised. **1.B** Trade agreements • Favourable trade arrangements could be offered for key components that Jordan will not pursue manufacturing, such as EV batteries. **1.C** BRT user subsidies • BRT ticket prices should be affordable and competitive with the full costs of driving.

Policy considerations (contd.)	
	1.D Multimodal planning • Requirements could be put in place to mandate multi-modal considerations across large-scale transport system planning **1.E** Behavioural change initiatives • Private vehicle users should be encouraged to public transport modes **1.F** Public transport standards and accountability • Quality and reliability of public transport should be guaranteed by standards
Examples of international options for consideration in Jordan	Vehicle scrappage scheme to improve fleet efficiency Safe and fuel efficient driver training programs New vehicle fuel economy standards Heavy Goods Vehicle emissions and particulate standards Pedestrianised or emissions-linked vehicle restricted zones Public transport emissions and particulate standards Intelligent traffic management systems

Project: Ma'an dry port

Benefit cost ratio	1.8
Capital investment	US$ 50m
Economic rate of return	21.6%
Net present Value	US$ 104m
Economic payback period	9.5 years
GHG emissions	**-US$ 14m**
Economic growth	US$ 113m
Social development and poverty alleviation	US$ 6m
Biodiversity and ecosystem services	-
Resilience	-

The project objective is to improve attractiveness of Jordan as a transit hub for the region by increasing connectivity, providing commercially competitive trade routes from South East Asia to Iraq and limiting the environmental impacts of freight transport. The dry port and Special Economic Zone at Aqaba also provide economic activity outside of Amman, and improving the geographical balance of the economy. Competing facilities and complementary project plans need to be shored up and implemented as part of a single program. The success of the freight rail and dry port in combination rely on a policy of continued development of Aqaba port to gain market share against other ports in the region as well as a medium term pick up in demand in Iraq.

Project: Freight rail

Benefit cost ratio	3.5
Capital investment	US$ 4.2bn over 5 years
Economic rate of return	27.2%
Net present Value	US$ 17, 610m
Economic payback period	9.9 years

Project: Freight rail (contd.)

GHG emissions	US$ 1, 187m
Economic growth	US$ 14, 850m
Social development and poverty alleviation	US$ 1, 572m
Biodiversity and ecosystem services	-
Resilience	-

This project has the potential to improve connectivity, reduce costs and to improve the environmental impacts of freight transportation. The railway enables additional freight transport which stimulates economic growth and spill-over economic activity. This economic activity leads to GHG emissions, but these increases are outweighed by GHG emissions saved from modal shift away from more carbon intensive road freighting.
The railway has the potential to hugely improve the productivity of the transport sector and the Port of Aqaba by providing lower freight rates. Trade increases offer an opportunity to improve Jordan's current account, regional and international connections.

Project: Electric Vehicles and zero emission charging infrastructure in Amman

Benefit cost ratio	1.2
Capital investment	US$ 120m
Economic rate of return	10.4%
Net present Value	US$ 24.4m
Economic payback period	19.3 years
GHG emissions	US$ 49.2m
Economic growth	**-US$ 26.2 m**
Social development and poverty alleviation	US$ 1.4m
Biodiversity and ecosystem services	-
Resilience	-

This project aims to reduce Jordan's dependence on imported energy and lower its reliance on gasoline for mobility; to increase electricity generated from renewable sources; to improve air quality in Amman and other Jordanian cities by supporting the uptake of Electric Vehicles (EVs); and to make Jordan a leader in EV integration in the MENA region.
Setting appropriate user-tariffs for charging will be key to the project's success. A concession agreement or grace period may be required from the Government to give the Private Sector partner consortium the confidence to invest in the network. The expansion plan and implementation in other cities should be tendered competitively to get the best value for public money.

Project: Bus Rapid Transit Amman-Zarqa

Benefit cost ratio	2.6
Capital investment	US$ 176m over 3 years
Economic rate of return	20.0%
Net present Value	US$ 437m
Economic payback period	12.4 years

Project: Bus Rapid Transit Amman-Zarqa (contd.)

GHG emissions	US$ 25m
Economic growth	-US$ 186m
Social development and poverty alleviation	US$ 598m
Biodiversity and ecosystem services	-
Resilience	-

The project's objective is to improve connectivity, public transport usage rates and customer satisfaction and reduce air pollutants and GHG emissions. As a result, saved travel times, increased options for public transport and a better environment can all positively affect the productivity of labour and welfare of employees.
By connecting with Hashemite university, Hashemite will be in a better position to compete with the universities in Amman for its transport and amenities. The route could also provide an additional flow of tourists to Zarqa given the simplicity and efficiency of the service.
The full commercial, economic and environmental benefits will be missed if occupancy rates are low and cars continue to cause congestion on the road. This requires the reliability and quality of service to drive behavioural change.

2.5 Opportunities in the waste sector

With an average population density of only 74 people per sq. km, the development and enforcement of waste management regulation in Jordan has historically been challenging. Municipal solid waste is typically disposed of into unlined landfill sites across Jordan, with the waste exposed to the open air. Similarly, wastewater and other substances are commonly disposed of directly into wadis and rivers. However, over the last 10 years there has been increasing attention paid to the social and environmental costs of Jordan's current approach to the waste sector. For instance, Zibar, a waste product from the olive oil extraction process, has been recognised to cause serious environmental problems and reduce soil fertility if spread on land or dumped into wadis since it contains a number of chemicals.[2]

However, spreading knowledge of negative impacts such as this in order to shift the behaviours of both individuals and businesses has proved challenging. This is compounded by the relatively high capital expenditures generally associated with waste sector reform, difficulties attracting the private sector and the additional waste generated by the influx of refugees. Nonetheless, a range of opportunities exist to green the waste sector if properly implemented. A selection of such opportunities are listed in this section to demonstrate this. It is notable that a number of projects, such as biogas generation from landfill and materials recovery, have the potential to boost economic activity via new revenue streams alongside the more obvious benefits of avoided GHGs and better protection of water sources.

2 The Jordan Times. 'Jordan lacks proper facilities for olive waste treatment — study', 24th February, 2014. Accessed 30th March 2016 http://www.jordantimes.com/news/local/jordan-lacks-proper-facilities-olive-waste-treatment-%E2%80%94-study#sthash.R0NxBJoG.dpuf

Current sector status and plans	Strengths and Opportunities for Green Growth	Barriers to Green Growth	Scaleability of initiatives within the sector
A solid waste management framework law is in place. However, significant challenges continue to exist for generating funds or landfill rehabilitation and waste collection processes more broadly. The Al Ghabawi site is the only landfill in Jordan which has been capped and lined and which generates electricity from biogas. Recycling generally relies on individuals scavenging by hand on open dump sites. However a number of initiatives exist which are pushing waste sector reform further up the agenda, even if implementation has been limited to date. For instance, biogas energy generation is a priority initiative in Jordan's INDC and USAID have conducted a number of scoping and feasibility studies into landfill reforms in Aqaba and Al-Ekeder.	Interventions in the sector have high GHG mitigation potential by limiting the methane currently released from uncapped landfill. Similarly, generating energy from landfill gas will boost resilience by improving Jordan's energy security. There are also opportunities to reduce health and safety issues around scavenging. A strength of the sector is that there is already a strong pipeline of green growth projects to be implemented in the sector and there are ample opportunities to engage the private sector, if a sufficiently enabling investment environment can be created.	While a number of strong green growth interventions have been proposed, many of these have not yet been implemented. This is because many interventions in the waste sector are relatively expensive and convincing stakeholders outside the relevant ministries of the value of such interventions has proved difficult. This means that financial relief or subsidies to incentivise the private sector to invest in waste reforms at scale have not yet been implemented. Furthermore, the fees that are generated from waste collection are not reinvested back into the development of the sector.	Since 19 of the 20 landfill sites in Jordan currently lack lining and capping, there is potential to implement the sanitary landfill and gas generation interventions at each of these sites, and on the new sites which will be required as the population grows. The material recovery facility and wastewater plant are considerably larger facilities with lower scaleability. However if the economic viability of the materials recovery facility can be proved then similar facilities could be developed in the south of Jordan, such as in Aqaba.

Policy considerations	
Project linked	**2.A** Finance and waste data system overhaul • Better understand quantities of waste and costs of building and operating facilities by overhauling the data management systems **2.B** Training programs • Erasmus schemes with technical universities, companies and institutions overseas to gain training for Jordanians. **2.C** Knowledge transfer programs • Using international forums to gather waste management expertise to implement domestically.

Policy considerations (contd.)	
	2.D Electricity tariff review • Waste gas for electricity generation could be targeted by a specific feed in tariff while fossil fuel electricity tariffs are also reviewed. **2.E** Public awareness programs • Better inform public on landfill health risks and recycling benefits
Examples of international options for consideration in Jordan	Recycled material product standards Specific recyclable waste collection Recyclable / re-usable item drop off sites

Project: Materials recovery facility and refuse-derived fuel, Al Ekeder

Benefit cost ratio	2.1
Capital investment	US$ 147m
Economic rate of return	19.1%
Net present Value	US$ 194.2m
Economic payback period	9 years
GHG emissions	US$ 89.8m
Economic growth	US$ 104.4m
Social development and poverty alleviation	-
Biodiversity and ecosystem services	-
Resilience	-

This project in Al Ekeder aims to improve recycling practices on the site with a materials recovery facility and reduce waste to landfill by generating energy from refuse-derived fuel. This will result in GHG, economic and social benefits through the formalisation of the recycling sector which currently poses a number of health and safety risks. This will consist of sorting recyclables from the incoming municipal solid waste, processing the recyclables at the Material Recovery Facility (MRF,and then burning those combustable materials not suitable for recycling as refuse-derived fuel (RDF). This project could work alongside the industrial wastewater treatment plant to build the profile of the north as a hub for largescale clean technology investments. By generating spillover economic activity around industries for recycled products, this intervention could also be a key means of addressing the refugee situation in northern Jordan in a green growth fashion.

2.6 Opportunities in the water sector

Jordan is one of the world's most water-scarce countries. It is heavily reliant on groundwater, of which approximately 25% is non-renewable. While Jordan is increasing its water production, demand increases at a higher rate. Water supply is already significantly rationed for some uses. There are four main user groups of water in Jordan: the agricultural sector, municipal (domestic) use, industry and tourism. The Ministry of Water and Irrigation is responsible for the overall strategic direction and planning of the water sector, in coordination with the Water Authority of Jordan and the Jordan Valley Authority.

Current sector status and plans	Strengths and Opportunities for Green Growth	Barriers to Green Growth	Scaleability of initiatives within the sector
Jordan's Water Sector Capital Investment Plan 2016 – 2025 defines its main aim as the sustainable development and management of water resources. Two key focus areas of the plan are the development of new water resources and the expansion of wastewater treatment services. These are essential to respond to Jordan's increased water scarcity, which is one of the highest in the world. The plan links in with other sectors through, for example, its focus on increased energy efficiency.	Jordan currently has a number of untapped resources of water, most importantly, access to the Red Sea for water desalination. The coverage of treatment plants is limited and can be significantly increased to reuse current water resources and avoid environmental side effects such as water pollution. Furthermore, there are many measures that can be implemented to manage water demand and efficiency, including metering and improving water infrastructure.	Jordan has limited water resources and is currently using them at a rate twice that of natural replenishment. The short-term strategy is heavily reliant on using groundwater resources, which are expensive to access and desalinate. Desalination is also energy intensive, therefore requiring consideration alongside alternative uses and sources of energy leading to project delays.	All initiatives presented as part of this section are scalable and can be linked to initiatives from other sectors. For example, water pump efficiency upgrades and biogas capture from wastewater treatment plants will have a positive spill over effect on the energy sector. The water sector is energy-intensive as it is currently responsible for about 15% of Jordan's total energy demand. These types of initiatives will contribute to reducing the sector's environmental footprint.

Policy considerations	
Project linked	**3.A** Community engagement on water value/scarcity • Educate on value and scarcity of water and on making water-efficient project decisions. **3.B** Alternative farmer income schemes Implement cooperative schemes such as renewable energy farms to reduce agricultural expansion and related energy and water stress. **3.C** Technical training in water sector Develop university or apprenticeship programs to increase engineers in the water sector.

Policy considerations (contd.)	
Examples of international options for consideration in Jordan	Import/export tariff reform to support production of less water intensive crops Enforcement of well and land use restrictions Drainage standards for construction sector

Project: Renewable Energy Desalination

Benefit cost ratio	2.3
Capital investment	US$ 364m
Economic rate of return	20.2%
Net present Value	US$ 515m
Economic payback period	10.2 years
GHG emissions	US$ 254m
Economic growth	US$ 256m
Social development and poverty alleviation	US$ 5m
Biodiversity and ecosystem services	-
Resilience	-

The Sheediyya-Hasa augmentation project represents a key opportunity to increase water abstraction from non-renewable water sources and address the dire need to improve water security. This project will provide an additional 50MCM / yr to the water supply for Northern Jordan. The project has the potential to increase the country's energy independence and to reduce the Greenhouse Gas (GHG) emissions impact associated with the Ministry's proposed project, by installing up to 214MW of solar PV capacity to power the energy intensive water desalination and pumping processes. The current desalination project design does not include solar power and would rely on power from conventional energy sources.

2.7 Opportunities in the energy sector

Jordan's current energy mix is heavily reliant on fossil fuels, in particular oil and gas. These are imported from abroad, due to the lack of reserves of either resource within the country itself. Diversification, therefore, is a key objective of national energy management. Another focus area is connecting smaller communities in Jordan to the national grid and linking it to neighbouring countries. Increasing focus is placed on alternative sources of energy, such as wind and solar. This section presents a number of projects that align with these overall goals, including decentralised solar energy generation at village level and on public buildings.

Current sector status and plans	Strengths and Opportunities for Green Growth	Barriers to Green Growth	Scaleability of initiatives within the sector
Under its 2007-2020 National Energy Strategy, renewable and nuclear energy are set to transform the Kingdom into a net exporter by 2030. The aim is to have the renewable energy share of the energy mix increase to 7% by 2015 and to 10% by 2020, a substantial increase from the 1% it currently represents. In terms of capacity, this equates to some 600MW by 2015 and to double this by 2020. However fossil fuels are expected to continue to play a key part in Jordan's plans for the foreseeable future, while clean technologies continue to mature. To this end, plans have been made to develop an oil pipeline spanning the country which has the potential to be a significant driver of economic growth.	The energy sector is a key sector for Jordan's Green Growth developments, through implementing renewable energy and energy efficiency initiatives. The energy sector is central to greenhouse gas reduction, increasing the country's resilience and tackling poverty. Currently heavily reliant on imported energy resources, building renewable energy capacity will provide strategic benefits to the country, while energy efficiency presents a significant opportunity if the government further increases efforts to implement existing initiatives.	To fully meet its vision of Green Growth, the energy sector will have to expand its share of renewable energy in the energy mix. Some barriers have been identified in achieving this vision. This includes financial resources, reliability and the policy framework. Also, skills and capacity, while expanding, are currently restricted to certain areas. However, Jordan is well-placed to build a vocational skillset in renewable energy.	All initiatives presented on this page, with the exception of the oil pipeline have high potential to be scaled. Both the public buildings and Eco-Villages programmes can be expanded to cover a larger portion of Jordan's energy consumption. It can be expected that, as a result for such scaling, both capital and O&M costs reduce over time. The same is applicable to further windfarm developments.

Policy considerations	
Project linked	**4.A** Ensure fossil fuel subsidy phase-out • Continue gradual phase-out of subsidies to provide long term price signals that encourage clean energy investment. **4.B** Competitive but attractive feed in tariffs • Provide predictable and achievable tariff levels for renewable investors **4.C** Review capacity requirements for small scale renewables • Encourage uptake of renewable installations at all capacity levels
Examples of international options for consideration in Jordan	Trade incentives on energy storage technologies Capacity building in renewable technology and energy storage Training on renewable energy technology feasibility studies and installation

Project: Aqaba – Al Zarqa Oil Pipeline

Benefit cost ratio	3.1
Capital investment	estimated US$ 480m
Economic rate of return	26.2%
Net present Value	US$ 1, 266m
Economic payback period	7 years
GHG emissions	US$ 238m
Economic growth	US$ 810m
Social development and poverty alleviation	US$ 219m
Biodiversity and ecosystem services	-
Resilience	-

Imported oil is currently transported over road from the port city of Aqaba to the Jordan Petroleum Refinery in Al Zarqa, near Amman. Some 1,700 trucks are involved in the process of moving crude and refined oil around Jordan. A pipeline has been proposed to shift the mode of oil transportation. This project has the potential to act as a stimulus for economic growth, which could enable other interventions to take place. There are two options for the project:

- **Option 1:** Connect Aqaba to Ma'an by pipeline. A newly designed storage and trucking facility of between 100,000 and 150,000m3 will be built in Ma'an to truck crude oil for the remainder of the route.
- **Option 2:** Construct a pipeline for the full route from Aqaba to Al Zarqa. The total length of this pipeline is approximately 360km, which is 215km longer than that proposed for Option 1.

2.8 Opportunities in the agriculture sector

The agriculture sector is strategically important to both water supply and food security. Many of Jordan's agriculture initiatives are designed and sponsored by the Ministry of Agriculture. Some private sector organisations are also engaging in similar initiatives, but usually only those where private commercial benefits are also to be gained, i.e. drip irrigation.

Another enabler for managing water supply and food security is helping to improve the agricultural productivity of land which is currently not being used for agriculture.

Current sector status and plans	Strengths and Opportunities for Green Growth	Barriers to Green Growth	Scaleability of initiatives within the sector
Under Jordan 2025: A National Vision and Strategy it is recognised that water and food security are two important priorities for Jordan as a whole and by default the agriculture sector. There is a sustained plan to implement initiatives in these areas to continue to make progress and improve the situation overall. The sector also has plans to maximise productivity and water efficiency on existing farms, increase local production, food security and storage capacity and maintain forests and biodiversity.	As recorded in Jordan 2025, currently 81% of Jordan's food requirements are imported. The agriculture sector has a great opportunity to produce more of the food domestically and hence mitigate the vulnerabilities associated with importing such a high percentage of the food consumed as well as enabling green growth particularly in the areas of resilience, for example through crop varieties that are drought-tolerant, and social development and poverty alleviation. Biodiversity and ecosystem services is also another opportunity, through implementing initiatives which have similar outcomes for example, Jordan's afforestation efforts.	Financing for all of the initiatives is a barrier to implementation, especially those which have high initial research costs (New Crop Variety Introduction, Livestock Healthcare). Where research is required, skills and capacity gaps also exist. Farmer engagement and willingness to participate is also critical to implementing green growth initiatives in the sector, and there are significant challenges around shifting behaviours. For instance, it can be challenging to convince farmers to recognise the society-wide benefit of investing in new irrigation methods when on a micro scale, the costs may appear to outweigh the benefits of such an investment.	All of the agricultural opportunities identified are easily scalable, with numerous locations in rural areas where they could be implemented. Analysis on drip irrigation is focused on implementation by the public sector. However the initiative is already scaling up through both public and private sector implementation; greater government investment in this technology can accelerate this process and ensure farmers with lower purchasing power can benefit from the intervention. Afforestation has been identified by stakeholders as a highly transferable intervention which could be applied alongside a range of other green growth projects, such as surrounding sanitary landfill or acting as a windblock for solar farms.

Policy considerations	
Project linked	**5.A** Research and development funding for new crop varieties and techniques • Invest in developing the right crop varieties for Jordan's climate

Policy considerations (contd.)	
	5.B Knowledge transfer programs • Use international fora to gather crop expertise and conduct Jordan-wide domestic awareness campaign. **5.C** Monitoring of livestock and crop productivity • Monitor livestock productivity to identify options for improvement **5.D** Small and large farm cooperative for livestock healthcare • Cooperation between large and small farms to increase uptake of livestock healthcare measures **5.E** Drip irrigation targets • Pursue current targets for government and private sector drip irrigation
Examples of international options for consideration in Jordan	Pesticide type and quantity regulations

Project: New Crop Variety Introduction

Benefit cost ratio	8.1
Capital investment	less than US$ 300,000
Economic rate of return	42.7%
Net present Value	US$ 1.96m
Economic payback period	4.6 years
GHG emissions	US$ 0.03m
Economic growth	US$ 1.93m
Social development and poverty alleviation	-
Biodiversity and ecosystem services	-
Resilience	-

The project objective is to improve food security and reduce water consumption through increased agricultural productivity and the introduction of drought-tolerant crop varieties. Whilst the economic growth are most notable in this project, producing more food domestically reduces the reliance on importing food and hence there is a lowering of GHG emissions and resilience benefit. Implementing this project with the use/introduction of drip irrigation, will further reduce the water demand making the project more green.

2.9 Opportunities in the tourism sector

Jordan has a unique tourist offering with world heritage sites such as the Dead Sea, Petra and Jerash. This, combined with the relative lack of conventional natural resources, makes the tourism sector key for the country's economy. While the country experienced a steady increase in tourism during the 2000s, this took a sharp turn at the onset of the Arab Spring. Between 2010 and 2015, the number of international visitors to Jordan dropped from 8.2 million to 4.8 million. However the government has kept increased emphasis is placed on developing Eco-Tourism in Jordan and adopting eco-friendly practices. The initiatives presented in this section support this vision and show how this provides not just environmental but also economic and social benefits.

Current sector status and plans	Strengths and Opportunities for Green Growth	Barriers to Green Growth	Scaleability of initiatives within the sector
The latest tourism strategy for Jordan is that related to the period 2011 – 2015. It is based on 4 pillars: marketing, product development, labour market development and enabling environment. Eco-tourism is explicitly recognised as a way of promoting Jordan and a way to diversify its product offering. Additionally, the strategy places emphasis on eco-friendliness for the sector as a whole. Currently, the Ministry of Tourism and Antiquities is developing a Eco-Tourism Unit in cooperation with the UNDP.	As a major employer and income generator, the tourism sector is able to influence behaviour of its customers, employees, suppliers and the wider community. For example, environmental education initiatives can be embedded in tourist guide training programmes, publicly displayed information at major sites and at tourist facilities such as hotels and restaurants. The tourism sector also has influence on major sites of natural interest and will be able to adequate environmental management of these.	Jordan's tourism sector is a key consumer of environmental resources, including energy and water. As such, there is ample opportunity for the sector to increase its eco-efficiency, through new technologies relating to e.g. renewable energy generation.	While some of the initiatives presented in this section are site-specific, they can be adapted and introduced to other parts of the country as well. For example, public parks and eco-lodges can be constructed anywhere near important population centres or sites of special touristic interest.

Policy considerations	
Project linked	**6.A** Domestic campaign • Campaigns via tour operators and social media to encourage domestic holidays outside Amman **6.B** Eco-tourism campaign • Promote eco-tourism options such as hot springs and eco lodges with nature focus **6.C** Blue flag beach awareness • Community awareness campaigns on benefits of blue flag beaches **6.D** Tourism guide training scheme • Focused tourism on adventure activities to diversify tourism offering in Jordan **6.E** Targeted funding towards designated tourist trails • Open access to a greater area of Jordan's countryside and historic sites through managed and maintained tourist trails
Examples of international options for consideration in Jordan	Public transport links to tourism destinations Provide low cost tourist visa option

Project: HRH Prince Hussein's Public Park

Benefit cost ratio	1.3
Capital investment	estimated US$ 16m
Economic rate of return	13.9%
Net present Value	US$ 11.1m
Economic payback period	15 years
GHG emissions	**-US$ 8.0m**
Economic growth	US$ 19.2m
Social development and poverty alleviation	-
Biodiversity and ecosystem services	-
Resilience	-

The Dead Sea Development Zone is one of Jordan's most significant tourist developments. Situated on the North-East shore of the Dead Sea, the area covers approximately 40km between the municipality of Sweimeh south to the Wadi Mujib reserve.
The Dead Sea Development Zone will offer a mix of residential areas, culture, education and hotels, amongst others. It is complemented with an extensive infrastructure network to connect it to Amman and other parts of Jordan, including through to Madaba, other parts of the Jordan Valley and the South.
A key feature of the area is HRH Prince Hussein's Public Park, a 1,290 dunum area that will be developed as part of the first phase of work. Spending time picknicking outdoors is a popular past time in Jordan. The park will offer a formal, yet public, space for visitors, with additional amenities including playgrounds, sport zones, cafes and various educational trails.

2.10 Assessing the contribution of sectoral opportunities towards the Sustainable Development Goals

Accounting for a broad range of impacts by consistently applying cost-benefit analysis across sectors can help Jordan to track progress against, and achieve, the UN's Sustainable Development Goals

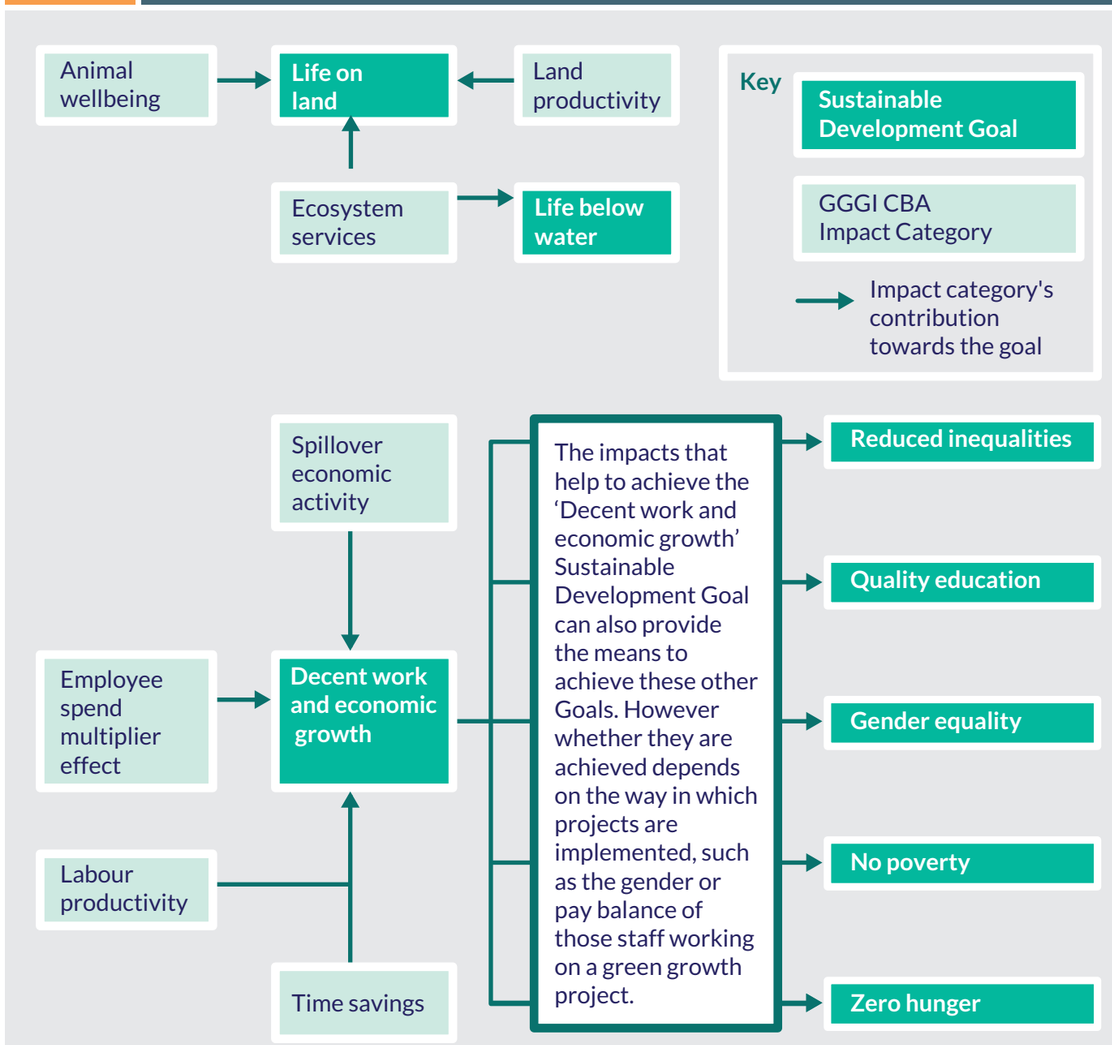
The monetary impact values which are associated with each of the sectoral opportunities identified were reached by using a consistent set of impact categories across projects and sectors in the CBA model. The below diagram illustrates how the selected impact categories map against the UN'S Sustainable Development Goal (SDGs). The map provides insight into how the impacts generated by the projects assessed contribute to meeting these goals, either directly or indirectly.

The SDGs are a globally recognised framework which is expected to provide the blueprint for development over the coming years. These impact categories provide broad, high level coverage of the different sorts of impacts that may arise from project implementation in Jordan. These form the basis of a consistently applicable methodology which can be used to appraise a variety of projects across sectors.

Going forward, by selecting projects which achieve positive impacts against each of these impact categories, Jordan can track progress towards 15 of the 17 Sustainable Development Goals. As such, reviewing how many of the SDGs a project supports via cost-benefit analysis – and the scale of each impact relative to the investment required – can aid decision-making in order to achieve the SDGs. The remaining two SDGs not covered by impact labels, 'Partnerships for the Goals' and 'Peace, justice and strong institutions' can be seen as the overarching governance requirements to facilitate the achievement of the rest of the goals via project-level initiatives.[3]

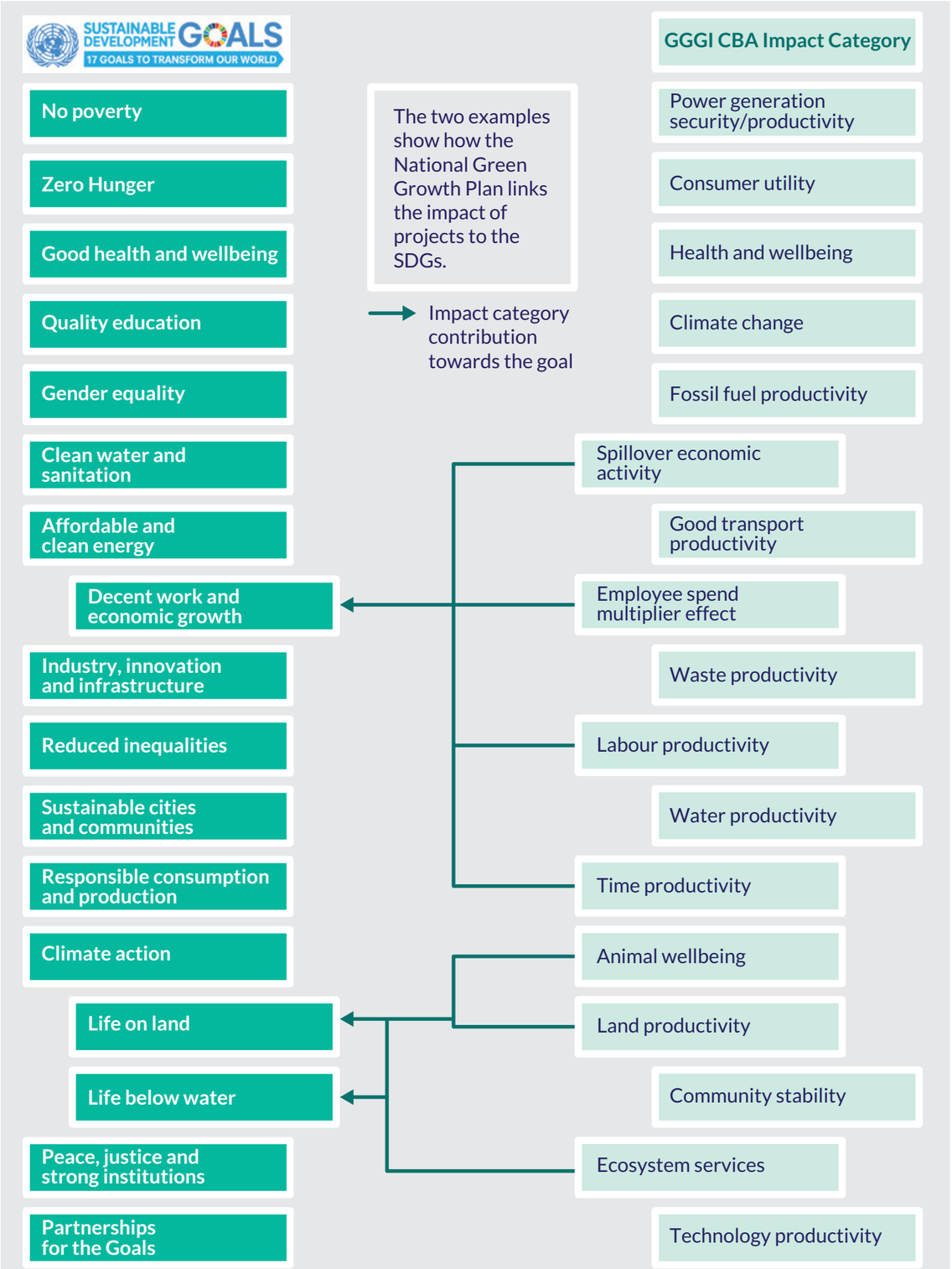
The impact categories in the CBA model, such as noise amenity, odour amenity and visual amenity, do not directly contribute towards the SDGs but the scale of these impacts are generally considerably smaller than the other impact labels. Similarly, 'Project promoter cost' also does not align with the SDGs as it is a private cost rather than a public impact.

Figure 2.3 Two examples of mapping the SDGs against the outputs of CBA analysis



3 Ministry of Tourism and Antiquities. 'Tourism Statistical Newsletter', 2015

2.11 Contribution of Green Growth towards the Sustainable Development Goals



2.12 Developing business cases for green growth opportunities

Quantifying the potential impacts of projects across the sectors is an important step towards project implementation. However, in order for green growth to become a reality, each of the project opportunities that have been identified must have a clearly defined plan of action. To this end, business cases form the next step in a project's implementation, demonstrating the key considerations around procurement approaches and possible cash flows from a project. As part of the NGGP development process, two high priority GoJ projects (Electric Vehicles in Amman and renewable energy for desalination) were selected for a business case assessment. The strategic, economic, financial, and commercial are briefly summarized below.

Potential Procurement approaches for Solar PV powering water desalination and pumping

The MWI plans to increase desalination and treatment of non-renewable groundwater sources which are remote from Amman, in order to meet the urgent water crisis facing Jordan. Solar PV installations will substitute the highly GHG emissions-intensive grid electricity needed to power the pumping and desalination processes.

Large-scale solar PV power plants are typically developed with a long-term Power Purchase Agreement (PPA). These agreements provide the basis for the other contracts needed for the project developer to deliver the capacity – the Engineering, Procurement and Construction (EPC) and Operation and Maintenance (O&M) contracts. The Ministry of Energy and Mineral Resources (MEMR) has recent experience of tendering solar PV through competitive tenders, and would be the logical off-taker for the renewable energy for desalination project. As outlined in the financial assessment below, in 2015 MEMR procured 200MW of solar PV capacity through the second round of direct proposals, achieving very low electricity tariffs compared to the grid production cost and the tariffs offered in the first round of direct proposals.

Once the project concept for the desalination facility has been developed further by the MWI and key technical details (water production volume, energy requirements, and project location) have been clarified, project developers can identify viable sites and capacity factors, and begin the prefeasibility and feasibility studies. These project-specific details will shape the form of the financial and commercial models and the PPA and other contracts.

After the power requirements of the pumping and desalination facilities are determined NEPCO can arrange a competitive tender by project developers to deliver the required capacity to the grid. Once the winners have been selected and the tariffs, grid connection agreements and PPAs are in place, the project developers can arrange project financing and procure EPC and O&M services with back to back contracts, allowing the construction, commissioning and operation of the installations to commence.

Potential procurement approaches for electric vehicles in Amman

The Ministry of Environment and other key stakeholders currently propose that the Electric Vehicles in Amman project be undertaken as a "public-private joint venture", with the private sector partner taking responsibility for the financing, construction, operation and maintenance of the charging point network. The Greater Amman Municipality will provide land for the charging points and assist the consortium to identify land for the solar PV installation. The Ministry of Environment, Ministry of Energy and Mineral Resources and the Energy and Minerals Regulatory Commission will support the drafting of the necessary legislation and regulations for licensing charging points. As regards the latter, the Ministry of Environment has recently published the Directive for Licensing Vehicle Charging Stations. These commercial arrangements were agreed by all parties. The AllCell consortium has requested that the

Government grant a grace period during which they will install, own and operate the network of charging stations. However, the details of a concession / grace period have not yet been finalised.

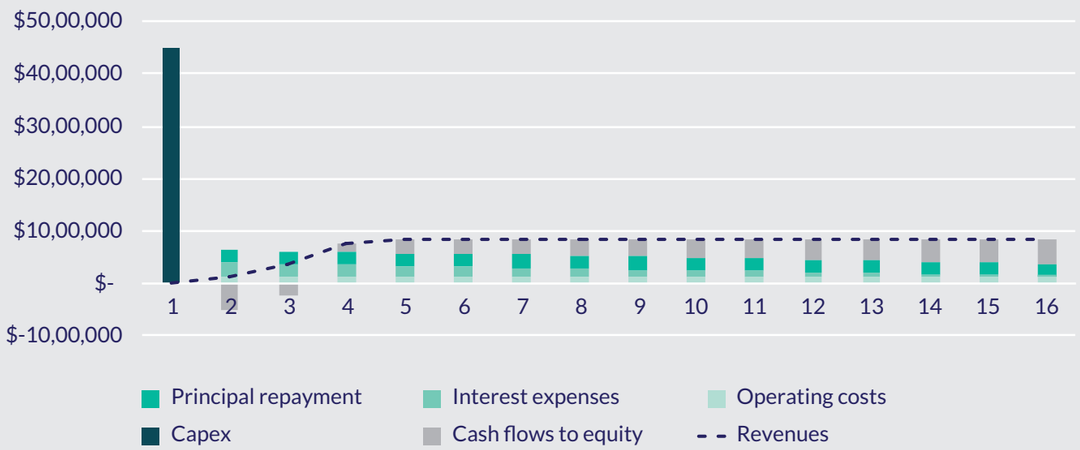
At present there do not appear to be other consortia expressing interest in constructing and maintaining the network. However, the Government may wish to consider introducing a competitive tendering approach (either now or at the end of a grace period with the private sector Joint Venture (JV) partner) which will enable it to ensure that the charging network is delivering value for money to the public. As noted in the strategic case, realising net benefits from the use of the EV charging network depends on both private EV take-up and competitive infrastructure costing. Competitive tendering processes for a fixed-term concession to construct, operate and maintain the network of charging stations would enable the Government to test whether the proposed capital expenditures are spent in the best interests of the public. The graph on the right demonstrates the possible cash flows which could result from these arrangements.

Planning phases

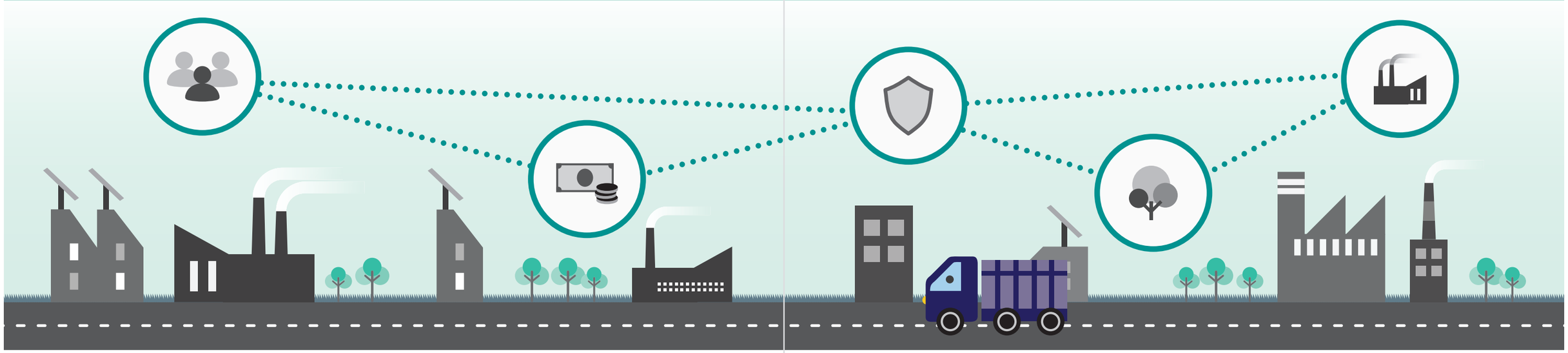
The pilot phase will be implemented in the summer of 2016 and will gather data for 6-12 months to clarify the green growth impact of the project and the commercial viability of the full-scale network. This will support the technical feasibility tests undertaken by the Royal Scientific Society. Following this commercial pilot the JV intends to transition to the full scale rollout under the licensing arrangements currently under development.

Figure 2.4 Outline Business Case analysis for EV charging stations in Amman

Indicative project cash flows for the first 250 charging stations from electric vehicles in Amman



3 Scaling up the green growth opportunity



3.1 Clustering green growth interventions

Why clustering?

The sectoral opportunities identified if implemented in a coordinated fashion could result in the potential green growth benefits scaling up substantially at a macroeconomic level

The sector opportunities identified in Part 2, Sectoral green growth opportunities, have clear green growth potential. However, the extent to which they hold appeal, both to a private investor or a government policy-maker, varies significantly. For instance some projects could appear relatively small and low-impact, such as the afforestation programme. Conversely, investing in tourism initiatives could be claimed to have the potential to exacerbate Jordan's water security concerns by generating increased demand, if considered as standalone projects.

It is therefore highly beneficial to cluster projects together to understand the true 'prize' of green growth. Interventions can then be scaled up and other complementary green growth measures introduced for a macro level `assessment. This clustering approach results in a range of benefits:

- Builds the case for large-scale interventions by improving the strategic and transformative impact of individual green growth projects
- Acknowledges the relationships that may exist between projects within a location, such as changing the energy mix used to power electric vehicles as described in the new Directive for Licensing Vehicle Charging Stations
- Better informs the design of cross-sectoral policies which are needed to capitalise on opportunities for co-benefits between projects/sectors and prevent undesirable knock-on effects

Furthermore, clustering is recommended to ensure there is coordination between policies and implementing partners. Green growth interventions are more likely to become embedded if they are implemented in unison and are mutually reinforcing. This requires committed investment from both the public and private sector. Short term, small-scale and standalone investments will not catalyse the transformative change that is required.

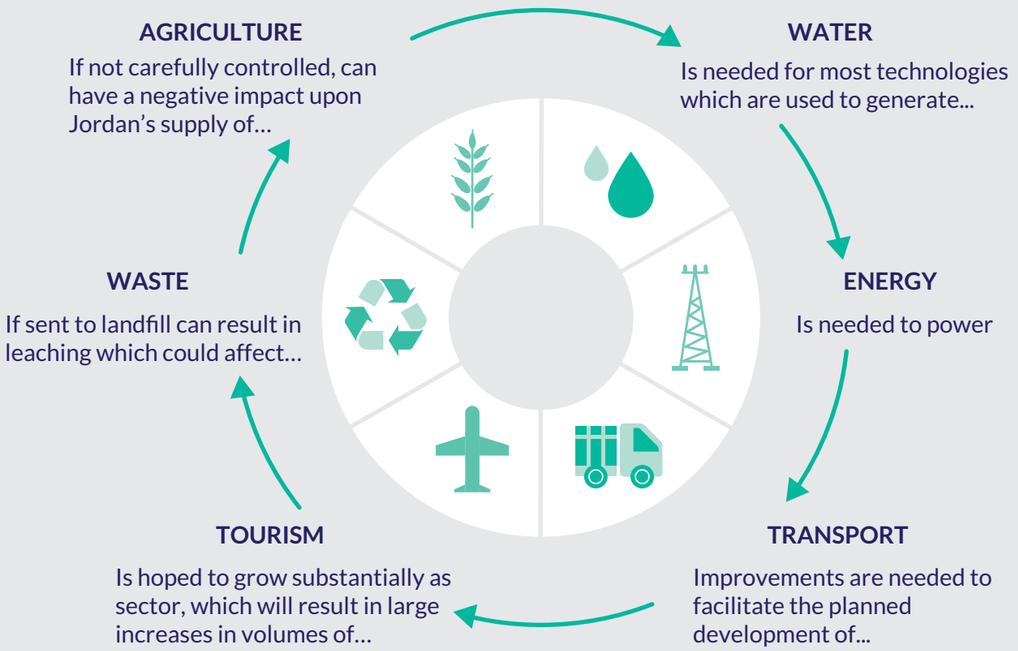
NEPCO's Green Corridor as the heart of a green growth cluster

NEPCO has proposed a 'Green Corridor' to reinforce Jordan's high voltage electricity backbone network. This will facilitate integration of more renewable generation capacity and improve reliability of supply. This project runs from Amman down to Aqaba in the South. This provides a clearly bounded geographic corridor which will enjoy better energy connectivity. This project can be considered green in its own right. However using this improved connectivity as a catalyst for a range of other green growth interventions has the potential to transform the corridor into a major cross-sectoral growth driver for Jordan.

In this section three green growth clusters demonstrate the potential cross-economy green growth interlinkages. These clusters are based on the project opportunities identified in Part 2, Sectoral green growth opportunities, but also pull in other priority interventions, and are still not exhaustive. Public and private sector experts from across sectors have collaborated to identify significant links between interventions. NEPCO's proposed Green Corridor (see Box on next page) forms the basis of one cluster to demonstrate how existing plans in Jordan can be integrated into green growth planning. The Green Corridor provides an existing platform for a cluster because of its ability to unlock renewable energy projects and link Amman and Aqaba with high capacity transmission lines. In addition to the Green Corridor, although not based on an existing platform project, a 'smart urban cluster' is proposed which emphasises linkages between urban interventions. The aim of this is to demonstrate how interventions together can raise the overall profile of an urban centre for investment as a cleantech hub. A rural resilience cluster is also proposed which emphasises the importance of responsible water and resource management for Jordan and can act as a catalyst for the economic and social development of rural areas.

Figure 3.1 **Some of the relationships that the priority sectors can have upon each other. The examples provided are indicative; there are a range of interdependencies which need to be accounted for if Jordan's sectors are to move towards green growth together.**

Examples of inter-sectoral relationships



3.2 Introducing the The Green Growth Clusters

Three clusters have been identified in this NGGP to demonstrate the mutually reinforcing benefits derived from grouping green growth interventions; Green Growth Corridor, Smart Urban and Rural Resilience. The green growth corridor has a specific geographic focus, being the important north-south route between Aqaba and Amman. In contrast, the smart urban and rural resilience clusters are thematic, and could be applied to a range of rural and urban areas in Jordan. The rural resilience cluster, for instance, can be seen as one possible shape for the priority 'tourist trails' initiative that is mentioned in Vision 2025. All of the interventions contribute towards multiple green growth outcomes; for instance, afforestation protects ecosystems services while also providing wind breakers to shelter solar farms from sandstorms, improving performance.

Tourism as a potential revenue stream is highly sensitive to external forces outside of Jordan's control. As a result, investments in Jordan may not automatically increase visitors under current geopolitical circumstances. This builds the case for clustering interventions by providing alternative revenue streams to communities while still investing in the long term economic growth driver of tourism. Implementing spatial plans driven by green growth clustering principles may also help to ensure that tourists perceive Jordan as a forward-thinking country to visit.

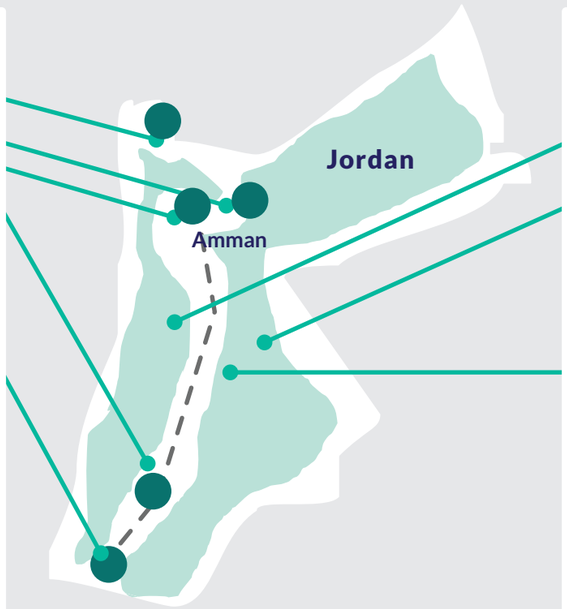
Figure 3.2 Green Growth clusters

Cluster 1:
Green Growth Corridor

The green growth corridor is focused on NEPCO's Green Corridor project which runs along the backbone of Jordan between Aqaba and Amman. This provides a framework for a number of inter-locking projects. The focus is on improving Jordan's energy resilience as well as providing new economic growth opportunities along the route. Acknowledging the long term need to move away from fossil fuels to provide baseload energy, solar technologies such as Concentrated Solar Power (CSP) is recommended for exploration along the route.

Cluster 2:
Smart Urban

The urban cluster aims to transform Jordan's urban areas into green cities that are attractive to both investors and residents through a series of flagship green growth projects. The cluster selects a group of interven-tions which can be used to publicise the urban area as 'green' to potential investors while also creating an improved urban space to live in.



Key
- Rural Area
- Urban area
- Green Growth Corridor

Cluster 3:
Rural resilience

The rural resilience cluster aims to strengthen rural communities and their surrounding ecosystems by diversifying incomes, ensuring resource availabili-ty and reducing environmental impacts. Job provision is an important aspect of this rural cluster to encourage equitable distribu-tion of the refugee inflows across the kingdom. Tourism is also introduced, on the basis that the other interven-tions can help to boost the perceived stability of the area – this is of crucial impor-tance given current challenges in the tourism sector around interna-tional perceptions of Jordan's safety.

Clustering as a proof of concept

It is important to note that, like the sectoral opportunities identified, these clusters should not be considered an exhaustive list of all the projects that could fit in these clusters. There are likely to be a number of other projects and initiatives that could contribute to these clusters but are not currently included in this document, and other new initiatives may emerge over time. The clustering provided here is a proof of concept of the potential gains which could result from implementing green growth interventions in a coordinated fashion.

A range of relationships exist in each of the three clusters presented. Some of these relationships can be considered crucial. This can be explained as one project being reliant on another to be considered a green growth intervention with a reasonable likelihood of having a lasting impact. Similarly, some of these relationships may be mutually reinforcing. Other relationships which may be more strategic or secondary are also highlighted. The nature of these relationships is explained on the following pages. The stakeholders required to push a project towards implementation are identified, demonstrating the large number of agents who need to coordinate in green growth planning. This also emphasises potential challenges around responsibilities for implementation which must be clearly defined.

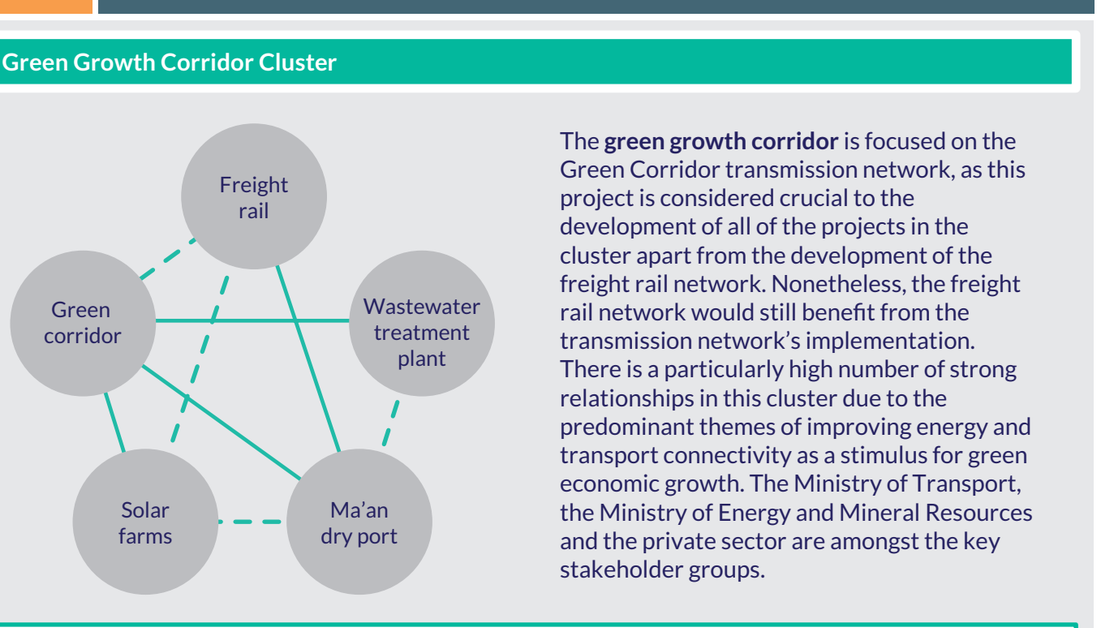
3.3 Clustering interventions: The green growth corridor

Green growth corridor cluster

The green growth corridor is formed primarily from projects that have been appraised by GGGI as part of this NGGP. However, other initiatives with high green growth potential but requiring further analysis have been brought into the cluster where studies have shown their high level feasibility. For example, concentrated solar power (CSP) has been proposed as forming a longer term replacement for fossil fuels.[1] Unlike current wind or solar PV, this technology has the potential to deliver firm and flexible power generation capacity. As such, investing in this technology now will enable it to mature, and eventually work alongside the Green Corridor transmission network and oil pipeline as the back-bone of this cluster. Towards the end of the pipeline's 30 year lifespan, this could lead to a gradual phasing out of fossil fuels from Jordan's fuel mix.

1 Fichter, T, Kern, J, Trieb, F. ,The challenges of Jordan's electricity sector'. Accessed 30th March 2016 http://elib.dlr.de/85640/1/DeutschJordanischeFestschrift_Topic_Energie.pdf p.20

Figure 3.3 Green growth corridor cluster



Intervention	Key green growth contributors to cluster	Impact on other interventions in cluster	Stakeholders responsible for implementation
Green Corridor	Crosscutting benefit of facilitating a reliable energy supply, with resulting **GHG, economic growth, resilience** and social benefits	Provides bedrock for sustained economic growth of other elements by reassuring investors of the stability of electricity supply. This has an important social element since it ensures equitable distribution of energy unlike current circumstances in which urban centres enjoy far more reliable energy services. Energy generating interventions such as solar and wind farms will benefit from the reduced transmission losses, substantially increasing their impact. Similarly, the Green Corridor will facilitate economic growth around the dry port and social development in ecovillages via reliable energy supply.	NEPCO is responsible for the implementation of the Green Corridor. However other Ministries and the private sector need to provide constant input regarding where energy demand exists.
Solar farms, Wind farms	**GHG benefit** of carbon-neutral	Many of Jordan's current plans, such as the fuel oil pipeline, lock Jordan into oil consumption from external	The Ministry of Environment, Ministry of

Intervention (contd.)	Key green growth contributors to cluster	Impact on other interventions in cluster	Stakeholders responsible for implementation
	provision of energy	sources into the medium term. This will prevent Jordan from fully decarbonising and achieving energy security.[2] Larger scale solar farm is therefore recommended to provide longer term energy options to fuel the interventions in this sector such as the ecovillages, dry port and wastewater treatment plant. More specifically, Concentrated Solar Power technology should be explored as a carbon neutral means of meeting baseload energy generation requirements, facilitated by the Green Corridor transmission line.	Agriculture, Ministry of Energy and the private sector are amongst the key stakeholders who need to be involved in the development of this project.
Freight rail	**Economic** and **social benefit** of improved connectivity	The freight train will deliver substantial increases in economic activity due to the time and costs saved in transportation. This will encourage more companies to ship their products between Aqaba, Ma'an and Amman, resulting in a supply chain and employee spend multiplier effect. If the rail network offers passenger services as well as freight, it will have the social benefit of greater mobility for individuals living in the urban centres and ecovillages.	The Ministry of Transport, the Ministry of Energy and Mineral Resources and the Private Sector are key stakeholders. Due to the extremely high capital expenditure, private sector finance is crucial to this project's implementation.
Wastewater reuse plant	**Ecosystems benefit** of preventing industrial effluent polluting water courses, **social and economic benefit** of increased water availability	This project will provide the water which will be required to facilitate industrial development around key growth hubs along the corridor. It will also reduce the environmental impact of industrial development, avoiding the risk of industries dumping untreated effluent into water courses and damaging valuable ecosystems such as the Dana Biosphere. Its own negative environmental impact will be reduced through provision of clean energy and the Green Corridor.	Ministry of Water and Irrigation is largely responsible. However Ministries responsible for other interventions such as the Ministries of Agriculture, Energy and Transport should all be pulled in to scope out demands for water along the corridor.
Ma'an dry port	**Economic benefit** of increased job opportunities and spill-over	The impact of the Ma'an dry port relies on a rail link from the Port of Aqaba. The dry port will generate job opportunities which in turn will bring	The Ministry of Transport and Ministry of Finance and Customs would

2 This is of significance as it was agreed as a core goal of the COP21 Paris Climate Agreement, to which Jordan is bound.

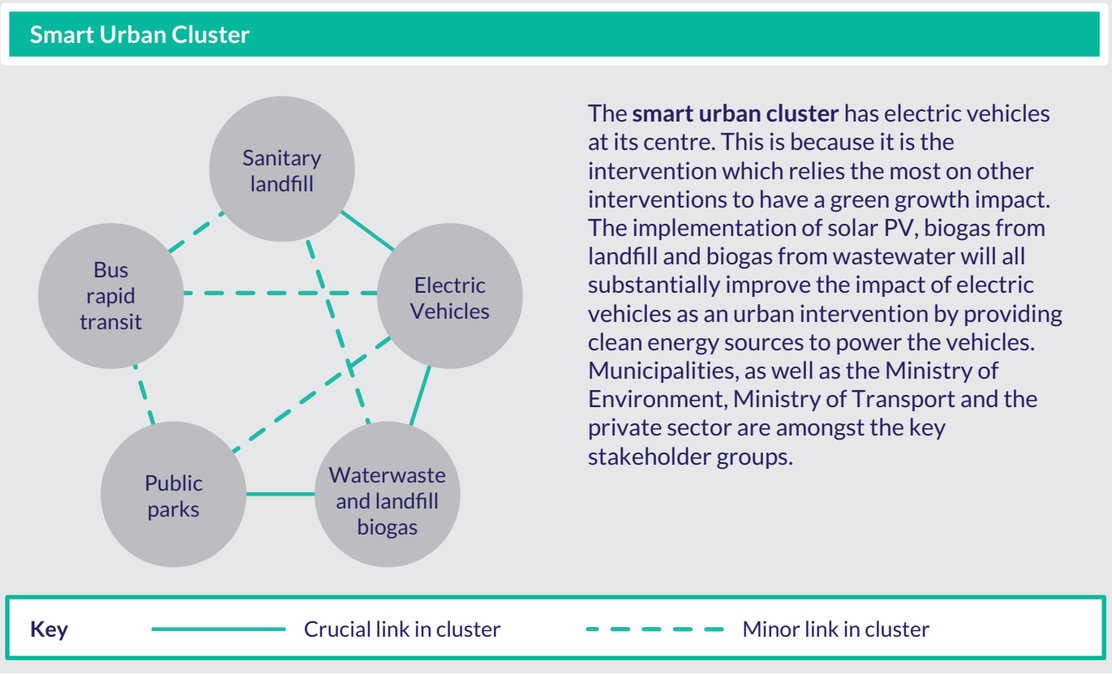
Intervention (contd.)	Key green growth contributors to cluster	Impact on other interventions in cluster	Stakeholders responsible for implementation
	economic activity	possible demand for the development of new residential ecovillages to house workers. This site will also provide a new location to employ the truck drivers who may have lost employment due to modal shifts towards freight by rail. The wastewater treatment plant and solar/wind farms will ensure that the dry port does not have an overly negative impact in terms of GHGs and water security.	be responsible for this project, as well as the Ma'an Development Authority. The private sector could be attracted through tax incentives and through the connectivity provided by the cluster as a whole.

3.4 Clustering interventions: The smart urban cluster

Smart urban cluster

The smart urban cluster is focused on electric vehicles but pulls in a range of other green projects to build the area's appeal as a futuristic, clean technology hub. It is not geographically specific; it is indicative and refers to a typical urban area in Jordan.

Figure 3.4 Smart Urban cluster



Intervention	Key green growth contributors to cluster	Impact on other interventions in cluster	Stakeholders responsible for implementation
Electric vehicles	**Economic benefit** of providing recognisable flagship intervention to attract green investment, **GHG benefit** of low carbon transport (if grid mix is greened)	Electric vehicles have high potential to capture the minds of both the public and investors as the centrepiece of a cohesive urban green growth strategy focused on symbiotic green growth interventions. This is because their claims to be green are only valid if the energy supplying them is low carbon. The intervention is therefore reliant on biogas from landfill, biogas from wastewater and solar PV on rooftops. If this is ensured, this intervention has the benefit of being an easily recognisable, high-profile initiative that already has considerable political buy-in in Jordan.	Municipalities along with the Ministry of Transport are best placed to drive the development of this initiative, and it could be positioned by them as an investment for the private sector. However the Ministry of Energy and Mineral Resources also be pulled into the project's development to push for a clean energy supply.
Sanitary landfill	**Social benefit** of providing a healthier urban environment and enabling urban expansion into areas with employment potential, **ecosystems services benefit** of avoided leachates and air pollutants.	Many urban areas in Jordan have landfill sites at their fringes. Due to their current potential to leach dangerous substances into watercourses and emit noxious fumes, they are significant inhibitors to urban expansion. Their impact is likely to increase over time as landfill is continually dumped in this fashion and urban areas expand towards them. Capping and lining new landfill sites will enable urban development in these areas. This could be highly positive, since the site can provide new employment opportunities via spill-over economic activities such as materials recovery. Public parks can also be developed nearby sanitary landfill sites, and the old landfill sites which have been closed and capped could be turned into parks.	The Ministry of Environment and Municipalities should coordinate efforts to cap and line landfill sites in urban areas. NGOs and donor organisations may be engaged to fund landfill-based interventions.
Wastewater reuse and biogas from wastewater reuse and landfill	**GHG benefit** of supplying clean energy for electric vehicles and broader urban electricity consumption, **ecosystems services** benefit of providing water and fertilizer for public park,	Energy generation from biogas can be used to further decarbonise the grid mix of the urban area and hence make the flagship electric vehicles project greener. There is also a strategic link with the solar PV intervention, as both contribute to greening the energy supply. The wastewater reuse facility can also provide water and fertilizer for the public parks within the cluster. Ensuring this supply of water can make investment decisions such as	The municipalities, the Ministry of Energy and Mineral Resources, Ministry of Environment and the Ministry of Water and Irrigation should coordinate on who should push energy generation from waste in an urban context. The

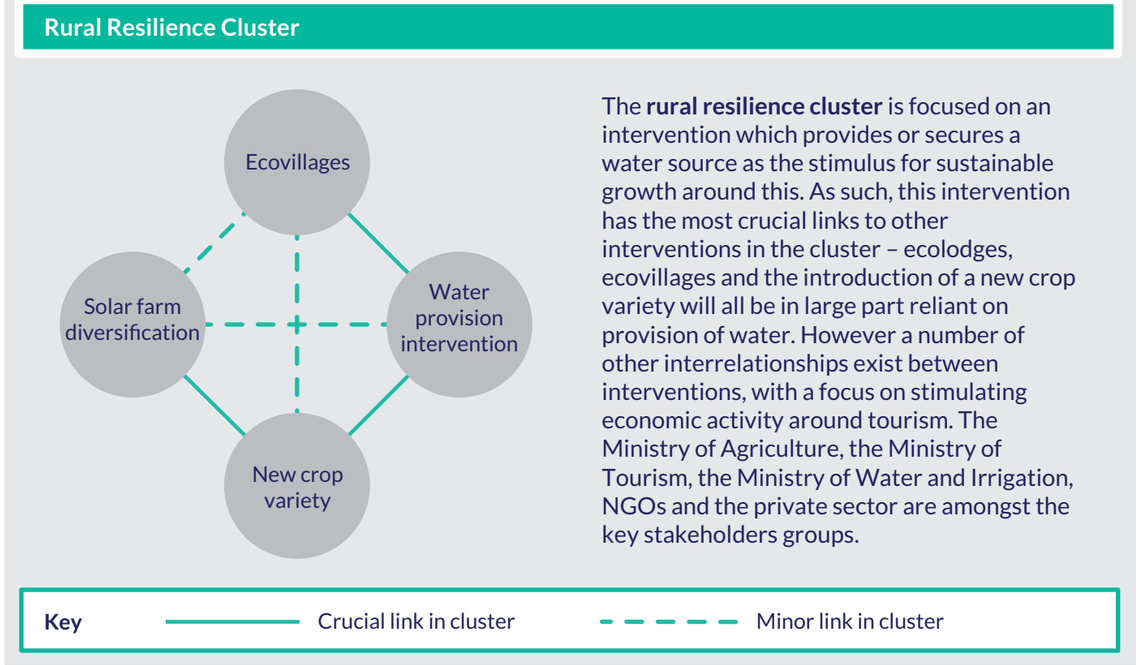
Intervention (contd.)	Key green growth contributors to cluster	Impact on other interventions in cluster	Stakeholders responsible for implementation
	resilience benefit of water provision in water-scarce context.	public parks a real possibility that might otherwise be rejected on the basis that, in a severely water-stressed scenario, their negative social impact in depriving civilians of drinking water may outweigh their potential positives.	Water Authority of Jordan should also be consulted on wastewater reuse – the municipalities can drive its redistribution to parks and afforested areas.
Bus Rapid Transit	**Economic benefit** of facilitating development of businesses around other interventions in cluster e.g. sanitary landfill, **social benefit** of connecting citizens with recreational interventions in cluster e.g. public park	Bus Rapid Transit can complement electric vehicles to ensure a holistically green approach to an urban centre's transport infrastructure. By planning routes, they also provide an opportunity to open up new areas for expansion by delivering time savings if combined with financial incentives to encourage the private sector to establish themselves along bus routes which enable easy access for employees. For example, economic zones outside the urban cluster such as the Dead Sea, if serviced by a bus route, could become a desirable site for industrial expansion providing jobs and low-cost connectivity to key residential areas for employees. The BRT could also connect residents to touristic areas outside the urban cluster such as the Dead Sea.	The Ministry of Transport along with Municipalities will be responsible for implementing this intervention – a private company may be contracted to leverage private sector finance.
Public parks	**Ecosystems services benefit** of green space in urban areas, **social benefit** of improved recreational facilities for citizens in urban area	Ensuring urban planning policy places a value on green space will be crucial to counterbalancing the other urbanisation measures recommended in this cluster that encourage construction and land use change. Parkland can provide cultural ecosystems services for the civilians who use the park for recreation, as well as other types of ecosystems services if it mimics native Jordanian rangeland and support indigenous flora and fauna. Providing a green space such as this will also be highly complementary to the other programmes in building the literal element of the 'green city' image and making the urban area appear to be an attractive place to live, work and invest in, with potential tourism benefits.	Municipalities and the Ministry of Environment are responsible for implementing this intervention.

3.5 Clustering interventions: The rural resilience cluster

Rural resilience cluster

The rural resilience cluster is focused on diversified sources of income focused on tourism, but introducing a range of other activities both to boost growth around tourism, provide resources to facilitate it and to minimise its impact upon the environment. It is not geographically specific, but rather is indicative to reflect a typical rural area in Jordan.

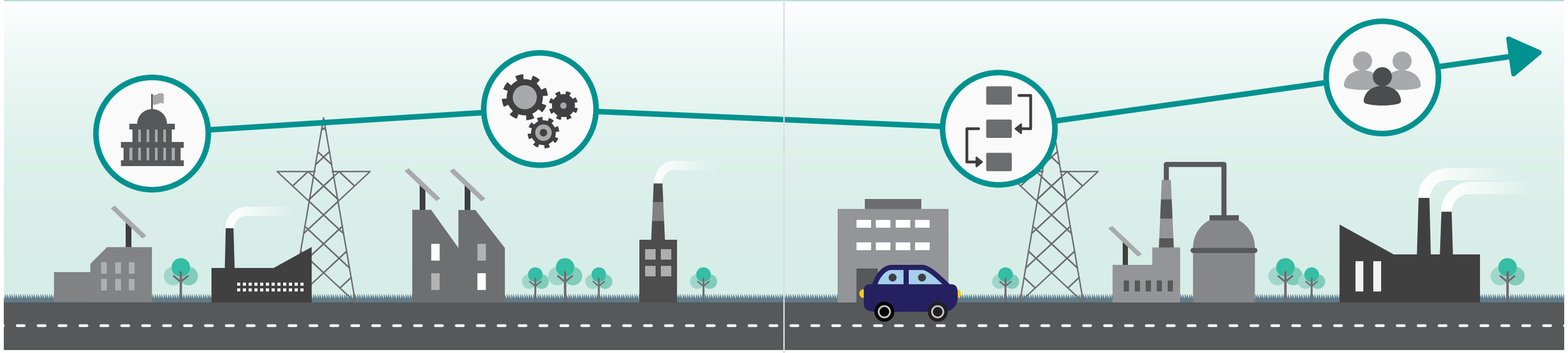
Figure 3.5 Rural resilience cluster



Intervention	Key green growth contributors to cluster	Impact on other interventions in cluster	Stakeholders responsible for implementation
Water provision intervention	**Social benefit** of additional provision of water for human consumption and usage, **ecosystems services benefit** of reduced strain on existing water resources in area, **resilience benefit**	Implementing a water provision intervention will provide a crucial water resource for the people of the area and will act as the key stimulus for the range of activities in this cluster. The nature of this intervention will be geographically specific depending on the rural context, but it could take the form of a desalination plant, a dam or a form of water harvesting. This	The Jordan Valley Authority should work alongside the Ministry of Water and Irrigation to implement this intervention in rural areas.

Intervention (contd.)	Key green growth contributors to cluster	Impact on other interventions in cluster	Stakeholders responsible for implementation
	of improved water security, economic benefit of spill-over activities	intervention is crucial to the cluster since water security is a particularly pressing issue in rural areas. If the other interventions are implemented without increased water provision, they would likely have a negative impact on Jordan's resilience due to the increased in water demand that they would generate. Certain water provision interventions can also provide additional green growth benefits to the cluster. For instance a dam's reservoir could function as a touristic hub for recreational activities and the dam itself could also generate electricity.	
Eco villages	**GHG emissions benefit** of clean energy provision for houses, **social benefit** of green community hub	The ecovillages will provide the community hub of the rural resilience cluster as a place for residents to live and benefit from the other interventions, such as becoming trained as tourist guides. Rural communities are particularly vulnerable to power outages in Jordan if they are reliant on grid energy. Ecovillages with solar panels on rooftops will address this by improving the energy security of the cluster through the localised provision of reliable energy, also reducing transmission losses and GHG emissions of centralised fossil fuel electricity. This programme can also build awareness of the potential financial benefits of renewable energy generation, if accompanied by the correct price incentives: a major barrier (see Part 4, Cross-cutting policies and governance for green growth). In addition, eco-villages are an opportunity to realize benefits from energy efficiency and green building codes.	Local municipalities should drive the planning of the ecovillages, in consultation with the Ministry of Energy and Mineral Resources and the private sector for solar panel technology.
Solar farm diversification	**Resilience benefit** of diversifying income sources, **GHG benefit** of low carbon energy, **ecosystems benefit** of reduced strain on land	As part of the cluster, farmers are encouraged to diversify their sources of income away from relying on agriculture. Some of the farmers lands used for growing crops can be reallocated to ground mounted solar PV. With sufficiently enabling legislation, farmers will then be able to generate electricity for their homes and sell energy back to the grid, providing an alternative source of income. Crops can still be grown beside the solar panels, but this measure can help contain agriculture and therefore water consumption. Separately, solar PV can be used directly to pump water and reduce the fossil fuel-related energy consumption of the agriculture sector. This intervention can be combined with distribution of the new crop variety to strengthen agricultural livelihoods in rural areas, and provide clean energy to power the development of tourism around ecolodges.	Engaging farmers is key to the implementation of the program. Like ecolodges, a range of public institutions could partner with the private sector to make this intervention available to farmers, such as NCARE and the Ministry of Agriculture as well as the Ministry of Energy and Mineral Resources or local municipalities. It is important that ministries and municipalities coordinate to avoid duplication of efforts.
New crop variety	**Resilience benefit** of hardier crops, boosting food security	New crop varieties will improve food security in the region. This will have potential spillover benefits, such as possible revenue opportunities derived from the tourists staying in the ecolodges - using locally produced foodstuffs in cooking will boost the 'eco' image of the area as well as reducing GHGs from food transport. There may also be additional employment opportunities for refugee populations to work on the farms enjoying productivity improvements. The other measures around improving resilience and ecosystems services in this cluster will ensure that refugee populations moving towards rural areas does not negatively impact rural populations which are already resident. The introduction of drought-tolerant varieties will help rural communities to become more resilient to adverse effects of climate change.	NCARE should drive the new crop varieties development, with the Ministry of Agriculture rolling the intervention out. Farmers should be consulted in the development process, with a focus on knowledge-sharing across different areas of Jordan.

4 Cross-cutting policies and governance for green growth



4.1 Developing solutions to barriers to green growth

"The central challenge we have faced over the past ten years has been implementation; how to stay on course with agreed plans and strategies"

- Jordan Vision 2025, p.48

Clustering interventions from across the sectors together provides a vision of the cumulative green growth impact that could be achieved if a number of projects were implemented in unison. However, many of these ideas have been in circulation for a number of years now, highlighted frequently in various government documents and plans. Despite being viewed as worthwhile interventions by numerous government stakeholders they have not yet come to fruition at scale. Identifying these barriers and developing solutions tailored for a Jordanian context will be crucial to efforts to make Vision 2025 a reality. This therefore raises the question; what are the barriers that are preventing green growth projects from being implemented across Jordan?

1 **Lack of adequate financing mechanisms to incentivize the private sector to instigate green growth**

Failure to get finance flowing towards projects is a fundamental barrier to project implementation. Across sectors, projects have repeatedly been restricted to the planning stage through high capital investment costs and a lack o f conviction that projects will deliver a rate of return that warrants the initial investment. Price tariffs for electricity generation have only recently began to attract a limited number of private sector stakeholders to invest in renewables, and challenges still exist related to keeping tariffs competitive when the oil price is low. There are particular challenges around convincing banks to invest in green growth projects since the "green" characteristics – and potential benefits - of these projects are still relatively novel to the Jordanian economy. There are also often difficulties around tendering processes for project implementation. The 2014 PPP Law has codified PPP project procurement methods, the way tenders are to be issued, the process of submitting and accepting bids and the rules and regulations of PPP projects. However feedback from the NGGP workshops suggested that this law has acted more as a model to date, providing suggestions for the design of PPPs to interested parties rather than scaling up consistent usage of PPPs across sectors. Part 5, Financing mechanisms for green growth, expands on the current state of financing mechanisms for green growth in Jordan.

2 **Short termism in planning**

Jordan's political and economic landscape is unpredictable. This understandably creates a bias towards short term decision-making that addresses the issues which appear most pressing and material, a key aspect of which is saving money, rather than longer term, 'slow-burning issues'. As part of this mind-set, least-cost options may be preferred as opposed to longer term solutions which are often higher costs. This mind-set can be seen from the national decision-making level down to the local level. For instance, Jordanian farmers are known to be deterred from shifting towards drip irrigation due to the high costs associated with such a shift, given that surface irrigation appears to service the immediate needs of the farm at considerably lower cost. Underpinning this crosscutting short termism is a widespread failure to sufficiently value externalities in decision-making which will ultimately have a fundamental impact upon Jordan's long term prosperity, such as water resources, GHGs and ecosystems services.

3 **Lack of knowledge transfer and communication between the public and private sector**

The comparative lack of private sector input into the development of the strategies mentioned above is also a key barrier to implementing green growth. The private sector, which is needed to finance and

implement a wide range of green growth interventions, is not always directly engaged in the development of strategies and policies.

4 Lack of sufficient funding perceived as key barrier by ministries

Barrier 1 references the lack of mechanisms which facilitate flows of finance towards green growth projects. An additional barrier exists which is distinct to this and relates to the mindset that it is a lack of funding – rather than a lack of mechanisms – which is blocking implementation. In some cases – particularly those in which a project can only get off the ground via public sector finance, then lack of funding may well be a key barrier. However identifying this lack of finance rather than mechanisms as the barrier to implementation can form a barrier to implementation in its own right in some contexts. This is because it may lead to project developers expecting to receive money –and not taking action until money is available – as opposed to actively investigating solutions via partnerships between the public and private sector for instance.

5 Lack of data, capacity, technical skills required to design and implement green growth projects

For green growth to be implemented at scale, a workforce informed by robust data and equipped with specialized skills is required. In the survey which was conducted, the lack of a reliable and up-to-date database was cited as a key challenge to making informed decisions on project design and implementation. A number of sectors, including the waste, agriculture and tourism sectors, also identified a lack of technical skills and resources as additional barriers to implementing projects. For instance, landfill gas collection requires highly specialised skills which do not currently exist in Jordan. Similarly, the skills required to build eco-lodges in the tourism sector and to take soil and crop samples in the agriculture sector are lacking. Attracting foreign practitioners, a possible solution, is likely to be costly and may challenge desired models of sustainable capacity building which emphasise growing the number of Jordanians in employment. This barrier exists despite the fact that 70% of unemployed women have bachelor's degrees, implying a mismatch of skills sets.[1]

Difficulties financing rail investment in Jordan

Despite the potential benefits being clear, the high up-front capital investment costs, political challenges, lack of financing mechanisms and difficulties around reliably modelling the economic growth potential have repeatedly stymied the national rail network's development.

As far back as 2000, a new national rail network was proposed for development. In 2012, feasibility studies completed and land acquisition explored for the first phase. New plans were proposed in 2015 for a$2.8bn network. Hopes in 2010 for the first lines to open from 2014-15 have not materialised.[2]

1 Albawaba News. 'Women in Jordan are more educated than ever — but they still aren't working', 8th March 2015. Accessed 30th March 2016 http://www.albawaba.com/news/women-jordan-are-more-educated-ever-%E2%80%94-they-still-arent-working-666136

2 Oxford Business Group, 'Jordan moves to lay new tracks', 25th June 2015. Accessed 30th March 2016 http://www.oxfordbusinessgroup.com/news/jordan-moves-lay-new-tracks. UFM Seretariat, 'Jordanian Railway Network'. Accessed 30th March 2016 http://ufmsecretariat.org/wp-content/uploads/2015/02/09-JORDANIAN-RAILWAY-ENGLISH.pdf. Meeting On Railway Co-operation In The Mediterranean, Presentation On Jordan Railways & Railway Projects. 14-16 June 2000. Accessed 30th March 2016 http://www.jordanecb.org/library/634459796779531250.pdf

6 Perceived and actual strain placed by refugees on economy

The current influx of refugees into Jordan is placing an undeniable immediate strain on the economy through the burden of integrating such a consistently high volume of people into society while also managing camps on the border. As this unpredictable situation develops, there is a risk that resources will justifiably need to be channelled in greater proportions towards the refugee situation, at the expense of sectoral development opportunities – although industry leaders have suggested that refugees should not be perceived as a threat to the economy. Nonetheless, perceiving refugees as a drain on the economy and therefore an added cost rather than an economic opportunity through a diversified labour force may itself become a barrier to green growth, not least because hostility in policy and behaviours towards the influx of refugees will have significant social implications.

7 Overlap of ministry's responsibilities and lack of coordination between ministries towards common goals

As has been demonstrated in Part 3, Scaling up the green growth opportunity, each sector has direct impacts upon other sectors and is in turn impacted by the actions of other sectors. It would therefore seem logical for sectors to align their actions together and seek out common goals. However in practice, it is extremely challenging to coordinate ministries who may also appear to have conflicting goals and may also be competing for a central budget pot. This manifests itself in a lack of coordination across ministries, with projects in one sector being prevented from implementation by another sector pulling in a contrasting direction. Similarly, with a number of actors working to achieve the same objectives both inside and outside of government, responsibility for ultimately ensuring that projects come to fruition can sometimes be diluted.

8 Low public trust in governmental commitment to strategies

As in many countries, politics in Jordan is sometimes driven by individuals who have their own agendas to push. Jordan faces the challenge of finding a balance between groups advocating for different priorities in a highly volatile economic and political environment. Representatives of interest groups follow certain agendas in interest of priorities such as economic growth, national security or job creation which are sometimes perceived to be conflicting. As power moves between individuals and interest groups, old plans are often either not enforced or scrapped altogether as the incumbent politicians often introduce their own policies and strategies. This leads to a lack of faith from external stakeholders that the government will stick by policy frameworks. This makes the private sector unwilling to make long term investment decisions. Corruption has been cited as a potential contributor to this constantly shifting policy context – in 2015 Jordan was given a rating of 53 by the corruption index, 0 being high corrupt and 100 being very clean of corruption.[4]

9 Electricity/transport infrastructure deficiencies

Across sectors, high energy costs are a significant barrier to implementing projects. For instance, large infrastructure investments will inevitably incur large electricity bills. However, if energy costs are consistently high or difficult to predict due to challenges around supply and distribution, as they often are in Jordan, the cost of reliable energy to power

3 Obeidat, O. Industrial sector leaders say integrating Syrians in workforce no threat to Jordanians',. The Jordan Times, 22nd February 2016. Accessed 30th March 2016 http://www.jordantimes.com/news/local/industrial-sector-leaders-say-integrating-syrians-workforce-no-threat-jordanians

4 NGGP Validation Workshop, 8/3/16. Transparency International, 'Corruption Perceptions Index 2015' 2015. Accessed 30th March 2016 http://www.transparency.org/cpi2015

a large investment can often become major barrier to implementation. The transport sector's reliance on privately-owned vehicles navigating the road network will also become a significant inhibitor to growth as populations and traffic volumes increase.

10 Inadequate legislation and enforcement that enables green growth

While Jordan has a well-developed legal framework, Vision 2025 observes that confidence in this legal framework is relatively low (Vision 2025, p.58). This is of particular relevance to green growth in the legislation and enforcement which regulates the six sectors of the green economy. Whereas in some sectors the challenges relate to legislation requiring redesign, in other sectors it is failure to sufficiently enforce existing regulations which is the issue.

Barriers in action: Legislation in the energy sector

Legislative issues exist across sectors, such as in the energy sector where challenges relate to the restrictions around renewable energy generation. Significant attention has been paid to improving this legislation, such as the Renewable Energy and Energy Efficiency Law (REEL) from April 2012. However, this needs to be developed further if Jordan is to become a hotbed for investment and implementation across sectors.

A renewable energy developer will need to enter into a number of contracts with various parties in order to develop a project including separate contracts with the landowner, NEPCO, the EPC contractor and operating and maintenance contract. Gaining contracts with the landowner and NEPCO may be particularly challenging depending on the current landuse of the site. and this may deter potential project developers. Similarly, the developer must apply for and obtain the necessary licences and permits after its bid or proposal has been accepted, even if the site has been acquired on a pre-packaged basis. While this legislative barrier applies primarily to the energy sector, it should be considered a cross-sectoral barrier since renewable energy has such high potential to be a green growth catalyst for other projects.

Barriers in action: landfill management in Jordan

The lack of widespread lining and capping of landfill in Jordan despite endorsement in a number of key strategies is symptomatic of a variety of economy-wide barriers at work. The low value which is attached to environmental impacts such as GHGs and leachate release, resulting from short term thinking, prevents green growth interventions in the sector from gaining buy-in. Similarly, failure to enforce environmental legislation makes landfill owners unlikely to implement site improvements when the least-cost option is leaving landfill untreated. Landfill gas capture could provide a financial return for this green growth intervention. However it is unlikely to become a reality at scale in Jordan under current circumstances due to lack of technical skills, capacity and a complex legislative environment for developers to navigate. Resistance to change is also a significant force across sectors in Jordan. There are substantial difficulties associated with transforming long-established behavioural patterns.

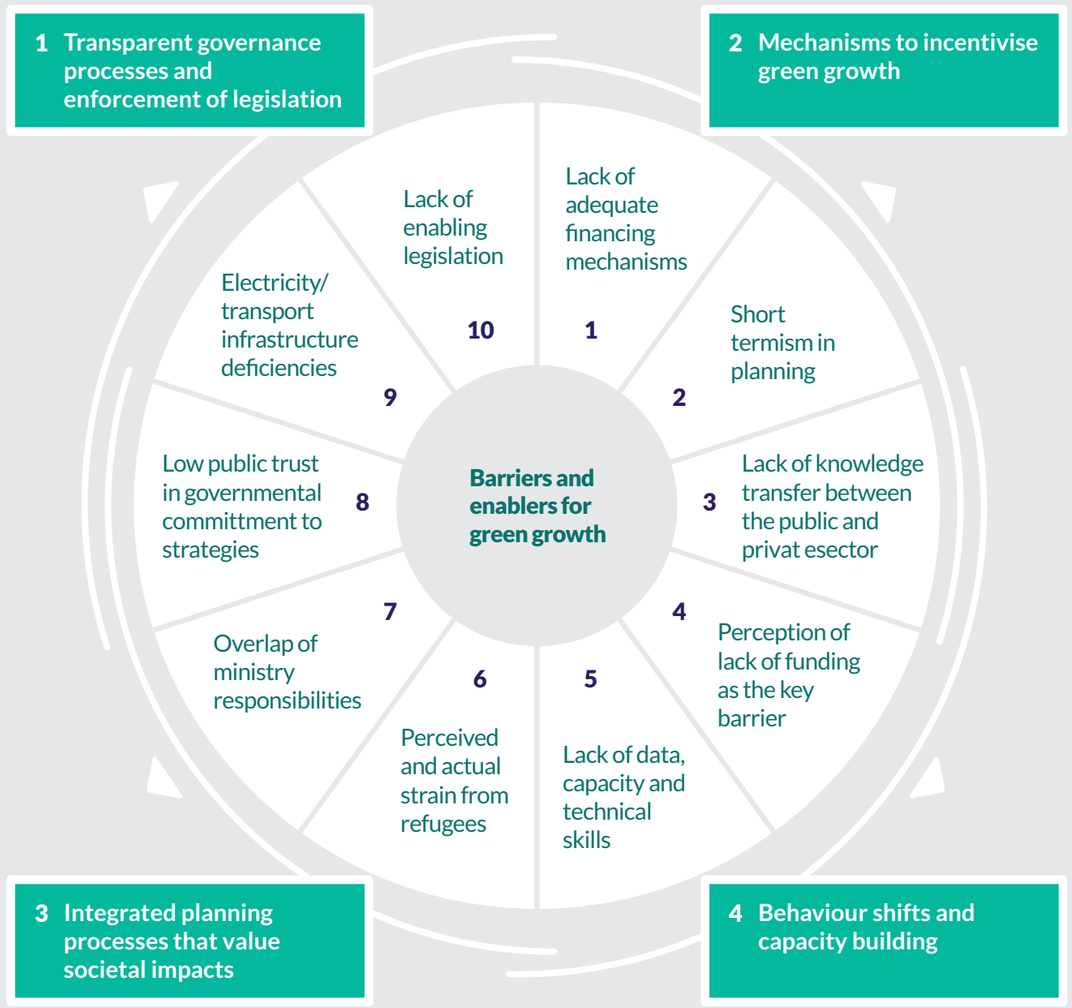
4.2 Cross-cutting principles to scale up green growth

"To define our region by problems and not solutions is to miss huge potential"

- His Majesty Abdullah II Ibn Al Hussein, World Economic Forum 2015

The eight key cross sectoral barriers that have been identified are varied in their nature. Some refer to difficulties of attracting investment from the private sector, whereas others call for reform of the Jordanian government's internal processes. Others do not require reform, but rather call for the stricter enforcement of existing legislation. To address these issues, four 'driving principles' for green growth have been developed to address these different categories of barrier in unison by marking out the 'must haves' for green growth. These high level principles have been selected to ensure they are flexible and can be adapted to meet future barriers and issues. They are underpinned by more specific policy considerations and actions, examples of which are on the following pages.

Figure 4.1 Driving principles of green growth



1 Transparent governance processes and enforcement of legislation

Smart implementation of green growth policies and regulations are critical to the delivery of the successful outcomes anticipated from these measures and to avoid sub-optimal outcomes. Regulation enforcement is a key priority in this respect. Using a transparent, data-driven approach will improve public trust in legislative processes and policymaking.

2 Mechanisms to incentivise green growth

Developing a range of innovative financing and PPP mechanisms can incentivise green growth. For example, establishing a clean investment fund and an urban and infrastructure investment advisory facility could support investment in low carbon and climate resilient infrastructure and encourage longer term decision-making.

3 Integrated planning processes that value societal impacts

There are a number of organisations in Jordan often working towards the same goals. Conversely, there are a range of conflicting priorities, including cross-cutting and difficult-to-account for variables such as the refugee situation. Actions such as the establishment of a cross-ministerial committee could be beneficial to ensure alignment, collaboration, common approaches, and overall review of progress and accountability.

4 Behaviour shifts and capacity building

Shifts in the mindsets and behaviours of both policy makers and the Jordanian people will underpin the successful design and delivery of green growth interventions and is fundamental to the green growth mainstreaming process.

4.3 Turning the driving principles for green growth into concrete policies and actions

The high-level nature of the four driving principles will enable them to continue to drive consistent green growth decision-making in response to new challenges in the future. However the transition towards green growth must begin now. To achieve this, these high-level statements must be converted into concrete actions. With this in mind, an intensive stakeholder consultation process was carried out with key Ministries and other green growth stakeholders, involving a survey, one-to-one meetings and a series of workshops. In two of the workshops, stakeholders focused on identifying Jordan-specific solutions to the barriers which have been identified as blocking implementation of plans and projects across sectors. The proposed solutions are aligned with the NGGP's aim to move towards implementation of Jordan's Vision as opposed to introducing a completely new set of development goals and aspirations. A series of enabling policy programmes have therefore been grouped together to address each of the four driving principles for green growth decision-making. The implementation agenda that each programme requires are outlined on the following pages.

Summarized under the four driving principle for green growth implementation, the enabling policy programmes presented below aim to address the barriers discussed in the previous section. The cross-sector policy options are to improve the enabling environment for green growth to support the implementation of the 24 interventions proposed in this document and green projects in general. It is important to note that the policy options described in this section should be seen as a contribution to the policy development process in Jordan and require further detailed analysis.

A range of indicative policy considerations are recommended, from targeted tax relief for businesses to development of databases on projects and capacity building programmes. This does not constitute an exhaustive list of the policies required, but rather an indicative representation of the sorts of policies which could be implemented under the four driving principles and begin the transition towards green growth to achieve national targets, such as the Vision 2025, and international commitments, such as the Paris Agreement. These policy suggestions can also be found in the high-level implementation agenda in Part 6, An implementation agenda for green growth.

Cross-sectoral barriers to green growth

1. Transparent governance processes and enforcement of legislation	2. Mechanisms to incentivise green growth	3. Integrated planning processes that value societal impacts	4. Behaviour shifts and capacity building
Enabling policy programmes	**Enabling policy programmes**	**Enabling policy programmes**	**Enabling policy programmes**
1.1 Monitor and ensure compliance with legislation	**2.1** Develop reward-based incentives in ministries to encourage long-term decision-making and target achieving rather than target setting	**3.1** Embed CBA analysis into decision-making processes across ministries	**4.1** Shift planning focus away from individual's agendas towards longer term institutionalised priorities
1.2 Review and introduce new legislation	**2.2** Shift away from aid support towards Foreign Direct Investment	**3.2** Embed clustering approach into spatial planning across ministries	**4.2** Build capacity to access and utilise donor funds more efficiently
	2.3 Incentivise private sector to set up businesses with refugees	**3.3** Align project planning to budget cycles and stay committed to plans	**4.3** Develop culture of corporate social responsibility in Jordanian companies
	2.4 Develop databases to help Jordanian private sector to access finance	**3.4** Clearly define roles and responsibilities for ministries	**4.4** Engage with the public to build support for green growth interventions
1.3 Improve transparency of ministry activities	**2.5** Review energy and electricity pricing		**4.5** Educate ministries and the public to recognise corruption
	2.6 Incentivize climate resilient development	**3.5** Develop infrastructure and jobs for refugees using green growth principles	**4.6** Strategic R&D to move up to high value added, knowledge intensive industries
	2.7 Establish institutions to incentivize green growth		

Enabling investment environment with sufficient skills, legislation, public trust and coordinated planning to facilitate Jordan's vision

4.4 Indicative policy actions

Transparent governance processes and enforcement of legislation

Enabling policy programmes	Short term action	Medium term action	Who is responsible?
1.1 Monitor and ensure compliance with legislation	**1.1S Penalty increases for non-compliance** Targeted Increase of penalties for non-compliance with high-impact laws (e.g. waste management) following review	**1.1M Establish sectoral compliance committees** Establish sectoral compliance committees to review and manage enforcement of legislation	JEDCO
		1.1.M Launch compliance awareness campaign Launch awareness campaign about the benefits of compliance with legislation	JEDCO, use funds from increased penalties for non-compliance to finance activities
	1.2S Conduct legislation review Conduct economy-wide legislation study – review performance of legislation and compliance with legislation across key green growth sectors including drivers for non-compliance. Identify high impact areas in which legislation does not facilitate green growth	**1.1M Royal endorsement of legislation** Utilise royal endorsement of regulation and legislation in high priority sectors of non-compliance	JEDCO, coordinating with the Royal Court
1.2 Review and introduce new legislation		**1.2M Compliance tax rebate scheme** Introduce tax rebate scheme for legislative compliance in priority sectors (with high fraud penalty and spot checks)	Ministry of Environment to coordinate effort between relevant ministries, private sector and other relevant external stakeholders
		1.2M Set up non-compliance amnesty group Set up 'amnesty' focus group discussing reasons for legislative non-compliance with stakeholders in question and engage them in developing new legislation	
		1.2M Streamline inhibiting legislation Streamline legislation identified by review as currently blocking green growth	

Enabling policy programmes (contd.)	Short term action	Medium term action	Who is responsible?
1.3 Improve transparency of ministry activities	**1.3S Set up open-source ministry review platform** Set up an open-source platform based on the tripadvisor model to enable external stakeholders to comment on the performance of ministry functions, legislation and processes	**1.3M Targeted response to issues identified by platform** Monitor ministry review platform and develop targeted responses to issues identified by stakeholders numerous times	Identify independent 3rd party agency to operate website
	1.3S Ministry spending audit review Conduct study reviewing current auditing processes on ministry spending	**1.3M Ministry spending audit programme** Roll out formal and transparent programme to audit spending consistently across ministries for public domain	National Audit Bureau
		1.3M International procurement standards Adhere to international standards in procurement	Relevant Ministry

Mechanisms to incentivise green growth

Enabling policy programmes	Short term action	Medium term action	Who is responsible?
2.1 Develop reward-based incentives in ministries to encourage long-term decision-making and target achieving rather than target setting	**2.1S Design project output/outcome measurement framework** Design framework for measuring and reporting the key outputs and green growth outcomes which are expected to arise from a project, across sectors	**2.1M Link career progression to project outputs/outcomes** Roll out project output/outcome measurement framework and link career progression of civil servants to project implementation milestones and evidence of longer term impact	Ministry of Development of Public Sector Government Reform Unit
2.2 Shift away from aid support towards Foreign Direct Investment	**2.2S Review PPP law and make recommendations** Review PPP law and scope role	**2.2M Develop innovative PPPs** Develop and pilot innovative PPP models for priority sectors	Ministry of Finance

Enabling policy programmes (contd.)	Short term action	Medium term action	Who is responsible?
	for innovative PPP models, align with REEE law (direct proposal submission)		
2.3 Incentivise private sector to set up business with refugees	**2.3S Targeted tax holidays** Offer tax holidays to establish industries in areas with high refugee populations with an emphasis on accelerated employment creation	**2.3M Update tax holidays in response to refugee situation** Review and reshape tax holidays and green growth screening criteria in response to the refugee situation, which is likely to change substantially over the coming years	Municipalities of areas with high refugee populations in engagement with private sector
	2.3S Develop tax holiday screening criteria Develop criteria to screen businesses applying for the tax holiday against their business's impact upon the green growth outcomes		
2.4 Develop databases to help Jordanian private sector to access finance	**2.4S Set up publicly accessible online portal for Green Project Finance** Set up fund filtering website that allows Jordanian businesses to enter a pre-determined list of criteria about projects they intend to develop, which then filters funding options which their project may be eligible for	**2.4M Update green funding website** Update website as new funding streams become available	See Recommendation 2: *Develop central and publicly accessible online portal for Green Project Finance in Jordan in Part 5 for more detail*
		2.4M Align green funding website with CBA database Align project criteria required for funding website with project criteria required for central CBA analysis	
2.5 Incentivize climate resilient development	**2.5S Urban and infrastucture investment advisory facility**	**2.5M Climate risk and resilience disclosure requirements** Introduction of disclosure	See Recommendation 12: *Set up urban and infrastructure*

Enabling policy programmes (contd.)	Short term action	Medium term action	Who is responsible?
	Set up urban and infrastructure investment advisory facility to support investment in low carbon and climate resilient infrastructure	requirements around growth outcomes, including climate risk and resilience to encourage longer term decision-making	*investment advisory facility in Part 5 for more detail*
2.6 Establish institutions to incentivize green growth	**2.6S Pilot cross-sectoral clean investment fund** Pilot cross-sectoral clean investment fund with targeted focus	**2.6M Establish clean investment fund** Establish clean investment fund to offer grants, technical assistance debt and equity across sectors	See Recommendation 5: *Consider establishment of a new Jordan Green Growth Fund in Part 5 for more* detail

Integrated planning processes that value societal impacts

Enabling policy programmes	Short term action	Medium term action	Who is responsible?
3.1 Embed CBA analysis into decision-making processes across ministries	**3.1S Establish cross-sectoral database** Establish cross-sectoral database with high performance software to ensure ease of updating and usage	Continually update database with revised information across ministries	Ministry of Environment
	3.1S Establish cost-benefit analysis database Establish cost-benefit analysis database using **3.1A** database, conduct pilot CBAs on projects	**3.1M Roll out CBA training** Roll-out regional CBA training, train ministry officials in interpreting CBA results for decision-making	
		3.1M Streamline CBA data requirements Streamline project data requirements for CBA analysis with data requirements for fund filtering website	
3.2 Embed clustering approach into spatial planning across ministries	**3.2S Develop green growth spatial development plans** Develop a series of long term, cross-sectoral, spatial development plans utilizing the clustering approach demonstrated in Part 3	**3.2M Mandate project alignment with spatial plans** Mandate that proposed projects have to align with and contribute towards spatial development plans to have funding approved	MOPIC, allocated project manager
3.3 Align project planning to budget cycles and stay committed to plans	**3.3S Change budgeting cycles from 3 up to 5 years** Change budgeting cycles from 3 up to 5 year cycles across ministries to embed longer term thinking	**3.3M Review fulfillment of budget commitments** Review the number of budget commitments made at beginning of 5 year period that were actually fulfilled at the end of the period	**3.3M Budget enforcement programme** Review and enforcement programme targeting areas in which budget commitments not fulfilled	Ministry of Environment
	3.3S Align project pipeline with budgeting cycles Embed existing			

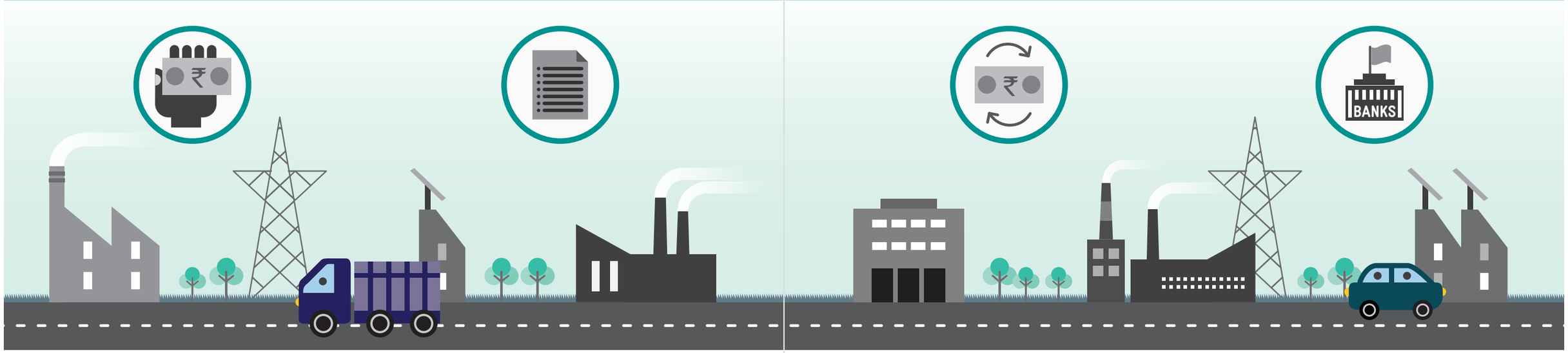
Enabling policy programmes (contd.)	Short term action	Medium term action	Who is responsible?
	project pipeline into new longer term budget cycle		
3.4 Clearly define roles and responsibilities for ministries	**3.4S Project management process reform** Formalise project management processes across ministries – every project identified as a ministry priority given a designated project manager, kick-off meeting organised with relevant stakeholder groups invited (including other relevant ministries), project timeline implemented	**3.4M Project management best practice training** Implement cross-sectoral training scheme in project management held by those project managers who have successfully delivered projects	Ministry of Environment
		3.4M Project manager incentive scheme Offer clear pathway for career progression to incentivise successful project managers to take on more challenging projects in other sectors	
3.5 Develop infrastructure and jobs for refugees using green growth principles	**3.5A Reallocate humanitarian funding towards green growth** Reallocate humanitarian funding towards more strategic interventions to boost resilience and minimise environmental impacts of refugee communities e.g. microgrid renewable energy, water harvesting	**3.5M Reassess refugee infrastructure demand** Reassess demand for infrastructure developed with refugees in mind in light of changing circumstances	MOPIC

Behaviour shifts and capacity building

Enabling policy programmes	Short term action	Medium term action	Who is responsible?
4.1 Shift planning focus away from individual's agendas towards longer term institutionalised priorities	**4.1S Introduce requirement of business case for policy/project change** Introduce policy that makes it a requirement for a business case to be submitted to the Achievement Unit if a policy or project is proposed to be changed or discontinued	**4.1M Long term planning leadership programme** Leadership programme emphasising the importance of long term planning over the plans of the individual – emphasise incentives in 2.1B	Prime Ministry Higher Green Economy Steering Committee
4.2 Build capacity to access and utilise donor funds more efficiently	**4.2S CBA training workshops** Conduct cost-benefit analysis training workshops to develop internal governmental CBA capacity	**4.2M CBA training for donor fundraisers** CBA analysts to train donor fundraisers how to use outputs from CBA analysis(e.g. economic rate of return) on proposed projects in applications for funding from donors	Ministry of Environment to train Ministry of Planning, Ministry of Finance
4.3 Develop culture of corporate social responsibility in Jordanian companies	**4.3S Organise high profile CSR events and attract global best practice** Organise for leading global CSR figures to give talks at key business events in Jordan as well as organizing bespoke events targeted at Jordanian businesses	**4.3M Expand CBA analysis to private sector** Share cost-benefit analysis database with industry leaders to begin dialogue on the economic benefits of identifying and measuring a wider range of impacts	Chamber of Commerce
4.4 Engage with the public to build support for green growth interventions	**4.4S Pilot green growth communications strategy** Pilot communication strategy articulating the benefits of	**4.4M Launch public green growth communications strategy** Roll-out green communication strategy with the public. Place emphasis on increasing	Municipalities

Enabling policy programmes (contd.)	Short term action	Medium term action	Who is responsible?
	interventions to the public in terms of costs and benefits to justify expenditure (e.g. 5JD of taxpayer's money delivering x% more reliable energy) – shape strategy in response to feedback	public knowledge about green growth issues such as energy, water, and ecosystems services.	
4.5 Educate ministries and the public to recognise corruption	**4.5S Government corruption awareness campaign** Roll out corruption awareness campaign in ministries around identifying what does and does not constitute corruption	**4.5M Public/private corruption awareness campaign** Ask ministries who participated in the corruption awareness campaign to share learning with relevant private sector stakeholders to cascade behavioural change across economy	MOPIC
4.6 Strategic R&D to move up to high value added, knowledge intensive industries	**4.6S Establish R&D fund** Establish R&D fund, review patenting policies and ensure funding facilitates patenting of innovative technologies	**4.6M Form private sector skills supply/demand committee** Form government committee with private sector stakeholders designed to link private sector skills demand and supply in education	Ministry of Education to drive, pulling in input from private sector and other relevant ministries
	4.6S Targeted relationship building with technical universities Establish links with priority overseas universities who provide courses and expertise in green growth priority areas e.g. biogas capture and energy generation, resilient crop and soil sampling	**4.6M Launch scholarships and innovation centres** Use R&D fund to finance scholarships and centres of innovation in Jordan, utilizing overseas best practice from partner universities	
		4.6M Launch Erasmus scheme Launch Erasmus scheme with overseas universities for targeted project skills and knowledge transfer, shaped by committee 4.6C	

5 Financing green growth in Jordan



5.1 What is Green Finance and why does it matter?

Green Growth is now an established framework for sustainable development in Jordan. Through the inclusion of environmental, social and economic objectives into the National Green Growth Plan (NGGP), a wide range of benefits can be achieved. These benefits address challenges and opportunities in Jordan's unique development pathway - from water and energy scarcity, to social empowerment and regionally diverse development.

Job creation, energy and water access and affordability, improved mobility from public transport (and therefore, economic productivity) - as well as reduced environmental and health impact and greenhouse gas emissions - can result from green growth, as has been studied and pursued by the Jordanian Government in recent years.

Green growth will, however, not be achieved by policy plans alone. It will not be a success story unless a fundamental enabler is addressed - financing.

The pace at which key infrastructure such as power grids can and should be put in place to enable green growth in Jordan requires a concerted effort to mobilise funding for such interventions, from public and private sources, both domestic and international, especially low-interest, concessional funding.

Equally, the financing of a sustainable development plan can not and should not, by definition, rely too heavily on donor finance and government grants - the very core of a green growth ambition is to achieve a sustainable green economy - sustainable in a social, environmental as well as an economic sense. So while donor finance and grants will be vital as enablers, incubators and facilities to de-risk investment, the ultimate aim should be to grow private sector participation in commercially attractive green infrastructure projects in Jordan.

The economics of many green growth interventions present a clear opportunity for this - the days where renewable energy was "clean but expensive" are long gone and the attractive returns on saving energy and water through efficiency improvements are equally proven.

As technologies have become cheaper, the investment needed to be more energy and water efficient is now paid for by the achieved savings - and as a consequence present a bankable return. Equally, the needed funds to build a solar plant or a wind farm is paid back by the saved fossil fuels that no longer have to be burnt whenever the sun shines and the wind blows.
But "economically proven", does not mean "commercially attractive" for private companies and banks to get involved. Structural barriers, such as a remaining lack of awareness of green growth technologies, and a limited pipeline of well developed "bankable" projects need to be addressed to allow an effective market for green growth project finance to evolve in Jordan. This would ensure sufficient private sector participation and commercial interest as well as supportive government and central bank involvement and international support.

These were key findings from the survey conducted by GGGI on barriers, as well as the most frequent discussion point during stakeholder validation workshops – financing is a key barrier, as well as a major opportunity for development.

This section of the report provides an overview of the current state of Jordan's green finance landscape and summarises a number of barriers and gaps.

A number of recommendations are then made for the way forward - to improve and accelerate financing for green growth projects in Jordan as enabler of the National Green Growth Plan (NGGP).

What is "Green Finance"

It is finance which aims to fund sustainable, green projects and programmes – whether green infrastructure such as solar plants or green buildings, to environmental protection or water-resource projects, to development projects to build capacity, develop policy and train people.
Besides creating new tangible assets, green finance also seeks to develop intangible assets - human capital, for example, in the form of new knowledge and capacity, or social capital (in the form of social cohesion amongst communities, sustainable behaviors which limit negative externalities such as pollution).

According to the International Capital Markets Association's green bonds principles, green financing broadly includes investment into the areas:

- Renewable energy
- Energy efficiency
- Sustainable waste management
- Sustainable land use (including forestry & agriculture)
- Biodiversity conservation
- Clean transportation
- Sustainable water management
- Climate change adaptation.

Other international bodies, such as the Principles of Responsible Investment (United Nations) have a more expansive definition that includes broader socio-economic goals such as economic development and social welfare and empowerment.

Globally, green finance is booming. The business case for green investment has long been made and entities ranging from investment banks to pension funds – and everything in between – are growing their green portfolios. For Green Energy alone, total global investment reached $329bn in 2015.

Amidst this trend, the scale of private, commercial finance is growing at an unprecedented pace. Goldman Sachs expanded its environmental finance targets from $40bn to $150bn by 2021, Citi Group reached a $50bn target for environmental solutions investment ahead of schedule and pledged an additional $100bn over the next 10 years* and the National Bank of Abu Dhabi (NBAD) announced "$10bn in 10 years" for environmentally sustainable activities.

New, specialized Banks, such as the UK's Green Investment Bank (GIB) emerged, as did large global "Mega Funds" focused on funding green growth – the most notably the Green Climate Fund (GCF). The pool of potential fund providers is widening; sovereign wealth funds, pension funds, national governments, commercial and investment banks, private equity funds and international financing organizations are all increasing their attention to green projects. Equally, development banks are increasing their focus on green finance, with examples such as the EBRD and the World Bank's (various) climate finance initiatives.

What this means is that, in principle, trillions of dollars are available for green growth projects worldwide, and billions of dollars are available for projects in the MENA region including Jordan.

Enabling Factors

To enable a healthy financing environment for green projects and initiatives in Jordan, a number of key elements need to be in place.

These can be considered Critical Success Factors (CSFs)

1 **An enabling policy and legislative framework to signal government long term commitment**

2 **Concrete incentives to promote investment in green projects**

3 **Diversified funding sources with a steady flow of funds** – *"enough money made available"*

4 **Well-established Entities**
fully operational, commercially viable Funding Institutions/Facilities which are accessible, transparent and accredited, which cover the spectrum of financing needs

5 **A healthy mix of green financing options/ tools** which are accessible to project developers and reflective of their financial needs – *"Effective and accessible ways to deploy money to projects"*

6 ***A strong pipeline of attractive projects to finance***
*documented in well articulated, strong project business cases and loan/financing applications, and publicly accessible to the global market. For commercial investors, **"bankablility"** matters most, for Concessional lenders, articulation of wider development benefits and commercial **"replicability"** matters*

7 ***Strict compliance with wider social, environmental and financial/fiduciary criteria – and the ability to demonstrate this***

5.2 Where does Jordan stand?

The following pages will provide a summary of the current finance landscape in Jordan with respect to the four elements mentioned above.

Policy and Legislative Framework

International Policy Frameworks relevant to Green Finance

Jordan is party to key international policy treaties and processes relevant to green finance, including the UNFCCC, and was a non-Annex 1 country. Jordan signed United Nations Framework convention in 1993 and ratified the Kyoto Protocol in 2003.
The submission of an Intended Nationally Determined Contribution (INDC) in 2015 ahead of COP21 in Paris was another key signal to the international community, including actors in green finance. At the COP21, Jordan signed the Paris Agreement that emphasizes that "all parties are to undertake and communicate ambitious efforts" without making the distinction between Annex 1 and non-Annex 1 countries.

Partaking in these conventions/agreements not only signals Jordan's support for green growth, but also helps Jordan to secure funds for green projects.

Also, as a developing economy, Jordan is a major recipient of aid and development finance from a wide range of sources – an area where growth in Green Finance is apparent.
Under the OECD Development Aid Committee (DAC) list, Jordan is categorised as an upper middle-income country. This provides the Kingdom with the ability to attract aid and development financing. For example, Jordan is eligible to receive funds under the LIFE programme, the EU's vehicle for financing environmental projects. As of 2012, Jordan had received funding for nine projects.

Relevant National Policies

A strong government commitment to support green growth objectives and set clear targets to reach such objectives provides encouraging signals to investors. The establishment of national green growth policies or action plans, and the allocation of public funds show government's commitment to achieve green growth objectives and can help raise investors' confidence.

A wide range of policies and legal frameworks are in place which promote a clean national commitment to green growth and sustainable development, including

Higher Green Economy Steering Committee: Facilitate green policy development and support project implementation.

MOENV: The National Climate Change Policy (2013-2020), the Government National Agenda for Sustainable Development (2006-2015) the Modified Environmental Protection Law (2015)

MEMR: Renewable Energy and Energy Efficiency Law (2012), National Energy Strategy (2007-2020), National Energy Efficiency Actions Plan (NEEAP, 2013) and supporting legislation.

MWI: National Water Strategy 2016 - 2025

MOMA & Other: Waste Strategy (2015)
MOT: Transport National Strategy (2014)
Greater Amman Municipality: Amman Master Plan 2008, Amman Sustainable Action Plan 2012
This cross-sectoral National Green Growth Plan (NGGP) will complement these and provide an overarching framework which also serves as a clear indication to the international finance community on the country's commitment to Green growth

Challenges relevant to Green Finance:

- Taxes too high on private international financing, hence taxes on international lending has to be reduced.
- Prudential banking regulations need to be relaxed – Islamic banks.
- Limited ESCO services market: Jordan does not currently have a comprehensive market for the delivery of water and energy efficiency services, many ESCOs now focus on solar installations and limited standards and regulations are in place for comprehensive ESCO services ensuring quality and performance standards compliance.
- Onerous implementation requirements on the public sector. The government is in charge of delivering many large-scale programmes. These will require not only funding, but also human and institutional capacity, which often lacks in order for it to deliver tangible results.
- Lack of transparency and coordination of green projects and programmes – Public Sector. There is a complex network of partners, donors and funding packages and programmes directed at RE and EE sectors in Jordan. The lack of coordination between programme owners limits their capacity to track progress of the programmes, their impact and their cost effectiveness. Not only does this hinder the design effective policies, but it also increases the risk of duplication of efforts.
- Lack of transparency and coordination of green projects and programmes in the public sector.
- Barriers to the implementation of law. Some Policies have not reached their full potential. A good example for this is the energy efficiency regulation. It can only be effective if accompanied by good oversight and governance, stakeholder awareness campaigns, technical guidance for implementation and a set of defined enforcement procedures.
- Increase central bank involvement to support green financing regulation

Incentives to Promote Green Investments

Incentives are essential to stimulate investments in green projects.

Taxes

Under Article 11 of the REEEL, all RE/EE equipment or production inputs, whether developed locally or imported, are exempted from Jordan's custom duties and sales taxes. The main beneficiary of such incentive are project developers using RE/EE equipment and machinery for projects.
Investment in the renewables industry is also income tax exempt for the first decade after the investment is first made. This is to encourage IPP projects to generate electricity on build operate own or build operate transfer basis.
Furthermore, in order to encourage the purchase of fuel efficient vehicles, taxes on small-engine hybrid vehicles were reduced from 55% to 25%. However, the tax incentive was lifted in 2012. Custom and sales tax exemptions remain on electric vehicle and electric vehicle infrastructure.

Subsidy reform in favour of green energy

Petroleum Products:

In the face of serious fiscal strain, the government phased out cash subsidies on petroleum products between 2008 and 2010. This was the first time prices were at the international level (LPG was still subsidized partially) and a rapid drop in petroleum subsidies ensued – from 2.5 percent of GDP in 2007 to 0.3 percent in 2009. At the same time the government compensated households in the form of salary increases for public and private sector employees and military personnel. At the very end of 2010, however, the government discontinued the monthly petroleum price adjustments as oil prices reached US$90 a barrel and reintroduced petroleum subsidies. By 2012, petroleum subsidies were at 2.8 percent of GDP or close to 9 percent of the government budget. Facing fiscal pressure again, in June 2012 the government increased the price of premium octane gasoline (octane-95) by about 13 percent. However, as octane-95 accounted for only about 10 percent of the gasoline consumption of Jordan's transport sector, this move proved inadequate in addressing the government's fiscal burdens. This led to the major reforms of November 2012, when subsidies on petroleum products were cut drastically and an extensive cash transfer program was instituted.

Electricity:

Electricity tariffs have traditionally been subsidized with any increase in costs (for example fuel prices) has not been passed onto the final consumers, but assumed by NEPCO. Due to rising government deficit and NEPCO's mounting operating losses, tariffs for select economic sectors and higher-income households increased by 15 percent since May 2012. The government has recently stated its intention to eliminate electricity subsidies by 2017.

Power Purchase Agreements (PPAs)

In order to encourage generation of renewable energy (REEE law 2010) the National Electric Power Company (NEPCO) is obliged to purchase electricity generated by renewables projects, and pay for necessary grid connections. Much of the renewables projects in Jordan, including Jordan Solar One in Mafraq, Wind projects in Maan and Wadi Arabi, and others have been developed with long-term PPAs agreed to between developers and NEPCO. The PPAs are integral for the ability of developers to obtain financing for projects.

Feed-in Tariffs (FiT)

The Energy and Minerals Regulatory Commission set up a Feed-in Tariff (FiT) for distributed renewable power development, the first in the Middle East, designed to allow the sale of the excess energy demand by producers back into the national grid. The FiT has developed the mechanism by which the private-sector can deploy renewables projects with guaranteed tariff rates for energy produced. The FiT is aimed at residents and small-scale producers selling electricity in local markets.

Perceived challenges

Tax

Challenges

- A USAID study on opportunities for green investment in Jordan found that investors do not regard the country as a key destination for clean tech development. Compared to other countries promoting clean tech, Jordan's tax incentives are not significant enough to attract investors. Additional incentives such as providing lands for project developers at lower cost could potentially attract more investors

Opportunities

- Introduce a carbon tax

Feed-in Tariffs (FiT)

Challenges

Changes around Jordan's FiT reflect their novelty and the need to adjust incentives schemes to attract investments to the sector and make renewable energy competitive. While being among the first to successfully introduce FiT, Jordan's FiT applied only to the first round of renewable energy procurements. In the following renewable energy procurement round, Jordan abandoned FiT and adopted a ceiling-tariff model.

Financing Sources

Key to ensuring the success of green growth is obtaining the necessary investment and financing for proposed projects and initiatives. The following two pages will provide a summary of:

- International funding sources supporting green projects in Jordan.
- Local funding sources currently available in Jordan, both public and private.

International funding sources

As a developing economy, a major source of financing for green growth projects in Jordan has been provided by international aid, development banks and other sources.

Development banks
Development banks providing financing to Jordan for the purposes of green economy initiatives include (though not limited to), the Agence Française de Developpement (AFD), KfW, the United Nations Development Programme (UNDP), the European Bank for Reconstruction and Development (EBRD), International Finance Corporation (IFC), the European Union (EU), the Kuwait Fund for Arab Economic Development and others. These are commonly coordinated through MOPIC who plays a key role in Donor coordination and project engagement.

Direct aid
Direct aid also plays a part in Jordan's green economy sector, including financing from the Abu Dhabi Fund for Economic Development and a host of others. By way of example, the US alone provides a range of financial aid to Jordan, including from the following sources:

- Economic assistance from USAID (approximately $1 billion per year), focusing on Jordan's water infrastructure development (footnote 1)
- Millennium Challenge Account (approximately $275 million) which is assisting the development of Jordan's water efficiency and water treatment programmes (footnote 2)
- Loan guarantees: to assist small to medium enterprises (SMEs) in Jordan through various mechanisms including the Jordan Loan Fund Guarantee to de-risk business loans, which is also used by SMEs in the green economy sector (footnote 3).

Specialised climate finance
Jordan also receives financial assistance from various specialised green funds. For example, the Jordan Sustainable Finance Facility (JorSEFF) has been recently set up between EBRD, EIB and KfW, and supported by EU NIF grants, with a pilot funding of €34.5 million.

Note that Jordan has not been as active as other developing nations in accessing the increasingly important climate funds that are being set up for green energy projects. A key example is the Green Climate Fund, which as of yet, no Jordanian entity has been granted eligibility for. Significant opportunities exist to access to this nascent yet very large pool of funds for green growth projects.

Commercial / private financing
Jordan has also been the recipient of direct financial investment and debt finance from the international commercial banking sector. Some of the recent renewables projects, including the Adenium Energy PV plants in Maan, and the Falcon Maan for Solar Energy PV project included private financing as part of a consortium of investors.

Nearly all renewable energy projects in Jordan have required some form of financing or underwriting from key international development banks or grants. Development assistance is provided primarily through concessional loans, co-financing or equity investments into green growth projects. Furthermore, the JREEEF has been set up to channel a range of funding, including international aid and development funds, to renewable and energy efficiency projects.

Local funding sources

Public sector funding
The public sector constitutes the major source of local funding for green projects in Jordan. The majority of the projects are financed through national budgetary contributions, supported by development partners, including key national infrastructure projects.

Local funding institutions

- **Agricultural Credit Corporation:** It is a quasigovernmental lending facility dedicated to support farmers operating under the Ministry of Agriculture. It has two special lending windows where the interest payments are met by the Ministry of Finance: The last government injection of resources into the Committee was in 2008 since when it has operated as a revolving fund. At present, the Committee has spare lending capacity. It also has emergency facilities with the Central Bank that it can draw upon.

Other sources of funding that play a role in the financing of the green growth sector in Jordan include:

- **Jordan Loan Guarantee Corporation (JLGC):** The JLGC is a sponsored by the Overseas Private Investment Corporation and is operated by the Government Development Fund. It is a loan guarantee scheme focused at SME lending.
- **Jordan Enterprise Development Corporation** (JEDCO) – grant funding
- **Amman Chamber of Industry** (ACI) – grant funding
- **Central Bank of Jordan** (CBJ) – loans
- **Governorates Development Fund** (GDF) – loans

Local funding sources – commercial / private Sector
Local Jordanian commercial banks have not yet played a role in the green sector. This has been attributed to a variety of reasons, including the lack of lending capacity, unfamiliarity with green sector projects, loan terms that are not suitable for the sector, and reluctance to lend SMEs and reliance on collateralized lending.

Local green growth fund facilities

- **Funding of the Jordan Renewable Energy and Energy Efficiency Fund** (JREEEF) – (see next proceeding slides)
- **Funding for the Jordan Environment Fund** (JEF) – (see proceeding slides)

The Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)

Key JREEEF Facts
Established: October 2012
Current fund size: JOD 25 million
Funding sources: Jordanian government, international aid agencies, grants

JREEEF Vision:
To make Jordan the recognized regional leader in sustainable energy implementation

JREEEF Mission:
To facilitate scaling-up of renewable energy and energy efficiency to meet the energy needs of Jordan, in accordance with the National Energy Strategy and National Energy Efficiency Action Plan.

Main features of JREEEF
The Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) was established in Oct 2012 by MEMR under the Renewable Energy and Energy Efficiency Law. It was set up to help facilitate the scaling-up of RE & EE to meet the energy needs of Jordan, in accordance with the National Energy Strategy and National Energy Efficiency Action Plan.

JREEEF Is governed by a management committee chaired by the Minister of MEMR and is comprised of six members from the private and the public sector.

The focus areas for JREEEF include residential, SMEs, tourism, and public buildings within Jordan. The strategic objectives of JREEEF include:

- To reduce the financial burden on consumers and the economy from energy imports and subsidies
- The deployment of practical and economical RE/EE applications
- The opening up of new markets and applications for RE and EE
- Development of domestic industries capable of scaling-up RE and EE utilization in Jordan
- Forming partnerships that are effective in developing and implementing RE and EE projects
- Partnering with donors to establish a continuing flow of funding for renewable energy and energy efficiency projects.

JREEEF funding sources
JREEEF began operations with seed funding from the Jordanian government of JOD 25 million. Since then, the fund receives $1-2 million from public financing a year.
JREEEF is also active in attracting donor financing and other support for its operations, including banks, MFIs, IFIs, aid programmes, aid programmes, donors, and loan guarantee facilities to help finance or co-finance programmes implemented by beneficiaries.

JREEEF has setup a donor coordination

committee with participation of USAID, AfD, EU, DFATD, EBRD, KfW and WB.
The following is an inexhaustive list of the funding JREEEF has received from organisations other than the Jordanian government since its inception, with capital contributions from the Canadian Government, the EU, France and others.

Services and funding provided by JREEEF
JREEEF focuses on five key areas of support in its drive to promote the uptake of RE and EE initiatives across Jordan, including:

- **Revolving credit structures:** where concessionary loans are provided to households, and as the loan is paid back through energy savings, the JREEEF fund is re-stocked for further lending to other consumers.
- **Direct grants:** some form of grants is also provided to drive down the capital cost of implementing RE/EE by consumers.
- **Equity financing:** with the provision of risk capital for projects, companies or individual entrepreneurs to encourage development of innovative technologies.
  Guarantees: underwriting risks for certain RE/EE developments.
- **Technical assistance:** including assistance with funding energy audits and creation of M&V systems, preparing bankable project proposals, etc.

JREEEF beneficiaries
The key beneficiaries of JREEEF's programmes so far include households, SMEs, community organisations, universities, government entities and more broadly, the Jordan national green energy programme / strategy.

JREEEF projects
The following is a list of the types of specific projects JREEEF has been involved in to date:

- Household PV Pilot Project North Jordan (Mercy Corps, EDCO, CBOs) (approved)
- Household Solar Water Heater Project (Jordan River Foundation) (approved)
- Distribution of LED bulbs in refugee camps (MoPIC) (approved)
- Energy Efficient Lighting Projects delivered by electric utilities (utilities, IDECO, EDCO, JEPCO) (approved)
- Scaling up household SWH and PV with donor co-financing (Canadian DFATD, EU) (planned)
- Interest Subsidy project for SMEs (Jordan Loan Guarantee Facility) (planned)
- Technical Assistance grants (planned)
- Support for Innovation and R&D (planned)

Jordan Environment Protection Fund (JEF)

Key JEF Facts

Established: 2006
Current fund size: Approximately JD 7 million
Funding sources: Jordanian government, international aid agencies, grants, Clean Development Mechanism

Main features of JEF
The JEF was established by the Ministry of Environment in 2006. The Fund was intended to provide financial support for projects in the context of environmental protection and preservation. The Fund also aims to drive technological and process improvements across select sectors and complement existing environmental expenditure in Jordan.

The Fund is managed by a board of directors, headed by the Minister of Environment, and with the participation of 5 public and 5 private sector entities.

JEF funding sources
The Fund was launched with $5.6m in 2011 and has been operational at a small scale since then, only distributing $1.4m on projects as on 2015.
The JEF fund receives financing from multiple sources including:

- Fines and compensation referred to the Environmental Law 66.
- Aid, donations and grants provided to the Fund from public institutions and civil bodies and private Arab, regional and international bodies. For example:
  - USAID has provided $1 million to the Fund
  - GIZ and AfD have offered support to strengthen the Fund
- Revenue from the sale of carbon certificates and any financial surpluses after the implementation of any projects or funded by external donors environmental activities.
- Donations to the Fund are exempt from income and sales taxes in Jordan. Currently, the Fund receives approximately JD 0.7 to 1 million per year.

Services and funding provided by JEF
Since its inception, the Fund has been focused on different environmental areas, including renewable energy, municipal works, agriculture (organics, water and irrigation matters) and waste management. Currently, JEF works as a direct grant model, but the Ministry of Environment's aim is to have the Fund move towards soft loans and a revolving finance model. The Fund also supports the development of bankable projects.

JEF beneficiaries
JEF's beneficiaries have been varied cross sectorally, and include:

- Industrial & Commercial entities: mainly SMEs producing products and services dealing with environmental issues.
- NGOs: environmental projects, advocacy, awareness, research and assessment.
- Government: Technical assistance, and other services.
- Environmental consulting companies: energy efficiency, environmental effectiveness, business planning.

Applying for JEF funding
The aim of the Ministry of Environment is to disburse $2.5 million from the Fund each year. Applications to the Fund cost JD100 and applicants can make a request up to JD500,000. Currently, no online system exists to provide applicants with the information and remote ability to make applications. Instead, applicants must reach out directly to the Ministry of Environment.

5.3 What kind of finance do Jordan's Green Growth Projects need?

A wide set of green growth interventions has been assessed, based on the CBAs and wider project opportunities available to Jordan, to scale up and accelerate green growth. Data presented is estimated as part of the CBAs and sources are provided in the supporting CBA Annex.

The tables below describe the typical project size for each, and provide comments and potential gaps in the current financing market.
The tables also show the findings on what revenue sources such exhibit (if any), which are critical as repayment/return sources to investors and lenders.

Green growth projects enable a wide range of benefits, beyond those which are currently "bankable" as financial, monetary returns. Where applicable, the returns not currently monetized under the current policy regime have also been documented – which can form the basis of future financing streams following policy change. Avoided CO_2 emissions, for example, is not yet a common monetizable return for commercial banks in Jordan, but under carbon legislation and under international carbon policy, these are likely to be a vital benefit to account for and to earn financial returns for in the future.

Finally, considerations are documented at this project type by project type level – which will inform decisions and subsequent overall green finance recommendations.

Green Growth Interventions

Green Growth "Interventions" (contd.)	Project scale and financing needs (contd.)	Comments and Gaps (contd.)	Revenue Sources from Green Growth Benefits (basis for loan repayments or equity returns) (contd.)	Green Growth Returns not monetized under current policy regime (contd.)	Considerations going forward (contd.)
Green spaces Public park Status: Design phase Size: Small ($16m)	**Project scale: >$15m (S)** • Public or donor funding	• The most appropriate financing mechanism would be public expenditure by the relevant municipality, with the addition of donor grants where it is available.	• Lease revenue from cafes and other commercial amenities built on the park grounds	• NA	1 Finance with public funding via JEF (supplemented by development finance if necessary) 2 Seek donor grants if public funding cannot be provided
Recycling / waste-to-energy Materials Recovery Facility (MRF) and Refuse-derived fuel (RDF), Al Ekeder Status: Feasibility studies completed Size: Medium ($147m)	**Project scale: >$150m (M)** • Public or grant financing are the optimal options	• Given high capital costs and limited commerciality, highly unlikely to obtain commercial financing. The best option would be to finance the project with government or donor financing. • Donor finance for Syrian refugees in Jordan is also a potential option given the social and economic impacts of this project	• Return on investment from sale of electricity from RDF energy generation and recovered materials	• Reduction in CO_2 emissions Socio-economic benefits including for the health of nearby residents and scavengers	1 Finance with public funding, development finance, and supplemented by aid grants (e.g. Madad fund)
Public transportation infrastructure Bus rapid	**Project scale: >$100m (M)** • PPP's an option: • Public funding Private finance (debt	• Significant capital costs, can be financed with public or private debt and equity. Private sector financing can be induced with loan guarantees from public sources,	• Revenue from ticket sales to users • Advertising fees from buses, bus stations and terminals	• CO_2 emission reductions from increased use of public transport • Air pollution reduction Traffic de-	1 Develop a PPP between the government and private enterprises to obtain either debt financing

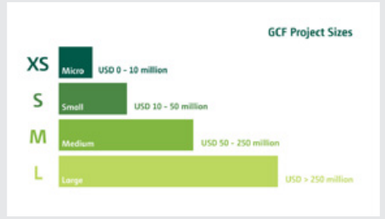
How much money is needed typically for such a project?

What kind of Financing is needed? (Debt, Equity, Grants, Loan Guarantees?)

What project benefits constitute revenues for repayments and equity returns?

What additional benefits are delivered – which could become financial flows in the future?

What should be considered for financing these projects going forward?



Please note that the size classifications used in this section into XS (very small), S (small), M (medium) and L (Large) follows the classification system of the Green Climate Fund (GCF).

Green Growth "Interventions"	Project scale and financing needs	Comments and Gaps	Revenue Sources from Green Growth Benefits (basis for loan repayments or equity returns)	Green Growth Returns not monetized under current policy regime	Considerations going forward
Utility scale solar and wind projects NGGP Example: Fujeij wind farm Status: In development Size: Medium ($130m)	**Typical Project scale: $80-200m (M)** • Large project debt and equity Finance – with 20+ year life • Loan Guarantees	• Developed as IPPs through direct proposals/tendering to MEMR, and contracted PPAs with NEPCO. • Benefits from co-financing through development banks to de-risk and reduce WACC and LCOE. **GAPS:** • Growing but lacking private sector finance involvement. • Growing but lacking 'readiness' for accessing international climate finance for the RE plans in Jordan (e.g. GCF) • The pace of project origination and financing deployment (project by project), slowing down the pace of RE deployment targeted in the National RE strategy and NGGP	• **Clean electricity** – remunerated in power Purchase Agreement (PPA) with NEPCO • Note at current technology costs these green growth projects **represent commercially viable "bankable" projects** – wind PPAs in the region of JOD 0.08/kWh ($0.11/kWh) and solar PPAs range from $0.06-0.08/kWh and falling	• CO_2 emissions reduction from solar or wind compared to oil, gas or coals fired electricity • Ranging from 380 to -over 1000g of CO2e per KWh	1 Increased private sector engagement on RE finance to accelerate pace 2 Consider specific commercial financing facility for utility-scale RE (e.g. proposed Jordan Green Growth Fund
Electric Vehicles with solar PV project(EVs)	**Typical Project scale: >$100m Infrastructure (M)** PPPs for EV charging stations & PV	• With high capital expenditure and OPEX costs, a JV with the private sector (PPP model) is suitable for the initiative. Public financing can include the provision	• User charges (for electricity from charging stations) • Sale of excess PV electricity	• Decrease in CO_2 emissions in the atmosphere • Less air pollution in Jordan's metropolitan areas	1 Develop PPP with infrastructure developers, with the government support including provision of land

Green Growth "Interventions" (contd.)	Project scale and financing needs	Comments and Gaps	Revenue Sources from Green Growth Benefits (basis for loan repayments or equity returns)	Green Growth Returns not monetized under current policy regime	Considerations going forward
Status: Charging network pilot stage Size: Medium ($120m)	capacity: • Public support ad private finance (debt or equity) For EVs: • Grant financed rebates lowering purchase price for EV buyers • Low interest car loans for EVs	of land, licenses for advertisements at charging stations, etc, to attract private investment. **GAPS:** • With continuing low oil prices, EV uptake may be low unless incentivised by the government. In countries where EV uptake has been high (see Norway), significant subsidies are provided for EV purchases by consumers	into the grid to NEPCO Advertisement revenue on charging station sites		and other non-cash incentives such as advertisement options on sites. To incentivise EV use: 1 Ensure exemption all EVs from import tariffs, custom duties and licensing fees to induce investment by private market 2 Consider extending JREEEF's scope and available capital to cover EV rebates and low interest rate loans
 Renewable desalination Example: Solar Powered Reverse	**Typical Project scale: >$350m (L)** • Large project Debt and Equity Finance – with 20+ year life • Loan Guarantees	• Can be developed through direct proposals/tendering to MEMR, with private EPCs and contracted PPAs as other pure wind/solar projects. • Benefits from co-financing through development banks to	• **Clean electricity** – remunerated in power Purchase Agreement (PPA) with NEPCO • Desalinated water – remunerated through agreements	• CO_2 emissions reduction from solar compared to oil, gas or coals fired electricity • Reduced water stress	1 Position project as innovative multi-benefit development project for concessional finance (grants and loans) from international development banks and
Osmosis desalination plant (RO) Status: Concept phase Size: Large ($364m)		de-risk and reduce WACC and LCOE. **GAPS:** • Limited awareness / experience of financing joint RE/RO technologies	with the Jordan Water Company		donors 2 Engage private sector and NEPCO on co-financing through commercial debt and equity arrangements Undertake detailed financing strategy project
 Freight rail Jordan freight rail Status: Planning stage Size: Large project ($4.2bn over 5 years)	**Project scale: >$4 billion (L)** PPP's an option: Public funding Private finance (debt and equity) Public loan guarantees to reduce investor risk	• Considered a mega project, freight rail requires significant upfront project capital costs, which would require government backing either through a PPP or loan guarantees (subsidization of rail is common around the world). **GAPS:** • Financing at the scale of this MEGA project a common challenge • A clear business case is required to demonstrate customer demand to justify investment outlay, since any potential commercial lender will be undertaking the same assessment.	• Revenue from freight companies and private sector users through cargo/container carriage fees	• CO_2 emissions reductions given efficiency of tonne-kilometers for rail over trucks • Traffic decongestion • Reduced air pollution • Decreased wear-and-tear to road transport system	1 Position project as multi-benefit development project for concessional finance (grants and loans) from international development banks and donors, alongside public and private finance. 2 Undertake detailed financing strategy project

Green Growth "Interventions" (contd.)	Project scale and financing needs	Comments and Gaps	Revenue Sources from Green Growth Benefits (basis for loan repayments or equity returns)	Green Growth Returns not monetized under current policy regime	Considerations going forward
 Green spaces Public park Status: Design phase Size: Small ($16m)	**Project scale: >$15m (S)** • Public or donor funding	• The most appropriate financing mechanism would be public expenditure by the relevant municipality, with the addition of donor grants where it is available.	• Lease revenue from cafes and other commercial amenities built on the park grounds	• NA	1 Finance with public funding via JEF (supplemented by development finance if necessary) 2 Seek donor grants if public funding cannot be provided
 Recycling / waste-to-energy Materials Recovery Facility (MRF) and Refuse-derived fuel (RDF), Al Ekeder Status: Feasibility studies completed Size: Medium ($147m)	**Project scale: >$150m (M)** • Public or grant financing are the optimal options	• Given high capital costs and limited commerciality, highly unlikely to obtain commercial financing. The best option would be to finance the project with government or donor financing, • Donor finance for Syrian refugees in Jordan is also a potential option given the social and economic impacts of this project	• Return on investment from sale of electricity from RDF energy generation and recovered materials	• Reduction in CO_2 emissions • Socio-economic benefits including for the health of nearby residents and scavengers	1 Finance with public funding, development finance, and supplemented by aid grants (e.g. Madad fund)
 Public transportation infrastructure Bus rapid	**Project scale: >$100m (M)** • PPP's an option: • Public funding Private finance (debt	• Significant capital costs, can be financed with public or private debt and equity. Private sector financing can be induced with loan guarantees from public sources,	• Revenue from ticket sales to users • Advertising fees from buses, bus stations and terminals	• CO_2 emission reductions from increased use of public transport • Air pollution reduction Traffic de-	1 Develop a PPP between the government and private enterprises to obtain either debt financing

Green Growth "Interventions" (contd.)	Project scale and financing needs	Comments and Gaps	Revenue Sources from Green Growth Benefits (basis for loan repayments or equity returns)	Green Growth Returns not monetized under current policy regime	Considerations going forward
transport Status: Planning stage Size: Medium ($176m)	and equity) • Public loan guarantees to reduce investor risk	and by providing exclusive options for advertisement throughout the BRT system, and development rights around major terminals. • **GAPS:** Large upfront costs may not be offset by usage fees for a long time.	• Commercial leases from bus terminals	congestion	or provide equity for investments required. 2 Undertake detailed financing strategy project
 Transport hub infrastructure Dry Port (Aqaba) Status: Planning stage Size: Small ($50m)	**Project scale: >$50m (S)** PPP's an option: • Public funding • Private finance (debt and equity) • Public loan guarantees to reduce investor risk	• The project can be financed through either a guaranteed loan (public, private or both). Nonrecourse loan options can also be used utilised to guarantee the loan with the value of the underlying assets with private lenders. Another option is a PPP model, where the government provides the land/ access to port facilities and other inducements to obtain private investment and/or lending. • **Note:** Project needs to be aligned with development of the freight rail – might not be built if the Freight Rail is pursued	• Revenue from shipping companies (importers and exporters) • Increased trade will benefit state revenues through custom duties	• Improved freight mobility enabling economic growth and development	1 Develop a PPP between the government and private enterprises to obtain either debt financing or provide equity for investments required.

Green Growth "Interventions" (contd.)	Project scale and financing needs	Comments and Gaps	Revenue Sources from Green Growth Benefits (basis for loan repayments or equity returns)	Green Growth Returns not monetized under current policy regime	Considerations going forward
Waste-to-energy / wastewater Wadi al Arab wastewater biogas Status: Design phase Size: Small ($1.5m of a $28m total)	**Typical Project scale: >$28m (S)** for programme of numerous plant • Debt and equity finance option • Grant funding for individual plants • Grants to de-risk private investment (through loan guarantees, interest rate subsidies)	• Significant upfront project capital costs, which can be provided with debt and/or equity, with guarantees provided through public funding or with grant funds. If project is commercially viable private investors can be sought. If not, grant funding should be sought, and coupled with state financing.	• **Revenue from the sale of electricity generated by burning methane gas to NEPCO.**	• Decreased methane emissions (major GHG contributor)	1 Co-financing through JREEF (as this generates RE) and private finance (repaid from NEPCO PPAs) 2 Consider development loans/grants to complement 3 Group individual projects into larger programme, seeking financing for consolidated programme

Other Green Growth interventions considered:

Agriculture New crop variety introduction Status: Ongoing Size: TBC	Public or donor funding	• Public or donor funding through direct grants is the most appropriate financing option for this project. Once the new seed varieties are tested. Without clear proof of concept that the new seed varieties will provide commercial benefits farmers are unlikely to pick up the costs.	• **Revenue from increased crop production**	• More efficient use of land and water for the production of food	1 Finance with public funding via JEF (supplemented by development finance if necessary) 2 Seek donor grants if public funding cannot be provided

5.4 Green Growth Finance Recommendations and next steps

A wide range of green growth projects have been assessed, as well as a number of critical factors for a healthy green financing environment. **12 key recommendations have been prepared for consideration.**

These are tangible, actionable recommendations to enable better Financing for the National Green Growth Plan (NGGP)

Each Recommendation is described below, and required next steps are summarized for each – outlining what is to be done in the immediate future following adoptions of these recommendations:

Finance Recommendations for Green Growth in Jordan:	Why?	Immediate Next Steps
Recommendation 1: Establish a dedicated Green Finance team	• Fills key Public Sector capacity gap in Green Growth implementation • Provide technical assistance to existing Institutions (JEF, JREEEF) and Helps Project Developers make better project proposals/loan applications • Supports JREEEF, JEF and local Financiers better evaluate and facilitate Green Growth Projects for funding • Helps establish stronger portfolio eligible for Int. Green Finance (e.g. GCF) • Provides Training for Public Sector employees to build capacity further (with SME support)	**Now:** • Consider funding options for the Green Finance team – JEF and or JREEEF could possibly be sponsors enabling the Green Finance team to be established • Hire first 2 employees (Green Finance experts) to do initial steps and build this capacity • Secure engagement of international organizations experts (e.g. GGGI Green Investment Services team) • Engage other organisations to provide support by experts once process is established **Next:** • Begin technical assistance in project origination, facilitation, matchmaking, assessment etc. • Begin further training & Capacity Building
Recommendation 2: Pursue direct access to international climate funds, especially the GCF, with accreditation following a readiness assessment for Jordanian entities	• Provides a structured approach to enabling GCF funding to Jordan, including the four entities currently considering GCF accreditation • Helps identify potential gaps to accreditation and GCF finance • Helps determine most suitable options for GCF accreditations and prioritize "Getting Ready" activities in the GCF's "Get Ready-Get Accredited-Get Funded" approach	**Now:** • Develop roll-out plan for next 12 months of nation-wide umbrella programme for tendering, financing, awareness and marketing etc. • List all potential options for GCF accreditation for entities in Jordan (including new ones which do not currently exist. • Have entities self-assess (at a higher level) their "readiness" in each category – with basic supporting evidence (interviews) • Prioritise • Develop plans to support "ready" entities

Finance Recommendations for Green Growth in Jordan: (contd.)	Why?	Immediate Next Steps
		to get Accreditation • Develop plans to support others to close existing gaps (Challenge is not non-compliance – but rather ability to prove compliance) This could be undertaken by the NDA with the Technical Assistance Team support in their coordinating role by establish a working group which shall **Next:** • Support chosen option in accreditation
Recommendation 3: Continue Development of Jordan Environment Fund (JEF) with focus on funding project origination, feasibility studies and better proposal development	• Ensures continued development in scale, scope and capacity of JEF • Enhance focus on using grants to fund "soft" side of projects - project origination, feasibility studies and better proposals/ loan application development, using the Technical Assistance Team • Improved online presence supports JEF accessibility and transparency perception - ultimately helping re-capitalize JEF over time from international and national sources	**Now:** • Develop agreements on JEF's sponsorship of the proposed "Technical Assistance Team" • Develop MOUs on JEF's service needs from the proposed "Technical Assistance Team" • Secure resources to build online visibility of JEF **Next:** • NEW: Funding Technical Assistance team which will help projects develop high-quality proposals and loan applications • Continue grant-funding projects Strengthen and enhance continuous fund-raising efforts
Recommendation 4: Continue Development of Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) – consider expansion of scope to energy efficiency, transport (e.g. EVs), ESCOs and funding Technical Assistance	• Ensures continued development in scale, scope and capacity of JREEEF – especially interest subsidies and loan guarantees • Enables more technical assistance to RE and EE projects in Jordan through the technical assistance team • Continues scale-up of fund to cover wider RE and EE areas, including potential of energy efficient transport (e.g. electric vehicles) • Improved online presence supports JREEEF accessibility	**Now:** • Develop agreements on JREEEF's sponsorship of the proposed "Technical Assistance Team" • Develop MOUs on JREEEF's service needs from proposed "Technical Assistance Team" • Secure resources to build online visibility of JREEEF • Launch accreditation scheme for ESCOs as eligibility criteria to access JREEEF funds **Next:** • Use JREEEF funds to enable Technical Assistance team which will help projects

Finance Recommendations for Green Growth in Jordan: (contd.)	Why?	Immediate Next Steps
Capability	and transparency perception - ultimately helping re-capitalize the fund over time from international and national sources • Expands role of JREEEF in growing the ESCO market	develop high-quality proposals and loan applications as a service to JREEEF and other stakeholders (incl. financiers and project developers and other financing facilities) • Continue funding projects • Continuous fund-raising efforts • Expand lines of credit to ESCOs
Recommendation 5: Consider establishment of a new Jordan Green Growth Fund to facilitate private Debt & Equity Finance for Medium (50-250m) & large (>$250m) Projects	• Created a financing vehicle for projects beyond the scale and scope of current facilities • Helps scale-up commercial, private sector finance to green projects • Creates ability to provide De-risking, lending and equity investments at a larger scale and faster pace • Enables greater coordination and co-financing amongst donors and concessional/institutional investors	**Now:** • **Scope and launch Feasibility Study for "Jordan Green Fund"** Explore options, Partners, structure, governance, legal entity, potential fund providers and fund users, deployment mechanisms, studying overlaps and/or complementary nature with existing funds (JREEEF, JEF, JorSEFF)
Recommendation 6: Set up urban and infrastructure investment advisory facility	• Supports investment in low carbon and climate resilient infrastructure • Facilitates longer term decision-making through investment focus on green growth outcomes, including climate risk • Work closely with Central Bank and Ministry of Finance to coordinate support	**Now:** Determine appropriate ownership of facility at central government level Engage key stakeholders in scoping demand for facility at sub-national level e.g. GAM, ASEZA
Recommendation 7: Conduct structured risk analysis and de-risking study for private finance of green growth projects in Jordan - each project type	• Provides a structured approach to private finance risk-perceptions about renewable energy, energy efficiency projects • Engages Private Sector Finance stakeholders in fact-based risk discussion and de-risking solutions • Provides instruments that ultimately helps reduce cost of capital for green growth projects	**Now:** Secure resources to scope Risk Analysis and DE-Risking Study Engage support to conduct Study • Promote Study to private sector stakeholders to ensure maximum participation (interviews, surveys, workshops) **Next:** Prioritise Study findings and implement feasible DE-Risking steps based **Now:**

Finance Recommendations for Green Growth in Jordan: (contd.)	Why?	Immediate Next Steps
Recommendation 8: Launch continuous private sector green finance engagement programme and working groups to evolve sector knowledge and provides a forum for project presentations and matchmaking	• Provides a continuous, structured forum for public- private sector engagement on Green Finance • Establishes thematic working-groups (mixed private/public sector) to engage with and address current and future green finance issues • Enables continuous dialogue, and coordination and policy learning with private sector participation • Facilitated by Green Finance Support Team	Establish Technical Assistance Team to support this process Determine Governance/Oversight for • this programme (ministry patronage – e.g. MOENV, MoF, Central Bank of Jordan) Determine programme participants • Develop and promote annual programme • Consider 4 quarterly workshops per year • with private sector representatives from banks, project developers, manufacturers, finance experts etc. Consider ongoing 'working groups' with • voluntary participation Specifically target engagement with Banks • in Jordan about green finance products **Next:** Develop and Execute Engagement Plan • with first set of regional commercial Banks to create awareness of NGGP and understand their interest in Green Projects in Jordan (e.g. NBAD) Establishment of Thematic working-groups (mixed private/public sector) • to engage with and address current and future green finance issues to enable dialogue, engagement and private sector participation on an ongoing basis
Recommendation 9: Improve credit lines to ESCOs	• Improves access to finance for ESCOs, which are critical for green growth • Provides incentive for quality and performance standards amongst ESCO market with limited regulation	**Now:** Support project developers and customers • with training in EPC Develop accreditation and certification • regime for ESCOs / EPCs Expand JREEEF's role in supporting the • growth and capability of ESCO services in Jordan Consider JREEEF accreditation for ESCOs • as incentive for quality and performance standards
Recommendation 10: Establish Nation-wide Programme	• Combines coordination on various schemes across Jordan to a national level programme management • Ensures a dedicated manager	**Set-up Accountable team:** Determine • Responsibility and appoint Manager and 1 support staff Develop roll-out plan for next 12 months • of nation-wide umbrella programme for tendering, financing, awareness and mar-

Finance Recommendations for Green Growth in Jordan: (contd.)	Why?	Immediate Next Steps
Management for Green Government building scheme and financing	and team with accountability to set clear targets (no. of buildings by 20XX) and results (Green Benefits) • Helps accredit scheme at a national level for international development, commercial and climate finance (e.g. GCF) • Helps coordinate and reduce costs of project and financing – centralized loans to this entity at a national level – funding deployment to "bundles" of government buildings being tendered as packages to private companies	keting etc. Liase with the Higher Green Economy • Steering Committee
Recommendation 11: Develop central and publicly accessible online portal for Green Project Finance in Jordan	• Compliant with public and private finance formats • Increases visibility and transparency of pre-screened Growth/Sustainable Energy projects in Jordan • Facilitates "matchmaking" between projects and financiers/ donors Facilitates promotion of JEF and JREEEF (and other) supported projects seeking co-financing • Enables co-listing in other finance "marketplaces" such as IRENA's Sustainable Energy Marketplace (SEM)	**Now:** • Conduct scoping, governance and costing study • Mobilise start-up resources (manpower and funds) • Design portal, project criteria and process **Next:** • Begin project listing with existing projects in Jordan with JEF, JREEEF and individual green growth projects • Consider co-listing in IRENA's "Sustainable Energy Marketplace" (SEM)
Recommendation 12: Consider phasing out withholding tax on interest for foreign debt or earmarking (recycling) such tax revenues into further green project	• Addresses tax burden on international lending which can result in higher interest rates to cover this cost	**Now:** • Study detailed impact in discussion with current lenders • Study costs and benefits of changing ta regulation (tax revenue loss or re-allocation vs. facilitated foreign investment) • Develop shortlist of options to address issues of high impact

Details to illustrate Selected Recommendations

Recommendation 1: Build Capacity - Establish a/strengthen the dedicated Green Finance Team

…within Government or reporting to Government. This could be as a standalone, independent team/under Patronage of a ministry/with a ministry (E.g. MOENV/ MOPIC/ MEMR, Prime Ministry, Central Bank of Jordan – TBD)

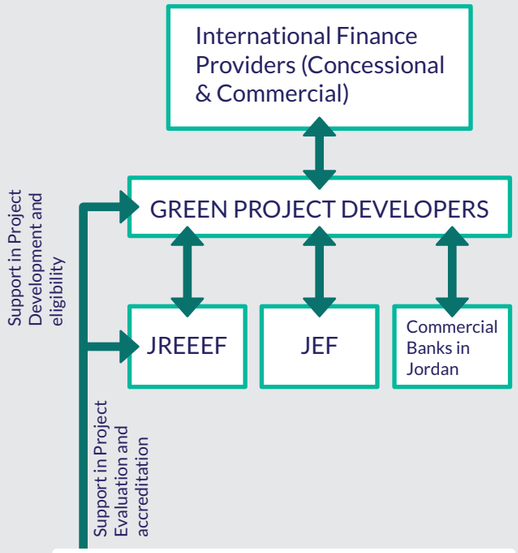
The role of this team should be to:

- **Advise on and support progress on all Finance matters for green growth projects in Jordan** (Expand – liaising with/coordinating with existing facilities (e.g. JEF, JREEEF etc)
- **Build further capacity within key government and regulator stakeholders through trainings and awareness sessions**
- **Act as facilitators in project origination – offering expert advice and support as a public service to Loan or Grant applicants.** A number of promising green projects never make it to a "bankable" project as stakeholders lack the experience and expertise. Providing this expertise can be a value-add service to be delivered into the Jordanian market, acting as facilitators, advisors etc,
- **Act as a technical advisor in facilitation** to fund providers who want to act as lenders, equity investors or loan guarantors
- **Develop and Execute an Engagement and Awareness "roadshow"** for private sector stakeholders in and outside Jordan – attracting interest in financing green growth projects in Jordan

Recommendation 2: Develop central and publicly accessible Online portal for Green Project Finance in Jordan

- Compliant with public and private finance formats
- Increases visibility and transparency of pre-screened Growth/Sustainable Energy projects in Jordan
- Facilitates "matchmaking" between projects and financiers/donors
- Facilitates promotion of JEF and JREEEF (and other) supported projects seeking co-financing
- Enables co-listing in other finance "marketplaces" such as IRENA's Sustainable Energy Marketplace (SEM)

*see also "Market Readiness Proposal for Jordan", Partnership for Market Readiness, April 2016



(Illustrative)

Illustrative example – IRENA's Sustainable Energy Marketplace (SEM):

http://irena.org/marketplace/

This enables accessible, transparent project listing which helps connect projects with financing sources

Details to illustrate Selected Recommendations

Recommendation 3:

Maintain Jordan Environment Protection Fund (JEF) with focus on funding project origination, feasibility studies and better proposal development.

Recommendation 4:

Continue Development of Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) – consider expansion of scope to energy efficiency, transport (e.g. EVs), ESCOs and funding Technical Assistance Capability.

Recommendations 3 and 4 suggest investing in improved online presence for JEF and JREEEF. This enable accessibility and transparency perception, for ease of access to fund users and potential fund contributors to re-capitalize these fund over time from international and national sources.

Two examples are provided to illustrate this – the SEEF in Egypt and the IRENA/ADFD Project Facility ($350m)

Case Study 1:
Examples on online accessibility:

Egypt Sustainable Energy Financing Facility (SEEF)

http://www.egyptseff.org/en

Case Study 2:
Examples on online accessibility:

IRENA & Abu Dhabi Fund for Development

http://adfd.irena.org/

Details to illustrate Selected Recommendations

Recommendation 5:

Consider establishment of a newJordan Green Growth Fund to facilitate Finance for Medium (50-250m) & Large (>$250m) Projects

....independent establishment aiming for credit rating and international accreditations
....enabling more private finance
...consider the UK Green Investment Bank (GIB) as a model and the Dubai Green Energy Fund ($36 billion) as a current regional development.

The role of such a fund or facility would be to:
Attract more commercial private sector investment to finance green growth in Jordan, creating a portfolio of commercially attractive projects and finance products (e.g. Renewable Energy) and blending equity, debt and grant finance sources to deploy to a managed portfolio of a wide array of green finance projects.

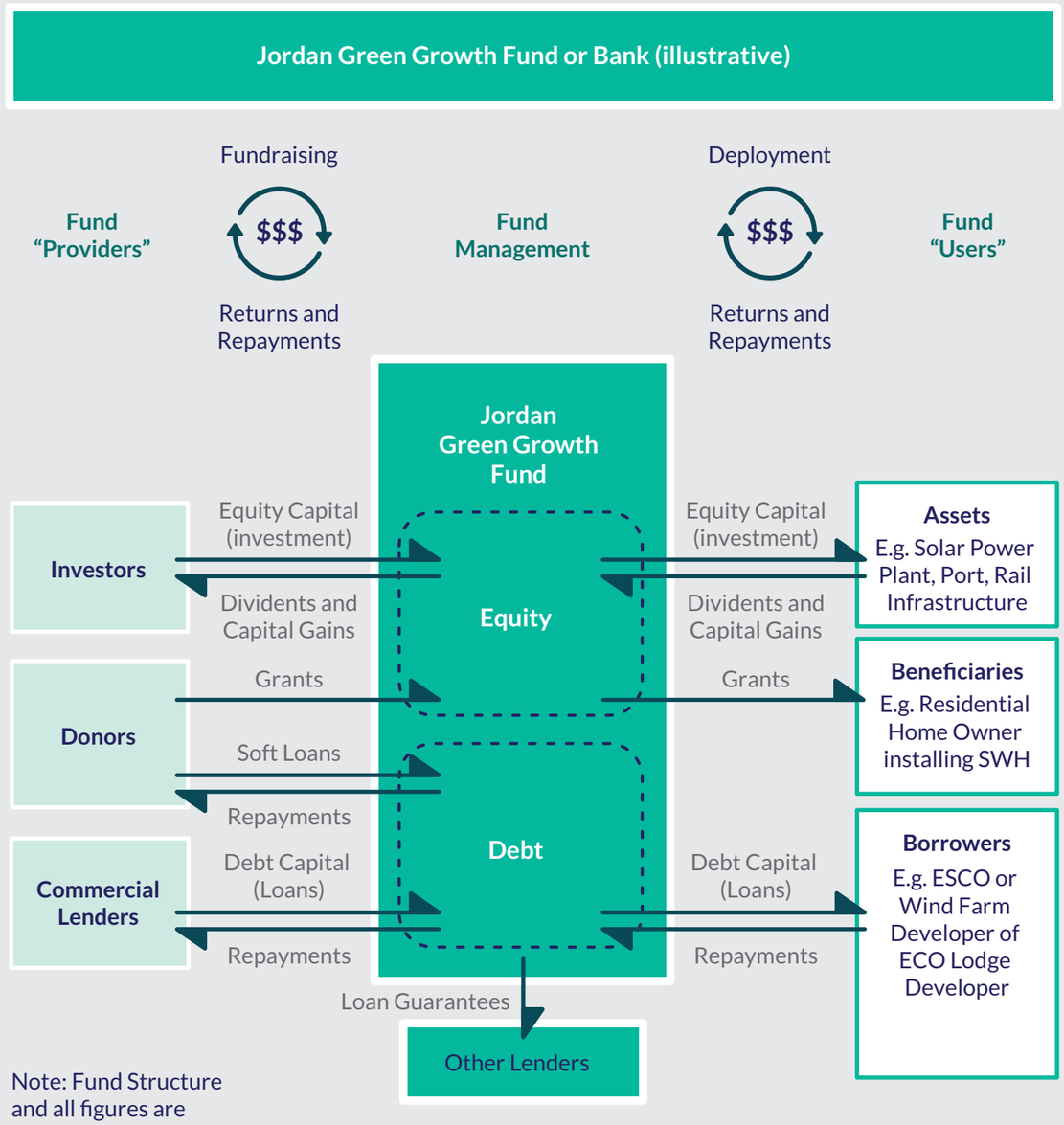
- Be an independent, commercially viable Fund/Facility able to develop internationally attractive investment and development assistance propositions
- Attract international commercial Equity and Debt Investment into the Fund
- Attract international Donor Finance to support the fund's lending ability
- Act as an umbrella provider of medium-sized and large loans (Debt) to Green Projects in Jordan
- Act as an umbrella Equity Investor for Green Growth Projects in Jordan
- Act as a de-risking facility for Green growth Projects in Jordan – through underwriting/ providing loan guarantees for other lender

Tailored Fund "Products"

Green growth interventions (examples):

Green Building Retrofit	Solar Plant	Electric Vehicles
"Green Building Finance Package"	**"RE Finance Support"**	**"RE Finance Support"**
2500 JOD Rebate granted upon project completion	120m JOD Equity Investment	20m JOD Equity Investment in EV Charging Stations
2% interest loan to building owners for loans up to JOD25000	2 % interest loan for 30% of total project cost	4000 JOD Discount on EV price (rebate)
	Loan Guarantee for 70% of Commercial Bank Finance	2 % low interest loan for EV Car loan

Jordan Green Growth Fund or Bank (illustrative)



Note: Fund Structure and all figures are entirely illustrative

Summary of selected green funds globally

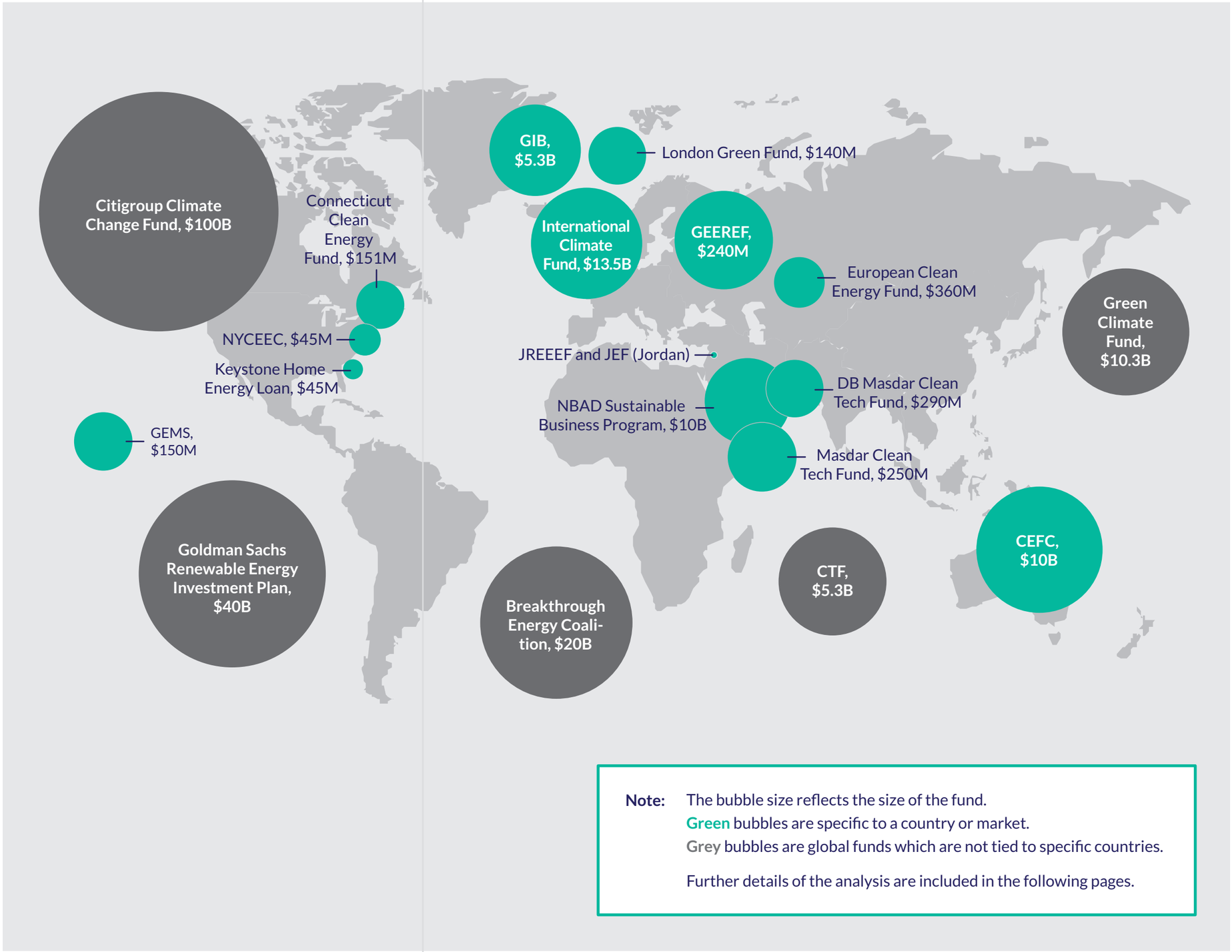
An overview of green funds globally
There are a wide variety of "green" financial products and institutions across the globe which position themselves as focused on green finance and investment. This section contains a high level overview of green funds in particular, and a brief description to provide a summary to stakeholders in Jordan about one particularly important financial mechanism being deployed in facilitating green growth around the world.

- **Focus:** In short, "green funds" include a range of vehicles that invest in products, companies or deals that directly promote environmental responsibility, usually targeting renewable energy, low-carbon transport, water and waste management, energy efficiency and/or demand side management.

- **Intent:** Many of the funds that have been assessed are designed to scale up the demonstration, deployment, and transfer of low carbon technologies with a significant potential for long-term greenhouse gas emissions savings. When clearly and transparently designed, green funds help enable the de-risking of a range of investments in the sector.

- **Partners:** Generally, green funds are aligned with institutional or national strategies and frequently serve as a framework through which activities can be coordinated across institutions and stakeholder groups. Concessional or seed financing in many of these institutions boosts investor confidence and can attract significant co-financing and de-risk projects.

- **Returns:** Green funds are usually not exclusively return oriented, but instead capture social benefits from driving down technology costs, supporting first-mover businesses, bridging finance gaps for certain technologies and really creating new markets. That said, green funds set up by commercial banks do tend to focus solely on profitable investments, and where they do consider wider socio-economic benefits, it will likely be in partnership with a non-profit or development banking entity.



Note: The bubble size reflects the size of the fund.
Green bubbles are specific to a country or market.
Grey bubbles are global funds which are not tied to specific countries.

Further details of the analysis are included in the following pages.

Name	Type	Country / Region	Year of Establish-ment	Fund Size	Fund Deployed to Date	Brief Description
Citigroup Climate Change Fund	Fund	Global	2015	$100B		Will support $100 billion in projects over the next 10 years. Focus on curbing greenhouse gas emissions, boost energy efficiency and help communities prepare for rising sea levels, extreme weather events and other effects of climate change.
Goldman Sachs Renewable Energy Investment Plan	Bank	Global	2012	$40B		Channelling investments totalling $40 billion over the next decade into renewable energy projects.
Breakthrough Energy Coalition	Fund	Global	2015	$20B		Global group of 28 high net worth investors from 10 countries committed to funding clean energy companies emerging from the initiatives of Mission Innovation, which was also announced at the 2015 UN Climate Change Conference. The group aims to bolster governmental assistance in renewable energy such as solar and wind to $20B.
International Climate Fund (ICF)	Fund	UK	2011	$13.5B		The fund is a financial contribution of Official Development Assistance (ODA) by the UK government to support action on climate change and development. In 2015, the fund was extended to March 2021 with additional $8B, including at least $2.5B in 2020.
Green Climate Fund (GCF)	Fund	Global	2010	$10.3B (pledges from 42 states, Feb 2016)	$168M for 8 projects has been approved	Founded as an UNFCCC mechanism to assist developing countries in adaptation and mitigation practices to counter climate change, will support projects, programs, policies and other activities in developing countries using thematic funding windows.
NBAD Sustainable Business Program	Bank	UAE	2016	$10B		NBAD committed to lend, invest and facilitate a total of US$ 10 billion of financing within the next 10 years to projects focused on environmentally sustainable activities.
Clean Energy Finance Corporation (CEFC)	Finance Co	Australia	2013	$10B initial capital	$1.4B	CEFC is an Australian Government-owned organization that was established to facilitate increased flows of finance into clean energy sector.
Green Investment Bank (GIB)	Bank	UK	2011	$5.3B	$3.2B	GIB manages $5.3B government funds and supports UK government in meeting its 2020 climate change targets. The bank refinanced a $315M stake in one of the world's largest wind farms, the Walney Offshore Wind Farm.
Climate Investment Funds (CIFs) - Clean Technology Fund (CTF)	Fund	Global	2008	$5.3B	$3.4B is approved and under implementation	CIFs were designed by developed and developing countries and are implemented with the multilateral development banks (MDBs) to bridge the financing and learning gap between now and the next international climate change agreement. CIFs are two distinct funds: the Clean Technology Fund and the Strategic Climate Fund.

Name (contd.)	Type	Country / Region	Year of Establish-ment	Fund Size	Fund Deployed to Date	Brief Description
European Clean Energy Fund	Fund	Europe	2007	$360M		The fund provides mezzanine and equity capital for European clean energy projects with attractive returns.
DB Masdar Clean Tech Fund	Fund	UAE	2010	$290M		The fund invests in sectors dedicated to clean energy, environmental resources, and energy and material efficiency. The fund focuses on companies that have revenue of at least $10 million but requires capital for growth or expansion for commercialization.
Masdar Clean Tech Fund	Fund	UAE	2010	$250M	$250M	The fund invests in the development and commercialization of technologies in renewable energy, energy efficiency, carbon management and monetization, water usage, and desalination.
Global Energy Efficiency and Renewable Energy Fund (GEEREF)	Fund	Europe	2006	$240M	$90M was committed	The fund is a PPP designed to maximize the private finance leveraged through public funds funded by the European Commission and managed by the European Investment Bank.
Connecticut Clean Energy Fund	Fund	CT, USA	2000	$20M pa. Total '00-'10: $151 M	$150M	The fund promotes, develops, and invests in clean energy sources for the benefits of Connecticut ratepayers.
Green Energy Market Securitization (GEMS) Program	Bond	Hawaii, USA	2014	$150M GEMS Bonds		This program is a green infrastructure financing program designed to make clean energy improvements affordable and accessible for Hawaii's consumers.

Name (contd.)	Type	Country / Region	Year of Establish-ment	Fund Size	Fund Deployed to Date	Brief Description
London Green Fund	Fund	UK	2009	$140M	All sub-funds are now operational	The fund is leveraging European Commission and UK public sector investment through sub-funds to stimulate further private sector commitment to small-scale waste to energy and energy efficiency projects in London.
New York City Energy Efficiency Corporation (NYCEEC)	Finance Co	NY, USA	2011	$45M federal & city funds plus private donations to seed	$50M	NYCEEC finances energy efficiency, cogeneration, renewables, fuel conversions and demand response projects across all building types and neighbourhoods.
Keystone Home Energy Loan Program and Warehouse for Energy Efficiency Loans	Loan	PA, USA	2006	$20M initial capital		The loan offers low-rate loans to help make affordable energy efficiency home improvements available to all eligible Pennsylvanians.

Details to illustrate Selected Recommendations

Recommendation 9:

Pursue direct access to international climate funds, especially the GCF, with accreditation following a readiness assessment for Jordanian entities

- As a developing country parties to the United Nations Framework Convention on Climate Change (UNFCCC) is eligible to receive resources from the GCF.
- Access to funding is given through **accredited national, sub-national and regional implementing entities and intermediaries** (including NGOs, government ministries, national development banks, and other domestic or regional organizations that can meet the Fund's standards).
- Funding can also be accessed through **accredited international and regional entities** (such as multilateral and regional development banks and UN agencies) under international access.
- **Private sector entities can also be accredited** as implementing entities.
- Also note that entities that are not accredited by the Fund may still submit funding proposals through an accredited

entities (20 in total so far) to obtain resources for climate change projects and programmes.
- Four entities are currently considering/ pursuing GCF accreditation in consultation with the NDA (MOENV) – MOPIC, JEF, JREEEF, Jordan River Foundation
- Clarity over accreditation as a national GCF intermediary versus eligibility for GCF funding will be of value

- Entities seeking accreditation to the Fund will be assessed against the **Fund's fiduciary principles and standards, environmental and social safeguards (ESS) and gender policy.**
- Access to GCF resources is through a country-driven approach. **A National Designated Authority (NDA) or a Focal Point** of a country can identify the strategy by which it will address climate change, and provide broad strategic oversight of the fund's activities in the country. Scope of NDA is: convention of national stakeholders, nomination letters for direct access, no-objection letters for projects/ programmes, approval of readiness support, strategic oversight aligned with national priorities.
- All entities, including international, regional, national and subnational and public and private entities, can apply for accreditation through one of two modes of access
  A Direct access modality: for regional, national and sub-national entities. Entities will need to accompany their application for accreditation with evidence of their nomination from the NDA or focal point designated from their country with their application for accreditation. Entities may be eligible to receive readiness and preparatory support in terms of capacity-building in order to meet the Fund's accreditation requirements
  International access modality: for international entities, including United Nations agencies, multilateral development banks, international financial institutions and regional institutions.
- There is a **3-stage accreditation process and the fit-for-purpose approach**, entities will be accredited for certain fiduciary functions, size of project/activity within a programme, and environmental and social risk category. Entities can apply on a rolling basis and applications are reviewed on a rolling basis. Decisions on accreditation will be made by the Board at its meetings. Entities accredited by the GEF, Adaptation Fund, and EU DEVCO that meet the pre-requisites may be eligible for the fast-track accreditation process (accreditation review and decision-making process within 3 months instead of 6 months), where completion of the application by the entity and the review will focus on the Fund's accreditation requirements (gaps), if any, that have not been assessed in other accreditation processes.
- After accreditation, an accredited entity can submit project and programme proposals for funding. Accredited entities must seek the no-objection(s) from the NDA(s) or focal point(s) for funding proposals. Funding proposals will be evaluated against the Fund's investment criteria.
- During the accreditation process, an applicant **entity's policies and procedures, track record, and capacity** to undertake projects or programmes are assessed as to whether applicant entities have the ability to manage GCF's resources in line with the Fund's **Fiduciary Standards** for the scale and type of funding sought, as well as the ability to manage Environmental and Social Risks that may arise at the project level. Entities seeking accreditation to access GCF resources will also be assessed against the Fund's Gender Policy.

Also Note the creation of the GCF's Private Sector Facility (PSF):
- PSF was created to address the investment requirements of the private sector and to promote public private partnerships. It lays particular focus on climate-sensitive private sector investments in developing countries. The PSF invests alongside qualified commercial banks, private equity firms, funds, development banks and other financial intermediaries for climate change projects and programmes. It provides financing to financial intermediaries for climate change projects and programmes. Financial intermediaries with potential accreditation are commercial banks regulated by Central Banks, private equity houses , impact funds, regulated financial intermediaries and development banks. PSF's uses the following instruments to provide financing: senior debt, subordinated debt, equity, guarantees, and grants. Private sector entities (Large, medium, small, and micro enterprises) working in clean energy, transportation & logistics, construction/ building, manufacturing, agriculture & forestry, water can access GCF funds through their local financial intermediary.

Source: GCF

The following section moves from financing mechanisms into an implementation strategy for green growth in Jordan. This draws on the findings from the sector and cluster analysis provided in Parts 1-4 with consideration of the financing mechanisms discussed here in Part 5.

GCF - High Level Investment Criteria

1 **Impact potential** - Potential of the programme/project to contribute to the achievement of the Fund's objectives and result areas

2 **Paradigm shift potential** - Degree to which the proposed activity can catalyze impact beyond a one-off project or programme investment

3 **Sustainable development potential** - Wider benefits and priorities, including environmental, social, and economic co-benefits as well as gender-sensitive development impact

4 **Responsive to recipients needs** - Vulnerability and financing needs of the beneficiary country and population in the targeted group

5 **Promote country ownership** - Beneficiary country ownership of and capacity to implement a funded project or programme (policies, climate strategies and institutions)

6 **Efficiency & Effectiveness** - Economic and, if appropriate, financial soundness of the programme/project, and for mitigation-specific programmes/projects, cost-effectiveness and co-financing

Additional Criteria for Accreditation & Funding

Fiduciary Standards
1 Basic Fiduciary Standards
- Key administrative and financial capacities
- Transparency and accountability.

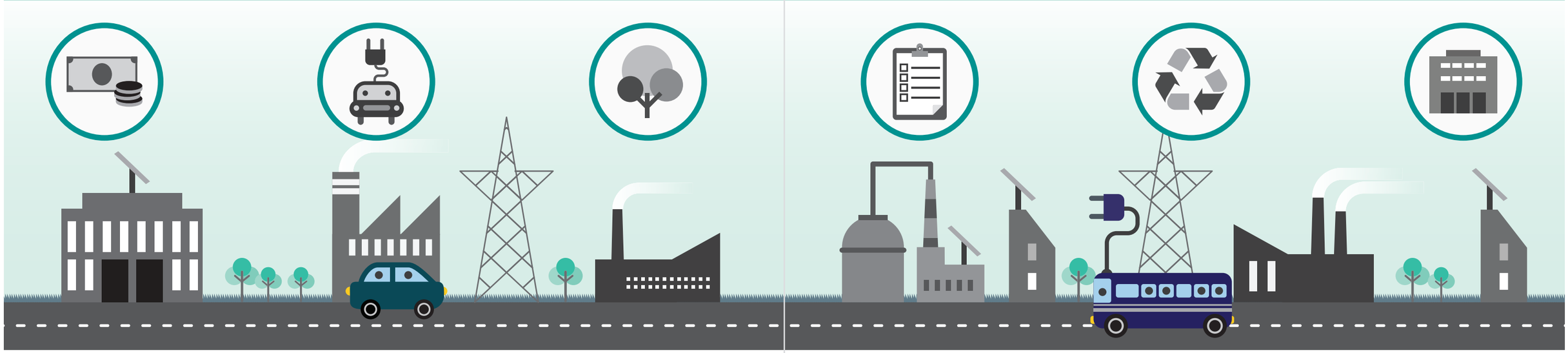
2 Specialized Fiduciary Standards
- Project management
- Grant award and/or funding allocation mechanisms
- On-lending and/or blending

Gender Policy
- Policies, procedures, and competencies.

Environmental and Social Safeguards (ESS):
1 **Institutional ESMS policy-level:** Performance Standard (PS) 1: Assessment and management of relevant PS1-8 environmental and social risks and impacts through an environmental and social management (ESMS)

2 **Project Level:**
- PS2 Labor and working conditions
- PS3 Resource efficiency and pollution prevention
- PS4 Community health, safety & security
- PS5 Land acquisition & involuntary resettlement
- PS6 Biodiversity conservation & sustainable management of living natural resources
  PS7 Indigenous peoples
  PS8 Cultural heritage

6 An Implementation agenda for green growth in Jordan



6.1 Developing a green growth implementation agenda for Jordan

How can Jordan take the green growth path to achieve sustainable development, in practice and at a large scale?

A green growth strategy needs to identify and target key entry points for green growth approaches, methods and tools, particularly in spatial planning and investment decision-making. Green growth policies need to be harmonized with other objectives and policies to ensure that they contribute to Jordan's strategic national and regional goals. Mainstreaming in a systematic fashion will help ensure that policies and plans for green growth are cost-effective and minimize institutional disruption, by modifying or upgrading existing processes where possible rather than designing new ones.

An implementation agenda for green growth in Jordan is proposed below based on the four 'driving principles' in Part 4, Cross-cutting policies and governance for green growth, and the Financing mechanisms for green growth in Part 5, Financing mechanisms for green growth. These are mutually reinforcing themes or approaches to achieving the five desired outcomes of green growth defined in Part 1, Jordan's growth trajectory:

1. Sustained economic growth
2. Social development
3. Resilience
4. Biodiversity and ecosystems services
5. Greenhouse gas emission reductions and avoidance

It will be important for consideration to be given to what good practice looks like in each of these reinforcing themes in line with the suggestions provided below and to allocate resource proportionately.

Jordan is primarily focused on short to medium term timeframes in policymaking and decisions, reflected by Vision 2025's strictly bounded temporal focus. As such, the focus of this NGGP has largely been on interventions that fit within this timescale. However, wherever possible, decision-making should look beyond the horizons of 2030. Largescale interventions such as the freight rail, once implemented, will provide bedrocks for sustainable economic development for generations to come. Similarly, while fossil fuels are acknowledged to play a part in Jordan's future into the medium term, the recommendation to invest heavily in cleantech R&D and scale up solar should be implemented with transition towards low-carbon sources for baseload energy in mind. Timeframes for the implementation of green growth interventions are illustrated via 'short term' policy recommendations up to 2020 and 'medium term' recommendations up to 2025.

Alongside the driving principles, more specific opportunities are recommended to point Jordan towards a green growth trajectory, along with the sectoral opportunities identified. However these recommendations do not guarantee green growth if implemented – the economic and geopolitical situation may evolve and so the policies may need to be updated. For this reason, the guiding principles and green growth outcomes should be referred back to in order to develop new green growth responses to new policy contexts as they arise.

The 12 key recommendations from Part 5, Financing Green Growth in Jordan, should also be considered in the implementation of the National Green Growth Plan:

1. Establish a dedicated Green Finance team
2. Pursue direct access to international climate funds, especially the GCF, with accreditation following a readiness assessment for Jordanian entities
3. Continue Development of Jordan Environment Fund (JEF) with focus on funding project origination, feasibility studies and better proposal development

4 Continue Development of Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) – consider expansion of scope to energy efficiency, transport (e.g. EVs), ESCOs and funding Technical Assistance Capability
5 Consider establishment of a new Jordan Green Growth Fund to facilitate private Debt & Equity Finance for Medium (50-250m) & large (>$250m) Projects
6 Set up urban and infrastructure investment advisory facility
7 Conduct structured risk analysis and de-risking study for private finance of green growth projects in Jordan - each project type
8 Launch continuous private sector green finance engagement programme and working groups to evolve sector knowledge and provides a forum for project presentations and matchmaking
9 Improve credit lines to ESCOs
10 Establish nation-wide programme management for green government building scheme and financing
11 Develop central and publicly accessible Online portal for Green Project Finance in Jordan
12 Consider phasing out withholding tax on interest for foreign debt or earmarking (recycling) such tax revenues into further green project

Following the implementation agenda, the diagram below shows the institutional responsibilities for delivering this plan. The proposed governance structure emphasizes long-term development of institutional support and co-ordination, aiming to establish an effective way of planning and implementation and provide a formal mandate for green growth. This governance structure aims to fast-track the implementation of projects and initiatives.

Green growth driving principle	What good practice could look like
Integrated planning processes that value societal impacts	Ensuring that the national and regional planning processes are integrated and that green growth considerations are understood and embedded within these processes. The quantification and valuation of the impacts of policies, investments and projects on green growth outcomes to inform decision making which means valuation of economic externalities, and in particular natural capital impacts
Mechanisms to incentivise green growth	Incentive mechanisms and pricing signals ensure the efficient allocation and use of scarce natural resources along with minimising fossil fuel consumption
Transparent governance processes and enforcement of legislation	Smart implementation of green growth policies and regulations successfully deliver the outcomes anticipated from these measures and avoid sub-optimal outcomes
Behaviour shifts and capacity building	Shifts in the mindsets and behaviours of policy makers underpin the successful design and delivery of green growth interventions and facilitate mainstreaming of green growth

6.2 Implementation agenda for green growth in Jordan

High level implementation agenda for delivering green growth. This implementation agenda is a non-exhaustive list of policy considerations that could be taken to accelerate Jordan's trajectory towards green growth over the next 10 years.

The recommendations have an economy-wide thematic focus. More detail on the economic-wide policy considerations can be found in part 4, Cross-cutting policies and governance for green growth.

Planning priorities for green growth	2015	Short term recommendations	2020	Medium term recommendations	2025
1. Transparent governance processes and enforcement of legislation	**1.1** Monitor and ensure compliance	**1.1S** Penalty increases for non-compliance		**1.1M** Establish sectoral compliance committees **1.1.M** Launch compliance awareness campaign **1.1M** Royal endorsement of legislation	Identify new barriers develop policy solutions guided by the driving principles
	1.2 Review and introduce new legislation	**1.2S** Conduct legislation review and present recommendations		**1.2M** Compliance tax rebate scheme **1.2M** Set up non-compliance amnesty group **1.2M** Streamline inhibiting legislation	
	1.3 Improve transparency of ministry activities	**1.3S** Set up open-source ministry review platform **1.3S** Ministry spending audit review		**1.3M** Targeted response to issues identified by platform **1.3M** Ministry spending audit programme **1.3M** International procurement standards	
2. Mechanisms to incentivise green growth	**2.1** Reward-based incentives	**2.1S** Design project measurement framework		**2.1M** Link career progression to project outputs/outcomes	
	2.2 Shift towards FDI	**2.2S** Review PPP law and make recommendations		**2.2M** Develop innovative PPPs	
	2.3 Incentivise business with refugees	**2.3S** Targeted tax holidays **2.3S** Develop tax holiday criteria		**2.3M** Update tax holidays in response to refugee situation	
	2.4 Develop private sector finance databas	**2.4S** Set up green funding website		**2.4M** Update green funding website **2.4M** Align green funding website with CBA database	
	2.5 Incentivize climate resilient development	**2.5S** Urban and infrastructure investment advisory facility		**2.5M** Climate risk and resilience disclosure requirements	
	2.6 Establish institutions to incentivize green growth	**2.6S** Pilot cross-sectoral clean investment fund		**2.6M** Establish clean investment fund	

Planning priorities for green growth		2015 Short term recommendations	2020 Medium term recommendations	2025
3. Integrated planning processes that value societal impacts	**3.1** Embed CBA across ministries	**3.1S** Establish cross-sectoral database **3.1S** Establish cost-benefit analysis	**3.1M** Roll out CBA training **3.1M** Streamline CBA data requirements	Identify new barriers develop policy solutions guided by the driving principles
	3.2 Embed clustering	**3.2S** Develop green growth spatial development plans	**3.2M** Mandate project alignment with spatial plans	
	3.3 Align project planning to budgets and commit to plans	**3.3S** Change budgeting cycles from 3 up to 5 years **3.3S** Align pipeline with budgeting cycles	**3.3M** Review fulfillment of budget commitments **3.3M** Budget enforcement programme	
	3.4 Define ministry responsibilities	**3.4S** Project management process reform	**3.4M** Project management best practice training **3.4M** Project manager incentive scheme	
	3.5 Develop infrastructure and jobs for refugees	**3.5S** Reallocate humanitarian funding towards green growth	**3.5M** Reassess refugee infrastructure demand	
4. Behaviour shifts and capacity building	**4.1** Shift planning focus away from individuals	**4.1S** Introduce requirement of business case for policy/project change	**4.1M** Long term planning leadership programme	
	4.2 Build capacity to access and utilise donor funds	**4.2S** CBA training workshops	**4.2M** CBA training for donor fundraisers	
	4.3 Develop CSR culture	**4.3S** Organise high profile CSR events	**4.3M** Expand CBA analysis to private sector	
	4.4 Public engagement	**4.4S** Pilot green growth communications strategy	**4.4M** Launch public green growth communications strategy	
	4.5 Corruption awareness	**4.5S** Government corruption awareness campaign	**4.5M** Public/private corruption awareness campaign	
	4.6 Strategic R&D	**4.6S** Establish R&D fund **4.6S** Targeted relationship building with technical universities	**4.6M** Form private sector skills supply/demand committee **4.6M** Launch scholarships and innovation centres **4.6M** Launch Erasmus scheme	

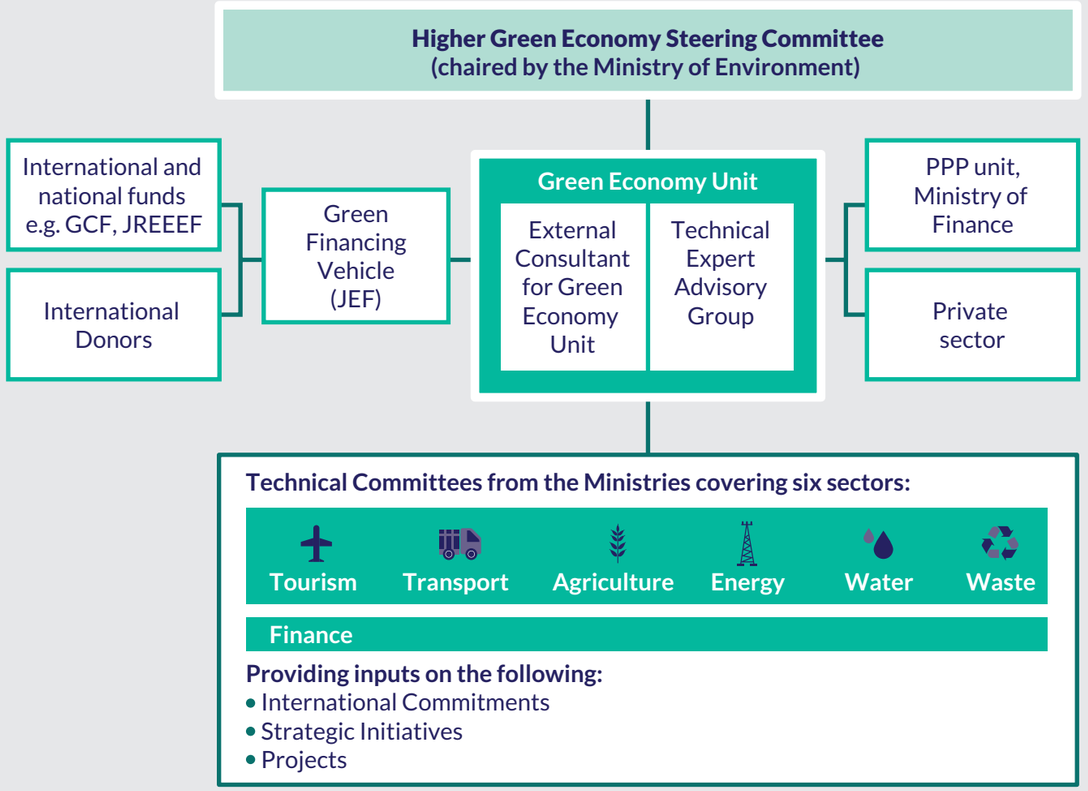
6.3 Institutional responsibilities for delivering green growth

Planning institutional responsibilities for green growth now can ensure strategic decision-making takes place on a cross-sectoral basis with responsible ministries.

The proposed governance structure below establishes the Green Economy Unit at the heart of the delivery model. The Green Economy Unit will be responsible for gathering inputs from a range of stakeholders and informing the Higher Green Economy Steering Committee. This Committee acts as a champion, supporting green growth and co-operating closely with the Prime Ministry to strengthen leadership. Integrated into the Green Economy Unit is an advisory board with technical experts to ensure that long-term national goals are linked to green growth objectives. To improve coordination within government, the PPP unit of the Ministry of Finance and the Green Economy Unit will coordinate their support for green project implementation. The new governance structure will also help to build a strong network of supporters involved throughout the planning and implementation process.

Stakeholder engagement will be strengthened, because key stakeholders and strategic partners in green economy projects and initiatives co-operate on a regular basis in the Higher Green Economy Steering Committee and Technical Committee as well as the Advisory Board. Moreover, the governance structure helps clarify roles among public sector organizations relevant to the green economy. In particular, coordination among Ministries will be improved.

Figure 6.1 Institutional setting for delivering green growth



6.4 Indicators for monitoring and measuring green growth performance

A dashboard of green growth indicators can keep the Jordanian government, investors and the broader public informed on progress towards green growth. As part of the National Green Growth Plan a baseline has been produced for these indicators. The baseline serves as a starting point against which green growth can be measured. The baseline takes into account Jordan's current trends in economic, environmental and social development without accounting for targets such as emissions reductions outlined in the INDC to the UNFCCC.

Green growth indicators can be used at two levels of detail: a top level suitable for helping to keep the public informed and engaged and to inform Jordan's political and business leadership and the international community; a second, more detailed level of monitoring that would inform ongoing planning, design and implementation of green growth initiatives. The top level indicators are those presented in Figure 5.2, the more detailed indicators are tailored to specific projects. Examples of detailed green growth indicators are provided in the supporting Cost Benefit Analysis studies of the NGGP.

Jordan can be held accountable to top level indicators and should introduce a review cycle every three to five years. This should involve a complete analysis of progress against each indicator. Where targets have been determined, an assessment of the gap between actual and target should be provided and measures detailed to show how the target will be achieved in the future.

The review cycle also provides an opportunity to add to or revise indicators. New indicators that have a closer correlation with green growth outcomes could be identified through national academic studies or be developed by other governments or organisations such as the OECD and adopted in Jordan. The primary dashboard of top level indicators should be updated to represent the best gauge of green growth progress. All indicators however, even if updated or displaced, should be continued to provide time series data.

Trends in the green growth baseline, updated through review cycles, will provide information that can be used to set challenging but achievable targets. Ultimately a refined set of indicators for each dimension, with medium and long term targets can be developed and monitored. Each target should be substantiated by interventions that set out contributions to the target. Ministries can then work together towards common green growth outcomes and drive projects at the sector level where ideas and expertise for green growth are put into project implementation.

Figure 6.2 Indicators for monitoring and measuring green growth

	Green-house gas emissions	Economic Growth	Social development and poverty allevi-ation	Resilience	Biodiversity and ecosys-tems services
Vision 2025 indica-tors	% of renew-able energy in energy mix	Real GDP growth rate	Human Develop-ment Index score	Contribution of lo-cal energy sources in the total energy mix %	Forest area (thousand acres)
		Total annual expenditure on research and development as % of GDP	% Participation in workforce (% fe-male participation in workforce)		
	Energy consump-tion density (kgoe per $1000 of GDP)	Investment increases	Size of informal employment (%)	Energy used per billed cubic meter of water (billed kW / m3)	% of solid waste disposed of in landfills
Addi-tional green growth indica-tors	Absolute GHG emis-sions vs BAU emis-sions	Real GDP per capita	% living below pov-erty line	% change of avail-ability of water per capita	Desertification rate
		Balance of pay-ments	Average number of hours spent on paid and unpaid work combined (total work burden), by sex	Water consump-tion per unit of GDP	Proportion of total annual water with-drawals rel-ative to total available water resource
		% of total tax revenue raised through envi-ronmental taxes			
		No. of jobs cre-ated	% of manage-ment-level work-force from low income backgrounds	Sector con-centration and market concen-tration - Herfind-ahl-Hirschman Index (HHI)	

6.5 Communicating and building capacity in green growth

Green growth will only take hold if the people of Jordan understand and support it as a concept.

Targeted communication is needed to help mainstreaming of green growth into national and sub-national planning in Jordan and to prepare the implementation of actions and approaches identified in this NGGP. The communication strategy should focus initially on the policies and recommendations for the short term up until 2025 in line with Vision 2025. The strategy can be revised periodically to reflect lessons learned and possible future changes in the priorities of the NGGP. For instance, it should be revised on a regular basis to account for the changing refugee plan in line with the Jordan Response Plan, but shifts should remain in line with the strategic principles established in this document.

The overall objective of a communications strategy will be to raise awareness about green growth, its underpinnings and benefits for various groups in Jordan. The aim is to mobilize a broad range of stakeholders to better integrate green growth into national and provincial processes and policies.

Key stakeholders for the communications strategy include policymakers at both national and municipality levels who have influence over creating an appropriate enabling environment, including regulatory and fiscal mechanisms and investment processes. Raising understanding and building support for the ideas developed in this NGGP among policymakers can provide the foundations for realising green growth on a national scale.

In the survey that was conducted as part of the research for the NGGP, a number of sectors voiced their support for making use of public channels of communication to increase public knowledge about green issues. This should be focused on making the case for green growth relatable to that individual's priorities. This can be brought to life for individuals by explaining the micro-level opportunities that can be capitalised upon, such as money saved via smart metering of water.

Education on green growth is extremely important at all levels and across sectors. Price signals to encourage investment in clean technologies need to be accompanied by efforts to inform industry stakeholders about the economic opportunities that exist around green growth technologies. Similarly, hard-to-reach stakeholders such as farmers or refugees need to be educated in sustainability issues wherever possible in order for green growth to truly become embedded. These policies and actions will help to mainstream green growth as normal practice over the longer term.

At a national level, capacity must be built by training policy makers and technical teams in all cross-cutting ministries and all strategically chosen ministries directly relevant to green growth. Actions to implement the driving principle 'Behaviour shifts and capacity building' can form the first steps towards this. This will complement leadership training and provide the knowledge, values, and skills in green growth that can be adapted into real projects on a day-to-day basis. Capacity-building of this nature is a necessity if green growth priorities are to be achieved.

Explaining green growth

There can be challenges around articulating green growth in a manner that is distinct from other development models without reverting to overly complex and technical language. A selection of high level, easily digestible green growth messages should therefore be selected to ensure buy-in within government, the private sector and where possible the general public. Some messages will be more appropriate depending on the stakeholder group. For instance, clustering green growth interventions can help to build public support for such largescale programmes by painting a picture of the cumulative 'prize' of green growth. Suggestions for these core green growth messages, and their relevant stakeholders are as follows:

- The 5 green growth outcomes – all stakeholders (p.17 of NGGP)
- Green growth as a means to futureproof Jordan's plans – strategic advisors (p.25 of NGGP)
- The green growth guiding principles – policymakers (p.82 of NGGP)
- Clustering interventions – the general public (p.65-75 of NGGP)
- A way of moving projects towards implementation – the private sector (p.10-16)
- Financing recommendations – the private sector, financial institutions (p.112-131)

Conclusion: The way forward to green growth

Steps are already being taken towards green growth and Jordan can recognise its potential; but focus and priorities are needed.

This NGGP has set out the opportunities that exist in Jordan and makes suggestions for ways to overcome key barriers to green growth. The journey to green growth, which begins with the recommendations in this document, will require significant political commitment and finance, but pays dividends by safeguarding Jordan's economy, society and environment into the long run.

Punching above its weight: Jordan's opportunity

In the midst of political unrest and turmoil in the region, Barack Obama described Jordan as "a country that punches above its weight".1 There is an opportunity for Jordan to punch above its weight beyond the political resilience and stability it has shown in the past. A vibrant clean technology sector, smart urban centres and resilient rural economies all have the potential to become a sustained reality and make Jordan iconic for the development path it has taken.

Making decisions based on green growth principles

Green growth principles can drive this transition and ensure that there is global recognition for Jordan's efforts to combat climate change, environmental degradation and social inequalities as well as its ongoing efforts to combat the refugee crisis.

These principles require CBA and green growth outcomes to become part of planning processes. This requires political will and persistence but will ultimately allow clearer and faster decisions to be made by Ministries, and should be achievable in the short term. Once in place, decisions made through this process with accurate and complete information will change Jordan's direction towards green growth.

Generating greater investment

The NGGP's longer-term outlook, supported by key strategic projects that demonstrate green growth benefits, should help to overcome investor uncertainty and increase investment levels.

Examples already exist: competitive tendering of renewable energy projects and reverse auctioned feed in tariff levels provide some investor confidence. But broader examples of strategic investments across sectors are needed to set a precedence under the NGGP and instigate further advances. If green growth can be demonstrated through key strategic projects it should become self-perpetuating and provide a boost to GDP.

Priorities

Governance arrangements and planning processes are the cornerstone of the NGGP and are to be addressed in the short term. Without mandated governance and processes the evolving market and geopolitical context will continue to drive short term decision making that may lead Ministries in different directions.

From a position of mandated governance and planning processes, iterations and modifications of projects and policies can be adopted within a framework and institution that can still achieve the vision for green growth. Ministries will be on the same page, having a greater impact for Jordan today and for future generations.

How Jordan is as a country in 2025 and beyond depends on decisions taken now. This NGGP identifies opportunities and makes recommendations for implementation. Now it is up to stakeholders from across society to seize this chance, build upon it and ensure Jordan fulfils its great potential into the future.