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The World Bank

Report No: ICR00004657

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD-85300)

ON

IBRD LOANS

WITH THE CONCESSIONAL FINANCING FACILITY SUPPORT

IN THE AGGREGATE AMOUNT OF US$500 MILLION

TO THE

HASHEMITE KINGDOM OF JORDAN

FOR THE

FIRST AND SECOND PROGRAMMATIC ENERGY AND WATER SECTOR REFORMS

DEVELOPMENT POLICY LOANS

December 31, 2018

Water Global Practice and Energy and Extractives Global Practice

Middle East and North Africa Region

CURRENCY EQUIVALENTS

Exchange Rate Effective December 7th 2018

Currency Unit =	
JD1.00 =	US$ 1.410
US$ 1.00 =	SDR 1

FISCAL YEAR

January 1 - December 31

Senior Global Practice Director:	Jennifer Sara
Practice Manager:	Carmen Nonay
Project Team Leader:	Caroline van den Berg and Mikul Bhatia
ICR Team Leader:	Dominick de Waal

ABBREVIATIONS AND ACRONYMS

AETAM	Automatic Electricity Tariff Adjustment Mechanism
AFD	*Agence Française de Développement*
ASEZA	Aqaba Special Economic Zone Authority
CAPEX	Capital Expenditure
CBJ	Central Bank of Jordan
DPL	Development Policy Loan
EA	Environmental Assessment
EE	Energy Efficiency
EFF	Extended Fund Facility
EIA	Environmental Impact Assessment
EMRC	Energy and Minerals Regulatory Commission
EPL	Environmental Protection Law
EU	European Union
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GFMIS	Government Financial Management Information System
GIZ	*Deutsche Gesellschaft fur Internationale Zusammenarbeit*
IMF	International Monetary Fund
JD	Jordanian Dinar
JREEEF	Jordanian Renewable Energy and Energy Efficiency Fund
JVA	Jordan Valley Authority
KfW	*Kreditanstalt für Wiederaufbau*
LNG	Liquefied Natural Gas
MCM	Million Cubic Meters
MoF	Ministry of Finance
MoICT	Ministry of Information, Communication and Technology
MoPIC	Ministry of Planning and International Cooperation
MEMR	Ministry of Energy and Mineral Resources
MoWI	Ministry of Water and Irrigation
NAF	National Aid Fund
NEEAP	National Energy Efficiency Action Plan
NEPCO	National Electricity Power Company
O&M	Operation and Maintenance

PDO	Program Development Objective
PFM	Public Financial Management
RE	Renewable Energy
SBA	Standby Arrangement
SME	Small and Medium Enterprise
TSA	Treasury Single Account
USAID	U. S. Agency for International Development
WAJ	Water Authority of Jordan

Jordan
First and Second Programmatic Energy and Water Sector Reforms DPLs

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A. BASIC INFORMATION

Program 1

Country	Jordan	Program Name:	First Programmatic Energy and Water Sector Reforms DPL
Program ID:	P154299	L/C/TF Number(s)	IBRD-85300
ICR Date:	12/04/2018	ICR Type:	12/04/2018
Financing Instrument:	DPL	Borrower	HASHEMITE KINGDOM OF JORDAN
Original Total Commitment	USD 250.00M	Disbursed Amount	USD 250.00M

Implementing Agencies: MoPIC, MoEMR, EMRC, NEPCO, JREEEF, MoWI, WAJ

Cofinanciers and Other External Partners: IMF, JICA, AfD, KfW, USAID

Program 2

Country	Jordan	Program Name:	Second Programmatic Energy and Water Sector Reforms DPL
Program ID:	P160236	L/C/TF Number(s)	IBRD-85300,IBRD-86730,TF-A4035
ICR Date:	12/04/2018	ICR Type:	12/04/2018
Financing Instrument:	DPL	Borrower	MINISTRY OF FINANCE
Original Total Commitment	USD 225.00M	Disbursed Amount	USD 250.00M

Implementing Agencies: MoPIC, MoEMR, EMRC, NEPCO, MoWI, WAJ

Cofinanciers and Other External Partners: JICA, AfD, KfW

B. KEY DATES

First Programmatic Energy and Water Sector Reforms DPL P154299

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/19/2015	Effectiveness:	11/04/2015	11/04/2015
Appraisal:	07/06/2015	Restructuring(s):		
Approval:	09/18/2015	Mid-term Review:	05/27/2016	05/12/2016
		Closing:	09/30/2016	09/30/2016

Second Programmatic Energy and Water Sector Reforms DPL P160236

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	07/21/2016	Effectiveness:		12/31/2017
Appraisal:	09/23/2016	Restructuring(s):		
Approval:	12/01/2016	Mid-term Review:	05/08/2017	07/24/2017
		Closing:	12/31/2017	12/31/2017

C. RATINGS SUMMARY

C.1 Performance Rating by ICR

Overall Program Rating

Outcomes	Satisfactory
Risk to Development Outcome	Substantial

Bank Performance	Satisfactory
Borrower Performance	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

Overall Program Rating

Bank	Ratings	Borrower	Ratings
Quality at Entry	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance	Satisfactory	Overall Borrower Performance	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators

First Programmatic Energy and Water Sector Reforms DPL P154299

Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Program at any time (Yes/No):	No	Quality at Entry (QEA)	None
Problem Program at any time (Yes/No):	No	Quality of Supervision (QSA)	None
DO rating before Closing/Inactive status	Satisfactory		

Second Programmatic Energy and Water Sector Reforms DPL P160236

Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Program at any time (Yes/No):	No	Quality at Entry (QEA)	None
Problem Program at any time (Yes/No):	No	Quality of Supervision (QSA)	None
DO rating before Closing/Inactive status	Satisfactory		

D. SECTOR AND THEME CODES

First Programmatic Energy and Water Sector Reforms DPL P154299

	Original	Actual
Major Sector		
Energy and Extractives		
Renewable Energy Solar	100	100
Major Theme/Theme/Sub Theme		
Economic Policy	35	35
Fiscal Policy	35	35
Fiscal sustainability	35	35
Private Sector Development	10	10
Jobs	10	10
Job Creation	10	10
Public Sector Management	35	35
Public Finance Management	35	35

Debt Management	35	35
Urban and Rural Development	20	20
Rural Development	10	10
Rural Infrastructure and service delivery	10	10
Urban Development	10	10
Urban Infrastructure and Service Delivery	10	10

Second Programmatic Energy and Water Sector Reforms DPL P160236

	Original	Actual
Major Sector		
Energy and Extractives		
Other Energy and Extractives	45	45
Renewable Energy Wind	14	14
Renewable Energy Solar	14	14
Water, Sanitation and Waste Management		
Water Supply	18	18
Sanitation	9	9
Major Theme/Theme/Sub Theme		
Environment and Natural Resource Management	64	64
Climate change	45	45
Adaptation	9	9
Mitigation	36	36
Energy	64	64
Access to Energy	27	27
Energy Efficiency	64	64
Energy Policies&Reform	36	36
Water Resource Management	27	27
Water Institutions, Policies and Reform	27	27
Public Sector Management	35	35
Public Finance Management	35	35
Debt Management	35	35

E. BANK STAFF

First Programmatic Energy and Water Sector Reforms DPL P154299

Positions	At ICR	At Approval
Vice President:	Ferid Belhaj	Hafez M. H. Ghanem
Country Director:	Saroj Kumar Jha	Ferid Belhaj
Practice Manager/Manager:	Carmen Nonay	Charles Joseph Cormier
Task Team Leader:	Caroline van den Berg	Husam Mohamed Beides
ICR Team Leader:	Dominick Revell de Waal	
ICR Primary Author:	Dominick Revell de Waal	

Second Programmatic Energy and Water Sector Reforms DPL P160236

Positions	At ICR	At Approval
Vice President:	Ferid Belhaj	Hafez M. H. Ghanem
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Practice Manager/Manager:	Carmen Nonay	Steven N. Schonberger
Task Team Leader:	Caroline van den Berg	Caroline van den Berg
ICR Team Leader:	Dominick Revell de Waal	

ICR Primary Author:	Dominick Revell de Waal	

F. RESULTS FRAMEWORK ANALYSIS

Program Development Objectives

The PDO of the DPL was to improve the financial viability and increase efficiency gains in the energy and water sectors in Jordan.

Revised Program Development Objectives

Indicator(s)

Indicator Name	Unit of Measure	Baseline 2014	Original Target Values	Formally Revised Target Values	Actual Achieved at Completion	Comments
Pillar A: Improving the Financial Viability of the Electricity and Water Sectors						
Reform Aspect 1: Achieving Electricity Tariff Cost Recovery						
Cost recovery of the end user electricity tariffs	Percentage	56%	100%		**103%**	**Fully achieved.**
Reform Aspect 2: Resolving NEPCO's Debt						
NEPCO Debt Management Plan developed and implemented	Yes/No	No	Yes, and Debt Management Plan implemented 2017 debt reduction target JD 84m of fuel related debt		**Yes**	**Substantially Achieved.** Plan implemented and 2017 target for debt reduction almost met (JD 83m)
Reform Aspect 3: Enhancing Cost Recovery in the Water Sector						
O & M cost recovery level in the water sector –defined as the Water Authority of Jordan (WAJ) and the three regional water companies O&M costs covered by user tariff	Percentage	86% revised to 70% in DPL2	100%	85%	**89%**	**Fully achieved.** At the end of 2017 the total of water tariffs collected from users covered 89% of O&M costs for WAJ and the 3 regional utilities. However, this outcome is potentially at risk due to the higher energy costs being faced by the water sector in 2018.

Pillar B: Increasing Efficiency Gains in the Energy and Water Sectors						
Reform Aspect 4: DPL1 Diversification to cleaner fuel supply for power generation and scaling up development of domestic renewable energy resources and energy efficiency						
Number of natural gas import contracts	Number	1 contract	3 contracts		**3 contracts**	**Fully Achieved.**
Share of gas supply to power generation	Percentage	7% of fossil fuel generation from gas	70% of fossil fuel generation from gas		**85.7% of generation from natural gas**	**Exceeded.**
Reform Aspect 5: DPL2 Provision of cleaner fuel supply for power generation and scaling up development of domestic renewable energy resources and energy efficiency						
Share of renewable energy capacity in the capacity mix	Percentage	0%	10%		**14.2%**	**Exceeded.**
Reform Aspect 6: Development of Electricity Distribution Networks Loss Reduction Program						
Reduction in electricity distribution network losses	Percentage	13.8% and no program	Network loss reduction program is under implementation and 2017 target achieved	13.25%	**12.05%**	**Exceeded.**
Reform Aspect 7: Scaling up of Energy Efficiency and Renewable Energy in the Water Sector						
Increase in energy savings in the water sector, as per the implementation of the Action Plan accompanying Efficiency and Renewable Energy Policy	Annual GWh saved	0 GWh	50 GWh		**84 GWh**	**Exceeded.** With the commissioning and operation of the 80MW Ma'an windfarm (which reached 66 MW in June 2016) and 14 MW of other renewable energy projects.
Reform Aspect 8: Optimizing allocation of water resources						
Surface water used for municipal water use	Million Cubic Meters (MCM) per year	123 MCM	128 MCM		**131.3 MCM**	**Exceeded.** The increase of reclaimed wastewater available for agriculture enabled additional

						surface water to be directed to municipal use.
Volume of treated wastewater used for non-domestic uses	Million Cubic Meters (MCM) per year	110 MCM	135 MCM		**144.2 MCM**	**Exceeded.** With operational improvements at wastewater treatment plants especially the expansion of As Samra.

G. RATINGS OF PROJECT PERFORMANCE IN ISRs

First Programmatic Energy and Water Sector Reforms DPL P154299

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	02/24/2016	Satisfactory	Satisfactory	249.38
2	07/21/2016	Satisfactory	Satisfactory	249.38

Second Programmatic Energy and Water Sector Reforms DPL P160236

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	03/30/2017	Satisfactory	Satisfactory	224.44
2	12/16/2017	Satisfactory	Satisfactory	224.44

1. PROJECT CONTEXT, DEVELOPMENT OBJECTIVES AND DESIGN

1.1 Context at Appraisal

1. This Implementation Completion and Results Report (ICRR) assesses the results of the programmatic series of Energy and Water Development Policy Loans (DPL) to the Hashemite Kingdom of Jordan. The DPL series was aimed at (i) Improving the Financial Viability of the Electricity and Water Sectors; (ii) Increasing Efficiency Gains in the Energy and Water Sectors. The first operation (DPL1, P154299) of US$250 million was approved by the World Bank's Board of Directors on September 18, 2015. The second operation (DPL2, P160236) of US$250 million was approved on December 1, 2016.

2. **At appraisal, Jordan had experienced a successive series of external shocks — the 2008 global recession, interruptions in natural gas supply from Egypt and the influx of refugees from Syria — exacerbating long-term structural vulnerabilities.** Following the global financial downturn of 2008, economic growth in Jordan decelerated sharply from seven percent to just over two percent in 2010.[1] Interruptions in the Egyptian natural gas supply, which in 2009 fueled about 90 percent of Jordan's power generation, forced the country to increasingly rely on more expensive and less efficient diesel and heavy fuel oil during a time of high global oil prices. Then over the period of 2011 to 2015 an estimated 1.3 million refugees moved to Jordan displaced by the conflict in Syria. The influx was equivalent to 20 percent of Jordan's pre-crisis population. This placed tremendous pressures on public services and infrastructure, in particular electricity and water services, throughout the country but especially in the northern governorates. Energy and water utilities – that were already under strain before the crisis – had to expand output to meet the increased demand for services from refugees while supply costs increased driven by the significantly higher energy prices. This combination of demand and supply side shocks led to a sharp rise in sector debt impacting both the sustainability of services delivery as well as country's fiscal position. [2]

3. **This combination of shocks required the Government to embark on a program of fiscal consolidation.** The Central Government's fiscal deficit (excluding grants) widened significantly. Domestic revenues shrank from an average of 27 percent of gross domestic product (GDP) during 2000–2008 to 22 percent of GDP in 2015 because of a drop in economic activity and policy measures. On the expenditure side, the Government initially accommodated a number of social demands through larger transfers and wage increases. Capital expenditures were cut in 2012 to control the fiscal deficit. Earmarked grants from the Gulf Cooperation Council (GCC) marked the beginning of an increase in capital spending in 2013 and helped sustain short-term activity while boosting Jordan's medium-term growth prospects.

4. **By 2015 Government had drawn down key lines of credit but was only beginning to address the underlying structural issues in the energy and water sectors.** Jordan's economy slowed down further in 2015 mainly due to the effects of security spillovers, requiring the Government to embark on a new program of fiscal consolidation. Domestic revenues decreased by 1.5 percent of GDP on account of lower tax and nontax revenues. Grants were less forthcoming at 3.3 percent of GDP in 2015 compared to 4.9 percent of GDP in 2014. Despite the continuation of the GCC-financed capital expenditure program, capital expenditures also retracted in 2015. To manage this fiscal deficit the Government requested—after using the Standby Arrangement (SBA) of the International Monetary Fund (IMF) —the use of IMF's Extended Fund Facility[3] (EFF) for 2016–2019.

5. **Jordan's public finances were particularly weighed down by growing losses both at the National Electric Power Company (NEPCO) and the Water Authority of Jordan (WAJ).** The IMF EFF program supported policies,

[1] IMF DataMapper April 2018 https://www.imf.org/en/Countries/JOR#countrydata
[2] Registered as a combination of debt and trade payables on utilities' financial statements
[3] This EFF follows the successful completion in August 2015 of the IMF's SBA) which supported a fiscal consolidation program that helped stabilize and improve confidence in Jordan's macroeconomic framework during 2012–2015.

among others, for electricity tariff sustainability in line with the policy program proposed by this World Bank programmatic DPL series and in support of measures to manage the debt of NEPCO and WAJ. The linkage between electricity and water is very direct in Jordan. Water utilities consume 15 percent of all the electricity produced in the country. Half of these water utilities' operational costs are for electricity. With both electricity and water tariffs well below full cost recovery the large annual deficits had to be covered from the public purse.

6. **By the end of 2014 NEPCO had accumulated losses of JD 4.6 billion and WAJ had accumulated losses of nearly JD 1.4 billion – together equivalent to over 20 percent of GDP.** In 2014 NEPCO made a loss of just under JD 1.2 billion equivalent to 4.7 percent of GDP. NEPCO's accumulated losses were covered by a combination of loans for JD 1.7 billion and advances from the Ministry of Finance (MoF) of JD 2.9 billion. WAJ in turn had loans of nearly JD 1 billion and advances from the MoF of JD 0.5 billion.

7. **The Government which ran a fiscal deficit of 9.1 percent of GDP in 2014 – in large part to sustain electricity and water services – lowered transfers to NEPCO and WAJ in 2015 forcing them to accumulate further debt.** MoF transfers to WAJ decreased from 0.8 percent of GDP in 2014 to 0.1 percent of GDP in 2015. NEPCO and WAJ resorted to borrowing from commercial banks rather than interest free from the Government. In the case of WAJ, MOF clawed back JD 134 million of the advances, which combined with a JD 204 million deficit led to WAJ's debt increasing to JD 1.7 billion. NEPCO in turn, borrowed an additional JD 0.7 billion from commercial sources bringing its total loans up to JD 2.4 billion.

8. **Without intervention the continuity of electricity and water services to both host and refugee populations was under threat.** The higher costs of commercial borrowing would only further drive up already large deficits in the electricity and water sector. Immediate action was needed to decrease costs and increase revenues, most urgently for electricity services, but also in the water sector. Along with a modest five percent increase in the electricity tariff, the Aqaba liquefied natural gas (LNG) regassification plant came on-stream in mid-2015 which greatly reduced input costs for electricity generation. Together the tariff increase and the lower fuel cost brought NEPCO's annual losses down to JD 233 million. However, the losses in WAJ increased to JD to 204 million due to the combination of increased borrowing and electricity costs. Furthermore, the combined level of outstanding NEPCO and WAJ debt increased to just under 25 percent of GDP.

9. **The interdependency of the energy sector and water sectors in Jordan called for an approach that worked across the two sectors.** With half the water sector costs being energy for pumping and treating water, and, with the water sector being the largest single energy consumer in the country (15 percent all electricity generated) reform issues across the sectors are inextricably linked. Policy and practice in one sector translate directly into impacts in the other requiring careful coordination across the two sectors.

10. **This DPL series built on World Bank Group engagement with the Government of Jordan especially in the energy sector.** In the early nineties, the World Bank supported the start of the energy sector reform process with a Development Policy Loan. Since then the World Bank group supported risk-mitigation for the first-ever IPP in Jordan with a PRG guarantee project, IFC loans to newly privatized distribution companies, development of renewable energy policy framework, and IFC loans and MIGA guarantees for solar and wind energy IPPs (including 117MW Tafila Wind IPP and seven solar PV projects with a total capacity of 102 MW) and repowering of the Hussein CCGT power plant. Closer to this DPL series, the World Bank had provided analytical and advisory support – funded through ESMAP grants – including 'An assessment of the Jordan 2012 Petroleum Subsidies Reform and Cash Compensation Program' (2013); 'Electricity Subsidies and Household Welfare in Jordan' (2011); and 'Energy Subsidies Reform in Jordan: Welfare Implications of Different Scenarios' Policy Research Working Paper WPS 7313. These reports formed the analytical foundation for policy dialogue for this DPL series.

Box 1. Overview of the institutional setup of the energy and water sectors in Jordan.
The setup of both the energy and the water sectors in Jordan is evolving towards institutional mechanism that enable and manage private sector participation. The energy sector is the more mature. The key institutional players in the energy sector are: i) the Ministry of Energy and Minerals; ii) the Energy and Minerals Regulatory Commission (established in 2014), and; iii) NEPCO that manages the grid, power purchases from independent power producers and regional distribution companies.

The water sector institutional structure is more fragmented. The Ministry of Water and Irrigation (MoWI) oversees both municipal water supply and sanitation (WSS) as well as irrigation. Jordan Valley Authority (JVA) manages irrigation from surface water. JVAs is subsidized by government spending around JD 35 million a year and with revenues of less than JD 10 million a year. Though accounting for half of the water sector's abstractions (around 400 MCM) irrigation consumes less than 2 percent of the electricity consumed by municipal WSS. Municipal WSS is managed by three main utility companies: i) Miyahuna for the greater Amman area; ii) the Yarmouk Water Company for the north of Jordan, and; iii) Aqaba in the south of Jordan. WAJ is the asset holding company for these three utilities and operates services in rural and small towns not covered by the three main utilities. WAJ is also the asset holding authority for the Disi Pipeline which is a public private partnership (PPP) with a bulk water supplier. The 2- year contract is with Diwaco a joint venture between a Turkish company (GAMA) and a US company General Electric Financial Services. As the asset holding company WAJ takes on all major borrowing for WSS, absorbs the annual losses made by the other three water utility companies and covers the bulk water purchases from the Disi pipeline.

1.2 Original Project Development Objectives (PDO) and Key Indicators

11. **The PDO of the DPL was to improve the financial viability and increase efficiency gains in the energy and water sectors in Jordan.** The DPL policy program was structured around two main policy pillars and seven policy reform aspects, with the following key indicators:

Pillar A: Improving the Financial Viability of the Electricity and Water Sectors.

Reform Aspect 1: Achieving Electricity Tariff Cost Recovery

- ***Indicator:*** Percentage of electricity operating costs – as reported by NEPCO – covered by end user tariffs

Reform Aspect 2: Resolving NEPCO's Debt

- ***Indicator:*** The development and implementation of a Debt Management Plan for NEPCO

Reform Aspect 3: Enhancing Cost Recovery in the Water Sector

- ***Indicator:*** Percentage of water utility operating costs by end user tariff – defined as the Water Authority of Jordan (WAJ) and the three regional water companies

Pillar B: Increasing Efficiency Gains in the Energy and Water Sectors.

Reform Aspect 4: Diversification to cleaner fuel supply for power generation and scaling up development of domestic renewable energy resources and energy efficiency

- ***Indicators:***
  (i) Number of natural gas import contracts
  (ii) Share (percentage) of renewable capacity in the capacity mix

Reform Aspect 5: Development of Electricity Distribution Networks Loss Reduction Program

- **Indicator:** Reduction in electricity distribution network losses

Reform Aspect 6: Scaling up of Energy Efficiency and Renewable Energy in the Water Sector

- **Indicator:** Increase in energy savings in the water sector in annual GWh saved

Reform Aspect 7: Optimizing allocation of water resources

- **Indicators:**
  (i) Surface water used for municipal water use in million cubic meters (MCM)
  (ii) Volume of treated wastewater used for non-domestic uses in million cubic meters (MCM)

See section F. Results Framework Analysis of data sheet for progress against indicators

1.3 Revised PDO and Key Indicators, and Reasons/justification

12. The PDO was not changed in the course of the two-part DPL series. Only minor changes were made to the triggers when formulating Prior Actions for DPL-2 to better reflect the developments.
The target for the indicator on cost recovery in the water sector was revised downward between DPL1 and DPL2. The water sector baseline in 2014 was revised down from 86 percent to 70 percent in DPL2. The target for 2017 was revised down from 100 percent in DPL1 to 85 percent in DPL2. This was a result of payments for the Disi Pipeline PPP project, which comprised debt service payments as well as operation and maintenance. Before 2014 debt service payments were included in the capital investment program. However, in 2015, they were disaggregated into operation and maintenance expenses, amortization, and interest payments. According to the Government Budget Law, the interest payments are included in the operation and maintenance expenses. Subsequently, the cost recovery indicator was adjusted to reflect these changes.
Other than the above, only minor changes were made to wording, but not substance, of some triggers for DPL2 to better reflect developments that occurred between DPL1 and DPL2. These included:

- *Merging Triggers 1 and 2 into Prior Action 2.1:* Trigger-1 (approval of tariff adjustments for 2016 and 2017 in accordance with the 2013-2017 Electricity Tariff Adjustment Plan) became redundant as NEPCO achieved cost recovery in Q4 2015 and the need for further tariff increases was obviated. Therefore, Trigger-1 was merged with Trigger-2 (approval of an automatic tariff adjustment mechanism by EMRC to ensure full cost recovery).
- *Prior Action 2.2:* The wording of Prior Action 2.2 (approval and implementation of a multi-year debt management plan) was revised to reflect that implementation of the Debt Management Plan was on-going process.
- *Prior Action 2.4:* The wording of Prior Action 2.4 (development and implementation of a strategy to scale up share of gas supply for power generation) was revised to reflect that NEPCO's fuel sourcing strategy is aimed not only at scaling-up the share of natural gas in the energy mix, but also at diversifying fuel sources to address supply risks.
- *Prior Action 2.5:* The wording of Prior Action 2.5 (issuance of required regulations for implementation of direct proposal bylaws) was revised to reflect title of regulations.
- *Prior Action 2.6:* The wording of Prior Action 2.6 (implementation of operating procedures in the Control and Dispatch center for integrating renewable power resources into the transmission grid) was revised to reflect more permanent nature of the agreements with the power producers, as compared to changes in the NCC manual.
- *Prior Action 2.7:* The wording for Prior Action 2.7 (operationalizing JREEEF's financing windows) was revised to reflect the JREEEF's new organizational structure that is aligned with its 'financing programs' (defined by end-user groups) rather than 'financing windows' (defined by financing instrument).
- *Prior Action 2.8:* The wording for Prior Action 2.8 (agreement between EMRC and selected distribution companies on a multi-year network loss reduction plan) was edited for clarity.
- *Prior Action 2.9:* The wording of Prior Action 2.9 (having a dedicated budget line sufficient for planned energy efficiency activities as laid out in the energy efficiency and renewable energy policy for the water sector) was revised to reflect that the Government is operationalizing its policies.

- *Prior Action 2.11:* The wording of Prior Action 2.11 (having a dedicated budget line sufficient for planned actions to optimize its water resources as laid out in the surface water utilization and water substitution policies) was revised to reflect that the Government is operationalizing its policies

1.4 Original Policy Areas Supported by the Program

13. **The objective of the proposed operation was to improve the financial viability and increase efficiency gains in the energy and water sectors in Jordan.** The operation was structured around the two pillars focusing on (a) improving the financial viability of the electricity and water sectors and (b) increasing efficiency gains in the energy and water sectors. The operation responded to strong Government demand and ownership for implementing policy reform programs in the water and energy sectors to address the challenges faced in coping with the impacts of: i) the rapidly escalating energy costs following the disruption to Egyptian gas supply ii) the additional demand for services generated by the Syrian refugee crisis iii) rapidly accumulating debt at NEPCO as user tariffs did not cover costs iv) rapidly accumulating debt by WAJ because as half its cost base was energy for pumping and treating water and these were not covered by water user tariffs v) the main purchaser.

14. ***Pillar A: Improving the Financial Viability of the Electricity and Water Sectors.*** The first of the two pillars of the DPL supported the Government's plan to sustain cost recovery in the electricity sector by adopting a robust pass-through mechanism to avoid the experience of fuel price shocks during 2011–2014. It also supported the Government's efforts to restore NEPCO's creditworthiness through the implementation of a multiyear debt management plan. The first pillar aimed to ensure sustained implementation of the Government program in the water sector by growing its revenue flows through the increase of the various water tariffs, and an improvement in billing and collection efficiencies in order to improve O&M cost recovery.

15. ***Pillar B: Increasing Efficiency Gains in the Energy and Water Sectors.*** The second pillar supported policies aimed at diversification of fuel sources for power generation through the implementation of a medium-term fuel supply strategy to increase the shares of natural gas and renewable energy. It also supported policies aimed at reduction of electricity distribution losses and enhanced efficiency in end-use of electricity. The strategy envisaged greater transparency in renewable energy development through implementation of direct proposal bylaws and establishment of a public data room; greater integration of renewable energy in the electricity grid by adoption of standardized operating protocols; and delivering institutional finance for energy efficiency and renewable energy by operationalizing financing programs at JREEEF. The operation's second pillar also supported more optimal use of water resources in the country, by amongst others, increasing the quality of wastewater treatment allowing for reuse of treated wastewater. Scaling up energy efficiency in the water sector was an important measure to reduce the cost of producing and distributing water in Jordan. This DPL provided additional support and incentives to maintain progress on these reform objectives to avoid forcing a trade-off between future fiscal and sector resiliency against meeting the demands of accommodating Syrian refugees.

2. KEY FACTORS AFFECTING IMPLEMENTATION AND OUTCOMES

2.1 Program Performance

**For multi-tranche DPL:*

Tranche #	Amount	Expected Release Date	Actual Release Date	Release
DPL1	US$ 250 mn	November 4, 2015	November 4, 2015	*Regular*
DPL2	US$ 250 mn	December 31, 2016	December 31, 2016	*Regular*

FIRST PROGRAMMATIC ENERGY AND WATER SECTOR REFORMS DPL		
Reform Aspect	**Prior Actions from Program Document**	**Status**
Pillar A: Improving the Financial Viability of the Electricity and Water Sectors		
Achieving Electricity Tariff Cost Recovery	Prior Action #1: The Borrower's Council of Ministers has approved on February 22, 2015 the implementation of the annual electricity tariff adjustment planned for 2015 in accordance with the Borrower's 2013-2017 Electricity Tariff Adjustment Plan.	The Government adopted three tariff increases under the five-year (2013–2017) Electricity Tariff Adjustment Plan, in August 2013, January 2014, and February 2015 (by an average of 15 percent, 15 percent, and 7.5 percent, respectively). Wholesale tariffs increased from an average of 64 fils per kWh in 2012 to 81 fils per kWh in 2016, raising NEPCO's *annual* revenues by about JD 300 million. NEPCO reached cost recovery ahead of schedule in Q4 2015, as higher sales revenues coincided with lower oil prices, the switch from oil to natural gas as main fuel for power generation, and the ramp-up of renewable energy.
Resolving NEPCO's Debt	Prior Action #2: The Borrower's Council of Ministers has issued on July 14, 2015 a circular requesting the inter-ministerial debt committee to develop a debt management plan for the Borrower's national electric power company (NEPCO).	As part of DPL1, the Government tasked its inter-ministerial Higher Ministerial Committee on Public Debt to develop a Debt Management Plan for NEPCO's accumulated commercial loans and advances from MoF, which stood at JD 4.9 billion (18.8 percent of GDP) in 2015. The Debt Management Plan developed by the Committee is aligned with Jordan's overall public debt management strategy and has been adopted as a part of DPL2.
Enhancing Cost Recovery in the Water Sector[4]	Prior Action #3: The Borrower's Council of Ministers has approved on September 14, 2014, bylaws No. 93 for 2014 including tariff adjustments for production wells in accordance with the Borrower's "Structural Benchmark Government Action Plan to Reduce Water Sector Losses" dated August 2013.	The prior action increased tariffs to 10 fils/m3 for abstractions of 75,000m3 to 200,000m3 a year from production wells and to 100 fils/m3 above 200,000m3 with the aim of reducing levels of over abstraction estimated at 385 MCM a year which was leading to increased levels of salinity in the highland groundwater.
Pillar B: Increasing Efficiency Gains in the Energy and Water Sectors		
Diversification to cleaner fuel supply for power generation and scaling up development of domestic renewable energy	Prior Action #4: NEPCO has assigned adequate number of staff and implemented a capacity building program for said assigned staff to manage LNG supply to power generation.	Since 2015, Jordan is importing natural gas through the LNG terminal in Aqaba under multi-year contracts as well as on the spot market. Natural gas accounted for 84 percent of power generation in 2016. The supply of LNG has helped reduce the fuels costs and achieve cost recovery from tariffs since 2015.
	Prior Action #5: The Borrower's Council of Ministers has approved on May 3,	The bylaws No. 50 for 2015 on renewable energy direct proposals were approved as a part of DPL1 and were followed up with the

[4] In contrast to the energy sector which measures full cost recover, cost recovery in the water sector cost recovery was defined here as operational and maintenance cost recovery as measured by MOWI covering WAJ and Water Companies.

resources and energy efficiency	2015, bylaws No. 50 for 2015 on renewable energy direct proposals.	'Instructions and Requirements for Proposal Preparation and Submission' as a part of DPL2.
	Prior Action #6: The Borrower's Council of Ministers has approved on May 3, 2015 the Jordan renewable energy and energy efficiency fund (JREEF) bylaws No. 49 for 2015; the JREEF board of directors has approved the business plan for JREEF; and the Borrower has allocated financing to operationalize JREEF.	Further to the approval of the Jordan renewable energy and energy efficiency fund (JREEEF) bylaws No. 49 for 2015, the approval of business plan by the JREEEF board, and the allocation of financing by the Government, JREEEF has emerged as an important institution for development of renewable energy and energy efficiency projects in Jordan. The financing programs for JREEEF were operationalized as a part of DPL2.
Scaling up of Energy Efficiency and Renewable Energy in the Water Sector	Prior Action #7: The Borrower's Council of Ministers has approved on June 2, 2015 an energy efficiency and renewable energy policy for the water sector.	In 2016 the Minister responsible for Water and Irrigation issued a policy for Energy Efficiency and Renewable Energy in the water sector and has since embarked on a program of investment to increase sources of renewable energy and improve efficiency especially of water pumping.
Optimizing allocation of water resources	Prior Action #8: The Borrower's Minister responsible for Water and Irrigation has approved a surface water utilization policy aimed at regulating surface water utilization in Jordan.	The Borrower's Minister responsible for Water and Irrigation issued a Surface Water Utilization Policy in 2016 that guides stakeholders on the optimal use of surface water, its protection, its management, and that proposes measures needed towards its integrated management.
SECOND PROGRAMMATIC ENERGY AND WATER SECTOR REFORMS DPL		
Reform Area	**Prior Actions from Program Document**	**Status**
Pillar A: Improving the Financial Viability of the Electricity and Water Sectors		
Achieving Electricity Tariff Cost Recovery	Prior Action 2.1: The Borrower's Energy and Minerals Regulatory Commission has adopted an electricity tariff adjustment mechanism, to sustain cost recovery taking into consideration consumer affordability.	As a result of the annual tariff increases during 2013-15, the shift to LNG from the new terminal at Aqaba since July 2015, a fall in global oil prices, as well as ramp-up of renewable energy capacity, NEPCO achieved cost recovery in Q4 2015, obviating the need for further tariff adjustment. To sustain cost recovery EMRC has adopted a tariff adjustment mechanism that will allow EMRC to pass through increases in cost to consumers. On October 5, 2016, EMRC approved the tariff adjustment mechanism to activate the fuel clause in the tariff, which is designed to ensure full cost recovery. The tariff adjustment mechanism has been applied consistently every month since November 2017. The additional revenue from automatic tariff adjustment mechanism is estimated to be JD 257 million for 2018.
Resolving NEPCO's Debt	Prior Action 2.2: The Borrower's Council of Ministers has approved a multi-year Debt Management Plan for NEPCO.	The Debt Management Plan for NEPCO has been prepared and adopted. It is aligned with Jordan's overall public debt management strategy and has four pillars: (a) interest on all outstanding

		debt would be serviced by NEPCO through tariff revenues; (b) repayment of the MoF advances of JD 2.8 billion would be done over a period of 32 years starting 2018 through annual repayment of JD 90 million; (c) NEPCO's commercial debt would be refinanced with debt of longer average maturity; and (d) any available profits would be used by NEPCO to repay a part of the commercial debt.
Enhancing Cost Recovery in the Water Sector	Prior Action 2.3: The Borrower's Council of Ministers has approved the measures to increase water sector revenues to enhance O&M cost recovery in accordance with the "Structural Benchmark - Action Plan to Reduce Water Sector Losses" dated August 2013. [5]	The Government has implemented the Structural Benchmark Program. WAJ achieved an operating cost recovery ratio of 87 percent in 2016 and 89 percent target set for 2017 in the Action Plan. However, even though revenues increased, the increase in costs since 2017 has offset the additional revenues. The Government agreed with the IMF to update, adopt, and publish the Structural Benchmark Program to aim at full operation and maintenance cost recovery by 2021.
Pillar B: Increasing Efficiency Gains in the Energy and Water Sectors		
Provision of cleaner fuel supply for power generation and scaling up development of domestic renewable energy resources and energy efficiency	Prior Action 2.4: NEPCO has adopted a strategy for diversification of fuel sources for power generation with increased reliance on cleaner energy sources.	NEPCO has adopted and started implementing the strategy for diversification of fuel sources. Nearly 85% of electricity is generated from natural gas imported from Aqaba LNG terminal through two contracts, one long-term and one mid-term. The share of renewable energy is rapidly increasing. NEPCO has also revived the supply of piped natural gas from Egypt since September 2018 and has signed a contract for supply of piped gas from the Leviathan starting 2019.
	Prior Action 2.5: The MEMR has issued 'Instructions and Requirements for Proposal Preparation and Submission' to implement the direct proposal bylaws No.50 of 2015 and has established a public data room for renewable energy development to improve transparency.	MEMR has issued new regulations (referred to as 'Instructions and Requirements for Proposal Preparation and Submission') for renewable energy procurement under direct proposal bylaws. A public data room has been developed in the form of an energy web portal, which allows users to access a wide range of data on Jordan's energy sector.
	Prior Action 2.6: NEPCO has adopted standardized operating protocols for intermittent renewable energy to be integrated into agreements with new renewable power producers.	NEPCO has adopted the said operating procedures for integrating renewable power into the transmission grid in the National Control Center (NCC). Furthermore, NEPCO has reflected these operating procedures in the standardized 'Transmission Operating Protocols' that are signed which each renewable power plant operator as part of the IPP agreements. The

[5] Cost recovery is defined here as operational and maintenance cost recovery as measured by MOWI covering WAJ and Water Companies.

		wording of the prior action was revised to reflect the agreements with the IPPs as these are more permanent than changes to the NCC manual.
	Prior Action 2.7: JREEEF has operationalized two of its financing programs to ensure better access to renewable energy and energy efficiency.	JREEEF has restructured its organization to align with seven 'programs' defined by end-user groups such as households, tourism, industry, and others. All programs are operating with program managers in place. The JREEEF annual report is included in the MEMR annual report. Financial information is available in separate, quarterly reports to the ministry.
Development of Electricity Distribution Networks Loss Reduction Program	Prior Action 2.8: The Borrower's Energy and Minerals Regulatory Commission and selected distribution companies have agreed on a multi-year Network Loss Reduction Plan which includes specific yearly loss reduction targets for 2016 and 2017.	Licenses for distribution companies require that loss reduction targets are finalized by EMRC every two years. Loss reduction targets for 2016 and 2017 were finalized by EMRC and agreed upon with the three distribution companies at the end of 2015. Loss reduction targets for 2018 and 2019 were be agreed at the end of 2017.
Scaling up of Energy Efficiency and Renewable Energy in the Water Sector	Prior Action 2.9: The Borrower's Ministry of Water and Irrigation has piloted the use of performance-based operations for the implementation of energy efficiency and renewable energy measures.	The annual energy savings of 50 GWh hours was exceeded with the commissioning and operation of the 80MW Ma'an windfarm. Though it had not reached full capacity it reached 66 MW by June 2016. Along with an additional 14 MW of renewable energy projects the total saving was 84 GWh by 2017.
Optimizing allocation of water resources	Prior Action 2.10: The Borrower's Ministry of Water and Irrigation has adopted a Water Substitution and Reuse Policy.	Based on the 2016 policy MoWI increased the amount of treated wastewater used for non-domestic uses to 144.2 MCM a year enabling 131.3 MCM of surface water a year to be directed to municipal use.
	Prior Action 2.11: The Borrower's Ministry of Water and Irrigation has adopted a Wastewater Treatment Plant National Plan for Operation and Maintenance, which includes the use of performance-based operation of wastewater treatment plants.	This plan aims to improve the operation and management of the 33 wastewater treatment plants in Jordan, as they are key in the reuse policy, but also will help improve energy efficiency

2.2 Major Factors Affecting Implementation

16. The programmatic series consisted of two single-tranche DPLs disbursed on effectiveness, with a loan amount of US$250 million each, which supported fiscal and policy reform programs in the energy and water sectors. In each DPL, the funds were disbursed in a single tranche as reflected in the Financing Agreement. Of the total amount of US$500 million, US$475 million was a variable rate non-concessional loan with a 35 year-maturity including 4.5 years of grace period, and, US$25 million was from the Concessional Financing Facility on a grant basis.[6] The following factors strongly supported the achievement of program outcomes:

[6] The Concessional Financing Facility (CFF) was a coordinated response by the international community to the Syrian refugee crisis, bridging the gap between humanitarian and development assistance. By combining donor contributions with multilateral

1. **Strong Government commitment to reform the energy and water sectors:** The government was reform minded and strongly committed to the objectives. In both energy and water sectors, policy commitments had been or were in the process of being formulated during the preparation of the first DPL itself.

   In the energy sector this included the five-year Electricity Tariff Adjustment Plan (2013-17), National Energy Efficiency Action Plan (NEEAP) and the setting up of the Jordanian Renewable Energy and Energy Efficiency Fund (JREEEF). The NEEPA aims to achieve energy savings of 20 percent from existing consumption and increase the share of renewable energy to 10 percent of national energy consumption by 2025. The operationalization of the JREEEF's financing programs aimed to support investments and sector stakeholders to conserve and/or generate energy. It has also improved the availability of financing and cooperation with local and international financial institutions under seven financing programs which are focused respectively on schools, households, government buildings, worship places, SMEs, innovation, and awareness and capacity building. Some other policy commitments envisaged during DPL1 were subsequently formulated during DPL2, including Automatic Electricity Tariff Adjustment mechanism (AETAM) and NEPCO Debt Management Plan (DMP). The Government and the EMRC displayed an unwavering commitment to monthly tariff increases under the AETAM even in face of some public protests, thus enabling the electricity sector to secure (nearly) cost-covering revenues from tariffs.

   In August 2013, the Government approved the Structural Benchmark - Action Plan to Reduce Water Sector Losses ('Action Plan'), to increase water sector revenues to enhance O&M cost recovery. The 'Action Plan' has become core to the policy dialogue and the resulting policy commitments in the water sector. With strong government leadership the 'Action Plan' is supported analytically, technical and financially by a range of development partners. The 'Action Plan' contains 30 actions ranging from improvements in billing efficiency to cost savings through improved water pumping efficiency and uses the composite indicator operating cost recovery ratio to track overall progress (figure 1).

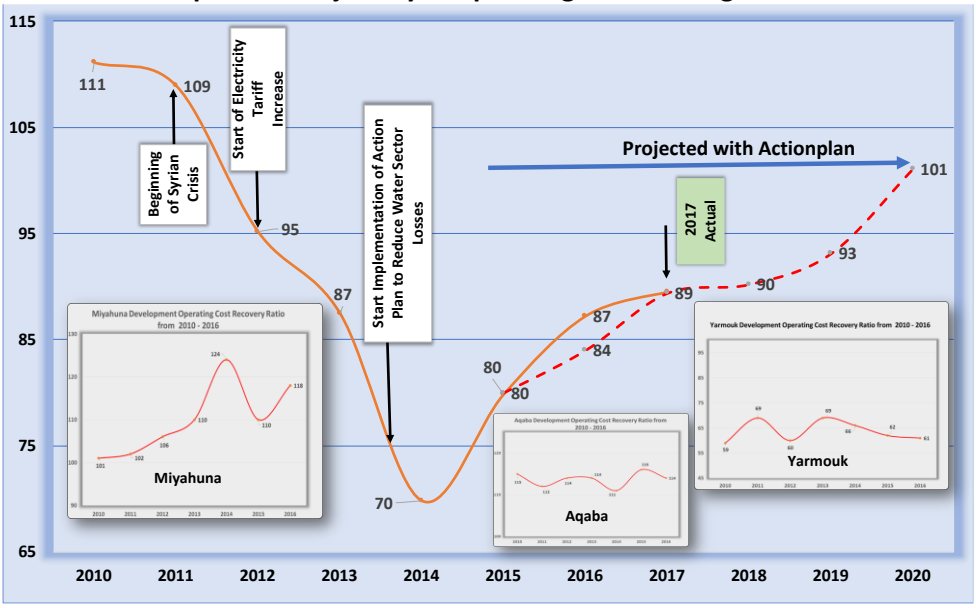
2. **Strong partnership between the Government, the World Bank and other development partners:** The DPL tapped into the active policy dialogue and development partner coordination in both the energy and water sectors. Partnerships with USAID, JICA, KFW, AFD and with IMF helped the emergence of a collective understanding of the challenges faced by the two sectors and the macroeconomic situation in Jordan. For instance, the analytical work on preparation of the NEPCO debt management plan was supported by USAID appointed consultants, while the work on tariff adjustments was supported by AFD appointed consultants, apart from the World Bank's own analytical modeling of NEPCO's financial projections.

   Also, DPL loans from multiple agencies – JICA, KFW, AFD and IMF Extended Financing Facility – were premised on the same or closely related prior actions – providing a joint push towards a challenging reform agenda. Regular interactions with the developmental partners and donor coordination meetings were found to be extremely useful in maintaining reform momentum in both sectors.

3. **Soundness of background analysis:** A detailed sector financial model was developed in the energy sector. This provided the analytical basis for monitoring the cost recovery in the sector and for determining the beak-even level of Brent crude for tariff adjustments. Though there was not an equivalent financial model in the water sector (which would have been very useful in retrospect) the Structural Benchmark Action Plan set out a series of interventions with costed returns providing a roadmap for reforms. The results of a PSIA for both energy and water showed that the impact of the planned tariff increases on poorer households were limited. This provided evidence to counter potential political reluctance to follow through on the reforms.

bank loans, the CFF enables eligible middle-income countries facing refugee crises to borrow at below regular multilateral development bank rates for providing a global public good.

Figure 1. Evolution and planned trajectory of operating cost coverage ratio from 2010 to 2020



Source: MoWI 2017. Structural Benchmark - Action Plan to Reduce Water Sector Losses. Progress Report

17. **Risks identified:** The risks identified were i) macroeconomic shocks; ii) sector strategy and policy reform momentum iii) geopolitical and regional risks especially related to the hosting of a large number of displaced people from Syria. The most significant risk was correctly identified as the political support for the policy reforms, especially tariff reforms. While there was political support for increases in electricity tariffs there has not been support for increases in water tariffs. While the targets set under the DPL were achieved over the specified time period, the lack of support to raise tariffs in the water sector has led to slippage in the rates of cost recovery and financial stress of water utilities due to the high cost of energy.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

18. **The Ministry of Planning and International Cooperation (MoPIC) had an oversight role for M&E.** Under this oversight the line ministries responsible for energy and water carried regular data collection and reporting. MoPIC convened regular monthly/quarterly meetings of the respective sector working groups with development partners to monitor progress.

(a) **Design**

19. **The design of the M&E system focused on clearly defined objectively verifiable numerical indicators complemented with specific policy and legislative actions.** The M&E of the operation was closely aligned to the M&E systems for the reforms in each of the respective ministries and was built on information systems that were core to the operations of the sector from financial performance (e.g. audited annual financial statements) to standard service delivery efficiency measures (e.g. network losses in electricity and NRW in water).

(b) **Implementation**

20. **The M&E system supported a results-oriented dialogue.** The M&E framework was used across the sector by both Government and its development partners. All the financial viability indicators were aligned across sector stakeholders and there were only minor differences (e.g. on optimal allocation of water resources) across Government M&E frameworks and the DPLs or projects of other development partners.

(c) Utilization

21. Results indicators played a role in the dialogue with authorities before during and after the DPL series. As a number of development partners had different dates and procedures for releasing budget support the sector data was regularly updated and interrogated as part of the due diligence of these operations. After the operation closed both the energy and the water sectors have continued monitoring most of the indicators and outcomes defined in the M&E system including: debt levels, cost recovery and energy savings.

2.4 Expected Next Phase/Follow-up Operation

22. Further to the Energy and Water DPL series, the Bank has remained engaged in policy dialogue for the 'Jordan: Economic Growth and Jobs Creation DPL Program' (delivered in June 2018). The energy sector featured as an important reform area in the first DPL of the Economic Growth DPL Program, with a focus on gradual reduction of electricity tariff cross-subsidies across consumer categories. A tariff cross-subsidy reduction roadmap has been adopted by EMRC as a prior action for the First Economic Growth and Jobs Creation DPL.

23. The Bank's analysis and TA in the energy and water sectors has fed into the broader dialogue on priority reforms across Government through the Economic Equitable Growth and Job Creation Transformation Matrix also known as the 'Five-year matrix'. The analysis carried out in the energy and water sectors has already fed into and shaped the 'Five-year matrix' and its supporting DPL series. The sector analysis has also influenced other social and economic objectives such as expansion of National Aid Fund's (NAF) cash transfer program to protect the poorest households from electricity and water tariffs, as well as, interventions to support growth in the agriculture sector.

24. ***Going forward, energy sector reforms need to focus on enhancing competitiveness of the Jordanian economy:*** An efficient electricity sector is essential for enhanced competitiveness of the Jordanian economy. Unlike most of its neighbors, Jordan is dependent on imports for bulk of its energy needs. Any inefficiency in planning, procurement, generation or delivery of electricity has a direct impact on competitiveness of the Jordan's productive sectors. In the recent years, many large consumers have been moving towards self-generation using solar-photovoltaic solutions, while availing balancing support and energy banking from the grid. Industry bodies have also reported that high electricity costs are a barrier to business expansion in Jordan. This indicates that there is scope for improving efficiency in electricity supply from the grid and applying cost-reflective tariffs. Competitiveness of productive sectors can be improved through efficient supply of electricity from the national grid and by opening the sector to competitive pressures from self-generation and third-party generation. In addition, Jordan needs to develop its rich solar and wind energy resources for enhanced energy security. Finally, improvements in efficiency of end-use of electricity can also help improve competitiveness.

25. ***Going forward, water sector reforms need to focus on the financial viability of the municipal water and waste water services:*** The electricity tariff for pumping water was increased to 140 fils/KWh in July 2018. This 40 percent increase in electricity costs has pushed WAJ and other utilities into a combined operating deficit of JD 12.5 million per month. For WAJ and its utilities to continue to provide uninterrupted services in 2019 a monthly subsidy will need to be transferred by the MoF to WAJ to cover the increase in electricity prices and to pay down sector debt. In the medium-term the increase in electricity costs will need to be passed through to water consumers to ensure that both the water and electricity utilities remain financially viable. In the short-term, however, additional analytical work and public consultation is required before implementing a water tariff increase. The analytical work required is a) a tariff review (underway funded by USAID) and b) a review of NAF targeting mechanisms and the extent of its coverage (underway funded by the WB). These two studies will provide options for both improving cost recovery of municipal water supply while protecting poorer households from those increases.

3. ASSESSMENT OF OUTCOMES

3.1 Relevance of Objectives, Design and Implementation

(a) Relevance of Objectives: *High*

26. **The objectives reflected shared priorities of the Government and the Bank to reform the energy and water sectors.** This operation supported the implementation of the Government's energy and water sector reforms which were fully aligned with Jordan's 2025 Vision which calls for achieving self-reliance and financial stability by enhancing financial sustainability and productivity across economic sectors. The operation's policy program supported the key objectives of the World Bank Group's FY2017–2022 Country Partnership Framework for Jordan which under its second pillar aims to improve the quality and equity of service delivery, including through private sector solutions. The management of the water and energy sectors were specifically identified, in the CPF, as key strategic sectors for promoting improved service delivery, economic growth, fiscal discipline, and private sector development, contributing to the World Bank Group's twin goals of reducing poverty and promoting shared prosperity in a sustainable manner.

27. The objectives of the DPL created the incentives to increase cost recovery and reduce inefficiencies in the energy and water sectors. Low cost recovery and inefficiencies were two of the root-causes of both fiscal and sector deficits.

(b) Relevance of Design and Implementation: *Substantial*

28. **The design of the DPL series was based on in-depth macro-economic and sector analytical work.** From the macro-economic analysis done by a range of institutions, including the IMF, there was a consensus view that the level of subsidies to the energy and water sector were a threat to Jordan's fiscal stability. The design defined clear causal linkages from prior actions through to the expected outcome to the PDO based on a combination of sector and overall fiscal analysis. The sector analysis included a financial model for the energy sector that provided deep insight into past and future implications of debt accumulation and cost recovery in electricity services delivery. The Poverty and Social Impact Assessment (PSIA) for both energy and water provided insight into the affordability of tariff increases to the poorest households in Jordan.

29. **The choice of the DPL instrument provided the immediate 'breathing space' needed by Government and sector institutions to continue providing services while addressing the structural issue of cost recovery.** Along with the budget support operations of other development partners (JICA, KfW and AFD) the Bank's DPL helped plug fiscal deficits, especially in the energy sector, while tariffs were progressively increased to reflect the costs of electricity production. The DPL also freed up some cash within the water and energy sectors to make efficiency improvements e.g. through installing energy efficient pumps in water utilities. The two DPL series design helped keep up the pressure on the reforms over both the design period and the year between the DPLs.

30. **The DPL complemented and coordinated with development partners providing project financing.** The DPL complemented the medium-term solutions for efficiency improvements (e.g. reducing non-revenue water and electricity network losses) being supported by a wide range of development partners (AFD, GIZ, KfW, USAID and NGOs) through investment project financing and policy lending. It also avoided the Bank from entering a crowded project financing space in Jordan that would have had high transaction costs for coordinating the detail of infrastructure investments.

31. The quick disbursing nature of DPLs provided support to the budget for utility debt restructuring averting an imminent zero-sum trade-off between fiscal discipline and meeting the demands of accommodating Syrian refugees. The funding released into the Government's budget (along with that from other development partners financing sector DPLs): i) reduced the immediate need for MoF to demand repayment of advances of JD 2.8 billion to NEPCO and JD 0.3 billion to WAJ; ii) freed up fiscal space to provide for the NEPCO Debt Management Plan including restructuring of both the MoF advance and of commercial debt over a 32 year period, and; iii) enabled an increase in the MoF advance to WAJ of JD 150 million to cover initial increases in the electricity tariff (effectively a temporary subsidy to WAJ).

3.2 Achievement of Program Development Objectives

Overall Rating: Satisfactory

32. This DPL series supported significant structural reforms in the energy and water sectors. All the DPL's targets were met for both sectors while service delivery expanded to meet, at least partially, the additional demand from Syrian refugees, host population growth and economic growth. This was achieved while averting an increase in the fiscal deficit, bringing financial stability to the energy sector and stemming decline in the water services.

33. The policy actions for this DPL series were set out under two pillars addressing (a) improved financial viability, and (b) increased efficiency gains in the electricity and water sectors. The two pillars encompassed seven policy reform aspects, as described below.

Pillar A: Improving the Financial Viability of the Electricity and Water Sectors

34. ***Achieving Electricity Tariff Cost Recovery:*** The electricity sector in Jordan experienced a fuel supply shock in April 2011 due to the disruption in piped natural gas supply from Egypt. The sector had to rely on expensive liquid fuels (HFO, LFO and Diesel) for power generation. The higher cost of liquid fuels was not immediately reflected in consumer tariffs and resulted in large subsides from the fiscus. NEPCO's operating income turned from a net surplus of JD 28 million in 2009 to a net loss of around JD 1 billion per year during 2012-14. NEPCO accumulated commercial loans and advances from MoF, reaching JD 4.9 billion by the end of 2015. The Energy and Minerals Regulatory Commission adopted a five-year 'Electricity Tariff Adjustment Plan (2013-17)', which led to three tariff increases – in August 2013, January 2014, and February 2015 (by an average of 15 percent, 15 percent, and 7.5 percent, respectively). Wholesale tariffs increased from an average of 64 fils per kWh in 2012 to 81 fils per kWh in 2016, raising NEPCO's annual revenues by about JD 300 million. NEPCO reached cost recovery ahead of schedule in Q4 2015, as higher sales revenues coincided with lower oil prices, the switch from oil to natural gas as main fuel for power generation, and the ramp-up of renewable energy.

35. Subsequently, an 'Automatic Electricity Tariff Adjustment Mechanism' (AETAM) was adopted in October 2016 to sustain cost recovery (taking into consideration consumer affordability) and made applicable from January 2017 onwards. This mechanism ensures that increases (or decreases) in global oil prices are reflected in consumer tariffs on a monthly basis. The breakeven price of Brent crude oil at which the automatic tariff adjustment would kick-in was calculated by NEPCO and EMRC as US$55 per barrel. This breakeven point was based on the NEPCO financial projections for 2017, consistent with the expected generation mix, sector performance, and demand projections. The tariff adjustment formula applied three-month moving average of Brent price, which did not cross the breakeven threshold until December 2017, and the automatic tariff adjustments had to be applied only from January 2018 onwards.

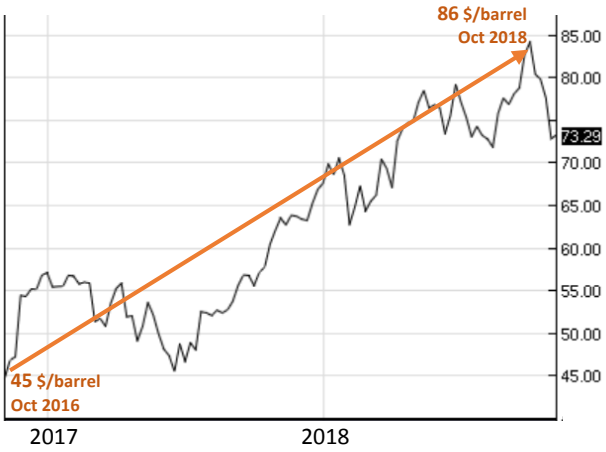
36. The automatic tariff adjustments are applied uniformly to all energy consumed across all consumer categories, except household consumers with a consumption of less than 300 kWh per month. This exemption is aimed at shielding poor households from the impact of higher cost of electricity generation. On the other hand, uniform application of the fuel adjustment charges across all other consumer categories and consumption slabs helps reduce the prevailing high cross-subsidy across large and small consumers.

37. Even though the price of Brent crude has jumped nearly 88 percent over the last two years – from about US$45 per barrel in Oct 2016 to more than US$85 per barrel in Oct 2018 – the electricity sector remained broadly at the cost-recovery levels due to the automatic passthrough in consumer tariffs. As of end Oct 2018, the additional revenue from monthly automatic tariff adjustments in 2018 is projected to be about JD 257 million. However, even with the monthly adjustments, NEPCO may yet close the 2018 financial year with a slight loss due to lower demand growth than originally projected, and some of the high-end consumers opting for self-generation using solar photovoltaic systems. Nonetheless, the automatic tariff adjustment mechanism has helped Jordan tide-over a period of rapid increase in global oil prices, which is likely to ease out going forward with cheaper piped natural gas from Egypt coming up in end 2018 and from the Leviathan in end 2019.

Outlook:

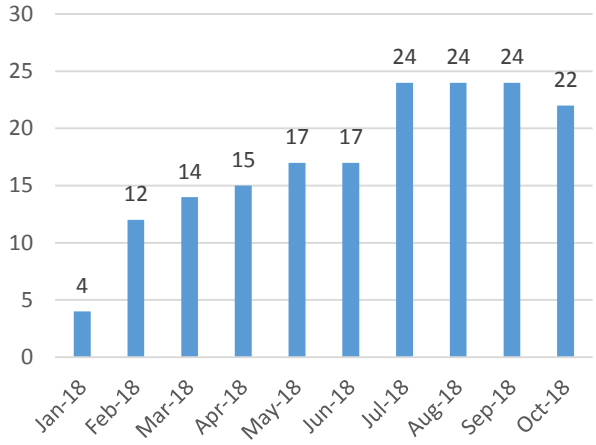
- *Government of Jordan remains committed to regular application of AETAM:* The Government of Jordan and the EMRC have displayed a strong commitment towards the regular application of the AETAM – even in face of some public discontent with the increased burden from taxation reforms, bread subsidy reduction, and now increased electricity tariffs. With the escalation in global crude oil prices now tapering off, the need for further tariff adjustments may also reduce.
- *Planned steps to strengthen energy security may reduce the roe of the AETAM:* The Ministry of Electricity and Mineral Resources (MEMR) has been taking planned steps towards enhancing energy security and reducing energy costs. This is premised on the twin strategy of diversifying energy import sources and developing local energy resources. Jordan has revived the import of piped natural gas from Egypt during September 2018 and is expected to start receiving piped natural gas from the Leviathan gas fields during the latter part of 2019. Both these contracts for piped gas imports are cheaper than the prevailing LNG contracts based on the expected Brent crude price and are only loosely indexed with the global crude oil prices. On the other hand, Jordan is also striving to develop its oil shale resources and has signed the contract for the first such project – albeit more expensive than the ongoing natural gas-based generation. However, the cumulative impact of lower cost imports and somewhat higher cost of domestic generation is expected to result in incrementally smaller role for automatic tariff adjustments going forward.

Figure-2a
Rise in Global Brent Crude Prices ($ per barrel)



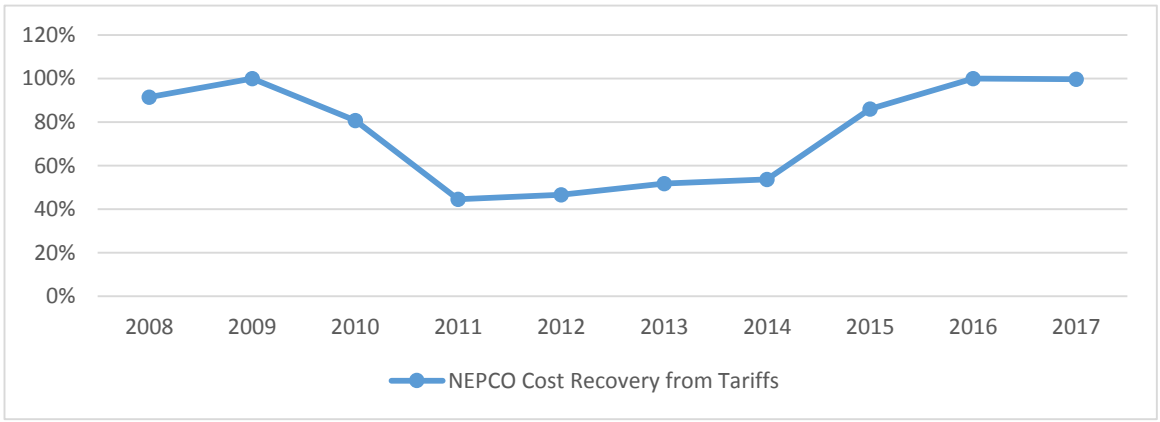
Source: Nasdaq Website

Figure-2b
Automatic Tariff Adjustments (fils per KWh)



Source: EMRC

Figure 2c.
NEPCO Cost recovery (including depreciation and interest but excluding debt repayment)



Source: NEPCO Annual Accounts

38. ***Resolving NEPCO's Debt:*** By 2015, NEPCO's accumulated commercial loans and advances from MoF had risen to JD 4.9 billion equivalent to 18.8 percent of GDP. The debt, guaranteed by the MoF, represented about a quarter of total consolidated public-sector debt, acting as a drag on the economy and limiting the Government's ability to borrow.

39. Linked to the DPL, the Higher Ministerial Committee on Public Debt developed a Debt Management Plan (DMP) for NEPCO. The Debt Management Plan developed by the Committee is aligned with Jordan's overall public debt management strategy and has four pillars: (a) interest on all outstanding debt would be serviced by NEPCO through electricity revenues; (b) MOF advances of JD 2.8 billion to NEPCO would be free from interest, and repayment would be done over a period of 32 years starting 2018 through annual repayment of JD 90 million; (c) NEPCO's commercial debt would be refinanced through further commercial borrowings with moratorium of 2–3 years and tenures of 5–7 years, to increase the average maturity of the debt; and (d) any available profits would be used by NEPCO to repay the commercial debt rather than refinancing it from commercial sources.

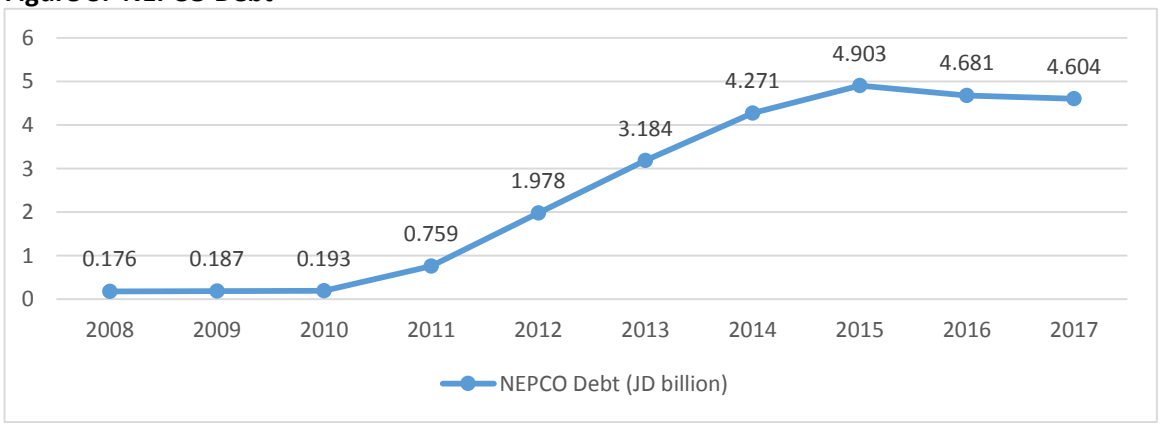
40. The approach for debt management was successful in ensuring that NEPCO's debt service liability did not precipitate a crisis. Interest was included in the tariff calculations by EMRC as well as reflected in the assessment of tariff adjustments under the AETAM. After a two-year moratorium, the repayment of MOF

advances over a period of 32 years is slated to start during late 2018. Despite tariff adjustment of up to 32 percent during the year under the AETAM, NEPCO is projected to close the year with a slight loss. As a result, NEPCO may not be able to service the required repayment of JD 84 million during 2018. The projected estimate is that NEPCO will repay JD 83 million during 2018 – substantially achieving the target – but this needs to be verified once the 2018 financial statement has been audited and published. However, this situation is expected to improve going forward as the global crude prices stabilize and NEPCO gains from cheaper piped gas imports from Egypt and later from the Leviathan. Meanwhile, NEPCO has been refinancing its commercial debt with new borrowings of longer maturity using a range of sources including the Housing Bank, Islamic Bank of Jordan, and Sukok Bonds among others. Of a total outstanding liability of JD 1.9 billion in October 2018, commercial debt of JD 545 million was refinanced during 2017, and JD 450 million has been refinanced in 2018 (till October).

Outlook:

- *NEPCO's legacy debt is now stable and interest is being serviced regularly:* NEPCO's legacy debt has stabilized at about JD 4.8 billion, including commercial loans and advances from MOF. The interest on the commercial debt is being regularly serviced from the tariff revenues.
- *NEPCO has been refinancing and consolidating its numerous commercial loans:* NEPCO has consolidated its numerous short-term loans into larger borrowings with longer maturity. The initial moratorium on repayment of these new loans has helped NEPCO manage its debt obligations.
- *Liquidation of NEPCO Debt remains an unmet challenge:* Although NEPCO has been able to manage its debt, it has not been able to liquidate this debt in any meaningful way so far. NEPCO would need to prepare a strategy for gradual liquidation of the debt by creating space for repayment within the tariff revenues and the expected cost reduction from import of piped natural gas going forward.

Figure 3. NEPCO Debt



Source: NEPCO Annual Accounts

41. ***Enhancing Cost Recovery in the Water Sector:*** The 2013 Structural Benchmark Program aimed to reach 100 percent O&M cost recovery and full cost recovery[7] of 74 percent by 2021 through a combination of revenue increases (tariff increases) and cost savings. Since 2013, MoWI increased water prices for all water users, including increases in industrial groundwater charges (November 2013), water and wastewater tariffs (July 2014 and December 2015), the charges for irrigation wells in the highlands (January 2016), an increase in wastewater connection fees (July 2014, originally planned for 2015), and the introduction of a treated wastewater reuse charge (January 2016). It also signed management contracts to improve collection efficiencies in Madaba and Zarqa.

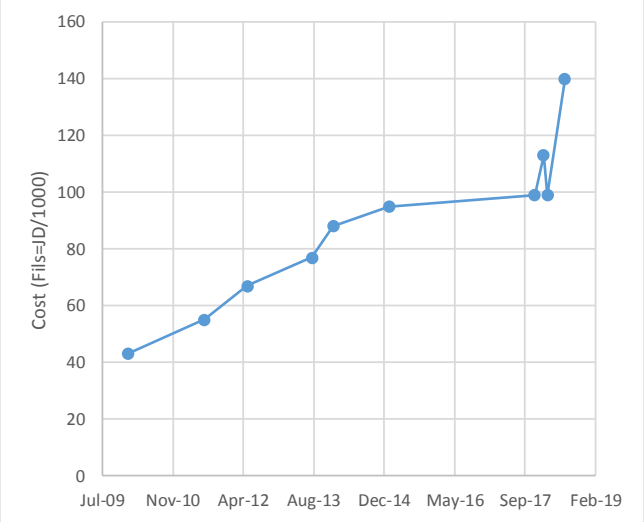
[7] The full cost recovery ratio is defined as the ratio where revenues would cover the sector's operation and maintenance costs and capital costs.

As a result of the sustained policy commitment to the Structural Benchmark Program, the revenues of the three water companies and WAJ rose by 37 percent to JD 294 million between 2014 and 2017 and the targets for improving the operating cost recovery ratio, from 70 percent in 2015 to 85 percent in 2017 was exceeded with an actual achievement of 89 percent.

Outlook:

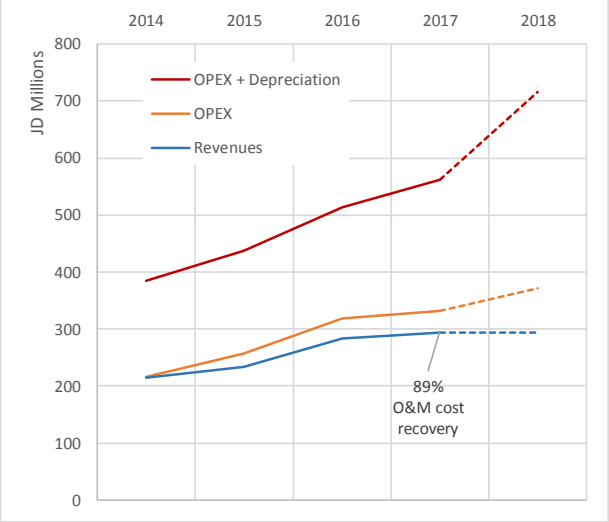
- *In 2018, since the close of the second DPL, electricity costs charged to WAJ increased by more than 40 percent (figure 4a).* This increase was due to global energy prices feeding through the EMRC's tariff adjustment mechanism to increases in electricity tariffs – as they should – but without corresponding increases in water tariffs to reflect the higher energy costs of pumping water. Electricity prices pass through to WAJ in two ways: i) direct electricity use by WAJ and its utilities ii) though the BOT contracts. The cost of electricity accounted for 49 percent of operational expenditure in the water sector in 2017 and is expected to rise to over 50 percent in 2018. As a result, WAJ and its utilities expect a JD 135 million deficit in 2018 after operational costs and payments to the two BOT companies, pulling its operational cost recovery ratio back down to 68 percent. The total deficit including depreciation and interest payments will be over JD 420 million in 2018 (figure 4b).
- *WAJ annual deficits had by the end of 2017 resulted in JD 2.4 billion of debt that needs to be managed.* While the immediate effect of increased electricity prices has been to pull the operational cost recovery ratio back down to 68 percent the larger issue is how to deal with the debt that has been accumulated by WAJ. An agreement on providing Government subsidy has been reached but needs to be improved (see section 3.4.c Other Unintended Outcomes and Impacts).
- *WAJ will need to increase water tariffs to sustain service delivery.* Due to the immediate fiscal constraints faced by Jordan, water sector tariff increases are one of the few solutions to keep water and sanitation services running. Average water tariffs would need to increase by at least 40 percent to sustain operation and maintenance costs at the current rate of 140fils/kWh.

Figure 4a.
Unit cost of electricity for pumping water per KWh (Fils=JD/1000)



Source: NEPCO

Figure 4b. Consolidated revenues, operational expenditure and depreciation for WAJ and utilities



Source: WAJ audited financial statements

Figure 4c.
Composition of WAJ liabilities as at end 2017

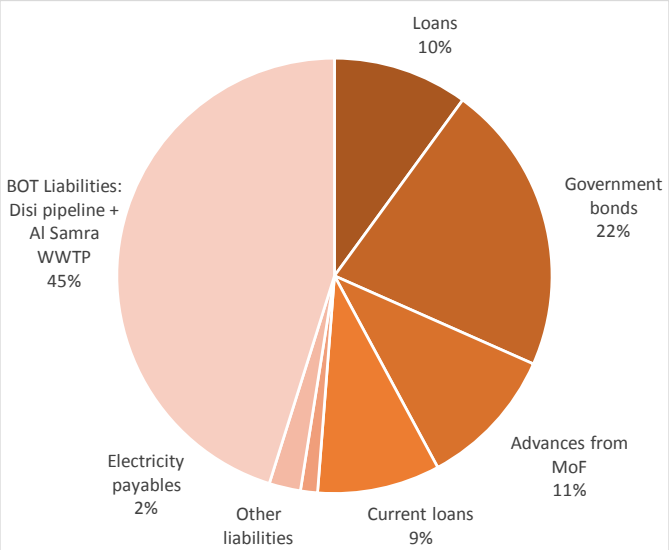
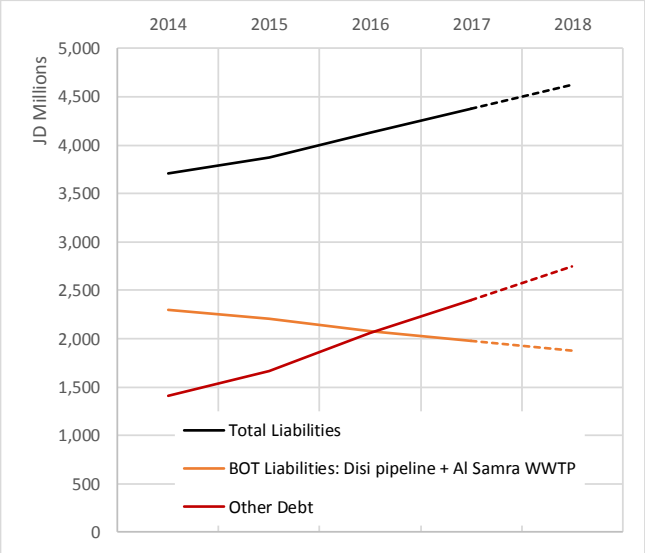


Figure 4d.
WAJ debt and BOT liabilities



Source: WAJ audited financial statements

Pillar B: Increasing Efficiency Gains in the Energy and Water Sectors

42. ***Provision of Cleaner Fuel Supply for Power Generation and Scaling Up Development of Domestic Renewable Energy Resources and Energy Efficiency:*** Restoring secure supplies of cleaner and cheaper fuels for power generation is a national strategic priority for Jordan. NEPCO developed a holistic strategy to achieve this and started implementing it in 2015. The main thrust of the strategy is diversification of supply sources. Natural gas, most of which is imported in liquid form through the LNG terminal in Aqaba, is sourced through two multi-year LNG supply contracts and on the spot market (smaller quantities are produced domestically from the Risha gas field). These contracts allowed NEPCO to provide natural gas for 84 percent of power generation in the four quarters up to Q2 2016. However, all of Jordan's long-term LNG imports remain linked to the Brent oil price, which makes the country vulnerable to price shocks. Jordan has managed to reduce this dependency by contracting for short-term supplies awarded on a straight price basis—decoupling this from Brent price indexation to benefit from highly competitive spot LNG pricing. In addition to LNG, Jordan is pursuing longer-term supply options such as piped gas from Egypt, Iraq, and the Eastern Mediterranean, to ensure secure and clean fuel supply to Jordan's electricity sector in the long term. The piped gas from Egypt has already started flowing in September 2018 and would reduce Jordan's dependence on more expensive LNG. The gas from the Leviathan project in Eastern Mediterranean would be available during the latter part of 2019.

43. Jordan has become a leader in private-sector owned renewable energy in the MENA region. Renewable energy is procured from independent power producers (IPPs). A total of 30 IPP projects, totaling 1,374 MW, are now at various stages of development. Power purchase agreements for around 1,000 MW of capacity have been signed and around 240 MW are operational. Sustaining the pace of progress in renewable energy development hinges on the Government's ability to: (a) procure new capacity in a cost-effective manner to avoid burdening consumers or imposing an additional cost on NEPCO, and (b) effectively integrate renewable plants into the grid once they start generating – especially in view of their variable nature.

44. On the energy efficiency side, the Jordanian Renewable Energy and Energy Efficiency Fund (JREEEF) is overseeing the National Energy Efficiency Action Plan (NEEAP) and is providing the funding necessary to implement measures in renewable energy and energy efficiency domains. The operationalization of the JREEEF's financing programs has supported investments and sector stakeholders to conserve and/or generate energy. It has also improved the availability of financing and cooperation with local and international financial

institutions under seven financing programs which are focused respectively on schools, households, government buildings, worship places, SMEs, innovation, and awareness and capacity building. The NEEPA aims to energy savings of 20 percent from existing consumption and increase the share of renewable energy to 10 percent of national energy consumption by 2025.

45. The bylaws to the Renewable Energy and Energy Efficiency Law and the accompanying 'Instructions and Requirements for Proposal Preparation and Submission' for renewable energy (including solar PV and wind power) further refine the procurement process of private sector-owned capacity. The public data room[8], which was developed under the EU grant and provides access to an energy data subsystem, a business subsystem, and an energy web portal, enhances transparency and increase investors' and public confidence in the credibility and reliability of the next phase of renewable energy development in Jordan. To improve grid integration, NEPCO developed operating protocols for variable renewable energy sources that are integrated into the agreements signed with the IPPs and reflected in NEPCO's own operating procedures in its National Control Center.

46. ***Development of Electricity Distribution Networks Loss Reduction Program:*** Transmission losses are relatively small (under 2 percent in 2015) but distribution losses are high compared to international standards (14 percent in 2015). The focus of the Government is therefore on reducing losses in the distribution networks, which promises substantial cost savings and efficiency increases in the electricity sector. The distribution sector has been privatized and is managed through performance agreements with the regulator EMRC. The prior action under DPL1 supported the implementation of Distribution Network Loss Reduction Program agreed upon between the distribution companies and the EMRC. Under this Program loss reduction targets for 2016 and 2017 were finalized by EMRC and agreed upon with the three distribution companies at the end of 2015. The target for the DPL series was to reduce network losses to 13.25 percent. This was exceeded with actual network loss reductions brought down to 12.05 percent.

47. ***Scaling up of Energy Efficiency and Renewable Energy in the Water Sector:*** The water sector in Jordan is very energy intensive and is becoming more so over time as deeper and more distance sources have to be brought into the supply chain. In 2005, the sector used 1.32 kWh/m^3 of water used, compared to 4.43 kWh/m^3 in 2015 for both irrigation and municipal WSS. Energy intensity was much higher in municipal WSS (8 kWh/m^3) than in irrigation (0.17 KWh/m^3) in 2015. With the energy efficiency measure deployed since 2015 energy intensity has been brought down to 6.55 kWh/m^3. However, this does not take into account the integration of the Disi pipeline – which pumps water from the Disi aquifer 300km south of Amman and over a 1000m gradient. Together with the Wadi Arab project that will come on stream in 2019 the the energy intensity of service delivery will go up again. About 15 percent of electricity consumption in the country is used in the water sector amounting to 2,076 GWh in 2013, of which WAJ consumed 1,354 GWh, Jordan Valley Authority (JVA) 70 GWh, and the remainder was used by private well users. The total electricity costs of WAJ and JVA were JD 108 million in 2013, rose to JD 156 million by 2016 and are expected to continue rising. The dismantling of the energy subsidies contributed to the initial increases. Since 2017, increases in global energy costs have also contributed transmitted through NEPCO's tariff adjustment mechanism.

48. ***The annual energy savings target of 50 GWh hours was exceeded through a combination of energy efficiency projects and introducing renewable energy projects.*** As a prior action of DPL1 the Council of Ministers approved the NEEAP which includes, among other things, a 15 percent reduction in energy consumption by existing water facilities by 2025. The water sector is expected to reduce its power consumption through a phased approach. MoWI identified energy savings for water pumping and other water sector-related activities as a priority reflected in the Structural Benchmark Action Plan. Over the period of the DPL several projects, including performance-based operations, have been implemented to improve the energy efficiency:

[8] Available online at eis.memr.gov.jo.

- *The Wala-Libb energy contract* - The replacement of pumps in two pumping stations generated power savings from 2015.
- *Energy Efficiency Program I+II* - The program, funded by KfW, rehabilitated 46 wells and fitted with more efficient pumping equipment.
- *Zara-Main transmission system* - Old pumps in the Zara-Main transmission system were replaced saving is about 18% of the current power consumption

49. In addition, the water sector has responded to higher energy prices by investing directly in renewable energy sources. Though the *Ma'an* windfarm a saving a total of 84 GWh had been made by the end of 2017. Other renewable energy projects include: *power production in WWTP Shalala; a small hydro power plant on Abu Alanda Khaw pipeline*; and PV enhancements to *Zara Main water system; Disi well fields; Dhluiel and Gweirah solar PV* farms.

50. ***Optimizing Allocation of Water Resources.*** Jordan's per capita available renewable water resources are falling steadily because of population growth both of host and refugee populations. As a result, the country depends disproportionally on groundwater resources which are overexploited by an estimated 235 MCM in 2017 (down from 385 MCM in 2014). As prior actions for DPL1 the Government adopted a surface water utilization policy. In February 2016 this was complemented by a groundwater substitution policy and a water reallocation policy. The surface water utilization policy aims to maximize the use of surface water by optimizing and increasing water storage capacity, enhancing rainwater harvesting capacity and protection of water sources from pollution by expanding wastewater treatment. More efficient use of the existing water resources will be achieved by allocating water to its highest value use.

51. Two complementary objectives of these policies have been to allocate more treated wastewater (reclaimed water) to industry and agriculture to free up surface freshwater to be used for municipal use. The targets under this DPL for both these objectives were exceeded. The volume of treated water used for agriculture and industry (non-domestic sources) was increased from 110 MCM to just over 144 MCM a year. This was done by improving the operation and management of the 33 wastewater treatment plants in Jordan. The Government has several approaches to improving O&M including performance-based operation of wastewater treatment plants by the private sector. In 2016, the Government expanded performance-based operations at two wastewater treatment plants in South Amman and the Zaatari refugee camp. Along with the phase III expansion of the large As Samra WWTP[9], which was completed in October 2015 under a BOT contract, the amount of reclaimed water available to agriculture and industry has been expanded by over 34 MCM a year. This has enabled an additional 8.3 MCM of surface water to be channeled to municipal water uses (MoWI 2018).

3.3 Justification of Overall Outcome Rating

52. **Rating: Satisfactory**. The overall outcome rating for the Energy and Water DPL series is rated **satisfactory**. This reflects the **high** rating for the relevance of objectives, **substantial** for the design and the implementation relevance (section 3.1) as well as **substantial** for achievements under both the pillars of the PDO for the series (section 3.2) for which all results indicators were achieved or exceeded.

[9] As Samra WWTP accounts for around 70 percent of Jordan's wastewater treatment capacity generating 133 MCM a year of high quality water for reuse, which is around 10 percent of water available to agriculture. As Samra generates a total annual amount of 133 MCM of high quality water for reuse which is being expanded further to provide 22.5 MCM a year to power plants by 2021.

3.4 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

53. Tariff increases are essential for the sustainability of the energy and water sectors but there is a need to ensure that NAF or other mechanisms protect the poorest households from the impact of the increases. The increase in electricity tariffs has been higher than expected in the PSIA. The PSIA modeled a passthrough of global energy prices at US$65/bbl to the electricity tariff while global energy prices rose to US$70/bbl in late 2017 and to US$85 in 2018. The water tariff was increased by: JD 2 for quarterly block 0-18 m^3, JD 4 for quarterly block 19-72 m^3 and JD 6 for quarterly block above 72 m^3. This was equivalent to a 12% increase in average tariff, effective October 2015. This was a modest increase for the lowest consumption block, with limited impact. Government did also increase water tariffs in October 2016 but there was no tariff increase for households consuming below 12m^3/month. With further increases likely particularly in the water sector, expanding NAF coverage may be part of the solution for the most vulnerable households. However, in a very fiscally constrained environment this will need to be complemented with volumetric cross-subsidies in one or both sectors.

(b) Institutional Change/Strengthening

54. The EMRC was formed in 2014. The World Bank engagement through the DPL series has helped strengthen the regulatory framework on key tariff related aspects including the AETAM. The World Bank has continued to engage with EMRC on strengthening the regulatory process for tariff determination, cross-subsidy reduction, competitive procurement of projects and introducing open access to the grid network.
The NEPCO restructuring report, supported by the Bank, set out a phased evolution of a market structure in the sector. This report set out a roadmap for further unbundling of NEPCO to separate out the transmission, power trading and fuel supply businesses starting initially with an accounting and functional separation into strategic business units. The recommendations from this report are being implemented through an EBRD financed project and also form a part of the 'Five-Year Matrix'.

55. The JREEEF had just been formed at the time of the first DPL. This DPL series assisted JREEEF in formulating its funding programs as well as emerging as the central body in Jordan for promoting distributed renewable energy and energy efficiency programs.

56. The World Bank also assisted capacity building in the area of LNG imports by organizing site visits to similar facilities in other countries. The World Bank continued engagement towards developing an approach for eventual liquidation of NEPCO and WAJ debt including through expert consultations and workshops – though further work on this is required.

(c) Other Unintended Outcomes and Impacts

57. **WAJ has accumulated annual operational deficits as debt reaching JD 2.4 billion by the end of 2017.** While improving cost recovery remains an important objective there is also an urgent need to address WAJ's debt burden, which is eight times its annual turnover. In addition to the accumulated debt of JD 2.4 billion, the fixed assets created by the Disi Pipeline and Al Samra BOTs are liabilities of just under JD 2 billion that have come onto WAJ's balance sheet.

58. **In late 2017 MoF agreed to take on payments for WAJ's debt by a) directly paying down the debt issued in bonds and b) providing WAJ with sufficient subsidy to cover commercial debt repayments.** In addition MoF agreed to cover the deficit created the increase in energy costs at the then prevailing tariff of 98 fils per kWh. In the 2018 national budget a provision of JD 210 million was enacted to directly pay down WAJ bond issues. A second provision of JD 262 million was made to cover other commercial debt repayments and to subsidize electricity costs.

59. **However, the arrangement between MoF and WAJ is only partly addressing the combined problem of**

debt management and increasing electricity tariffs. The first problem is that the provisions made in the national budget were based on the 98 fils/kWh and do not take into account the July 2018 increase to 140 fils/kWh. WAJ is therefore only paying the electricity distribution companies the rate of 98 fils/kWh and the electricity distribution companies charging WAJ interest on the outstanding balances. The second problem has been that the subsidy payments from MoF have not been regular or in full leading to a cash management crisis at WAJ and accumulation of payables to the BOT companies and further interest charges. In turn the Disi Pipeline company is struggling to pay its electricity bills potentially leading to a shutdown.

60. **Due to the immediate fiscal constraints faced by Jordan, water sector tariff increases are one of the few solutions to keep water and sanitation services running.** Average water tariffs would need to increase by at least 40 percent to sustain operation and maintenance costs at 140fils/kWh. In addition, Government subsidy would be needed to pay down the debt accumulated by WAJ.

61. **But recent civic protests over the removal of subsidies and the proposed increase income tax, severely constrain the political space for maneuver.** In the last two years, there has been a series of protests about increases in the price of fuel, electricity, bread and sales tax as well as the attempt to amend the income tax law. Media commentary from both unions and citizens have called on government to consult more broadly on changes, particularly the income tax law, before they are approved at cabinet level. Calls were for better balancing of cuts in subsidies with investments in job creation, reform to improve government performance and fighting corruption.

62. **Given these constraints, the way forward is through a combination of a) central government borrowing to pay down WAJ's more expensive debt b) small but steady water tariff increases and c) redoubling efforts to improve water sector efficiency.** The debt that WAJ accumulated was short-term and at high interest rates compared to the debt that MoF is able to issue. Analysis of affordability, particularly for poorer households, is needed to inform changes to the tariff structure but tariff increases are needed to sustain service delivery. In the medium-term additional efficiency measures in the water sector are needed to reduce the energy intensity of the sector and to reduce non-revenue water are required.

3.5 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

62. Additional poverty and social impact analysis in planned for early 2019 once the latest household budget survey data become available. The results of the 2016 PSIA for both energy and water showed that planned tariff increases on poorer households would be limited. With the higher than expected rise in oil prices further analysis and the need to increase water sector tariffs over the medium-term to restore financial viability of water services further welfare impacts will be assessed in a follow-up PSIA to feed into the current series of DPLs underpinning the 'Five-year matrix'.

4. ASSESSMENT OF RISK TO DEVELOPMENT OUTCOME

63. **Ratings: Substantial. The Government is demonstrating strong on-going commitment to both the energy and water sector reforms.** However, the accumulation of arrears in 2018 by WAJ owing to delayed transfers from the government budget and a freeze in municipal tariff increases since 2016, jeopardize the financial viability of WAJ. Given these constraints, the way forward is through a combination of a) central government borrowing to pay down WAJ's more expensive debt b) small but steady water tariff increases and c) redoubling efforts to improve water sector efficiency.

64. **Financial:** No reversal of the reforms in the energy sector if foreseen. However, there is a need for an energy sector investment plan with a clear list of prioritized and sequenced projects that is agreed by stakeholders and approved by the EMRC. This should be supported by an agreed process of transparent competitive tendering of projects. While there is no indication of a reversal of reforms in the water sector, there is a need to press for

additional reforms in the water sector to ensure that water tariffs increase in response to increases in energy costs while additional actions are implemented to improve efficiencies in the delivery of water services – especially in reducing non-revenue water losses which are still estimated at 50 percent.

65. **Social:** In order to protect the poorest households from increases in global energy costs feeding through to both electricity and water tariffs an expansion of the NAF coverage may be needed for the most vulnerable households especially if sector cross-subsidies are reduced. The existing level of cross-subsidy within the electricity tariff structure is very steep and needs to be reduced to avoid creating perverse incentives e.g. lowering tariffs for wealthier households or perverse disincentives for large electricity consumers to move to self-generation of electricity. In the electricity sector this would enable a reduction in the cross-subsidy built into the tariff structure. In the water sector it would protect the poorest households from the increases in the water tariff needed to ensure financial sustainability - meeting the operating cost recovery ratio target of 100 percent.

66. **Institutional and technical:** In the both the energy and water sectors there is a need to strengthen communication with consumers particularly on the impact of global energy prices service delivery. Despite the PSIA demonstrating that there would be only modest impacts on household welfare in both the energy and water sectors there was greater reluctance to raise tariffs in the water sector. This was due to the combination of: i) reservations about burdening poorer households with higher costs water – as access to water is seen as a right – and; ii) the knowledge that many poorer households are supplied by communal (or multi-family) connections that would not automatically benefit from the cross-subsidies embedded in the tariff structure.

5. ASSESSMENT OF BANK AND BORROWER PERFORMANCE

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

67. **Rating: Satisfactory. The DPL built on a strong analytical base and active policy dialogue with government and development partners in both the energy and water sectors.** Partnerships with USAID, JICA, KFW, AFD and with IMF helped the emergence of a collective understanding of the challenges faced by the two sectors and the macroeconomic situation in Jordan. DPL loans from multiple agencies – as well as the Extended Financing Facility by IMF – were based on the same or closely related prior actions. The Energy Global Practice of the World Bank, in particular had a well-established program of TA to support tariff rationalization and NEPCO debt management, underpinned by a detailed financial model for tracking the financial viability of the sector.

(b) Quality of Supervision

68. **Rating: Satisfactory. Continuous policy analysis and dialogue, through supervision missions, closely monitored impact of the reforms albeit that a greater presence on the ground would have been beneficial.** Regular short missions for the preparation of the second DPL, which the Government requested to be brought forward, helped keep up pressure on the reform program. Missions engaged with sector agencies, MoPIC and development partners with parallel policy lending operations. In the energy sector progress was triangulated using the independently developed sector financial model. This provided an evidence-based approach to interpreting developments in the sector including their impact on key outcome indicators. The in-depth poverty and social impact analysis also helped assuage concerns over the reform's impacts on the welfare of households. However, given the highly interconnected nature of the energy and water reforms a continuous Bank presence would have been beneficial in facilitating dialogue between the energy and water sectors.

(c) Justification of Rating for Overall Bank Performance

69. Rating: Satisfactory. The combination of a strong analytical base for preparation, alignment with the IMF Program and regular dialogue with stakeholders – both government and development partners – justifies a satisfactory rating**.**

5.2 Borrower Performance

(a) Government Performance

70. Rating: Satisfactory. The Government was committed to fundamental structural reforms to ensure the financial sustainability of both the energy and water sectors. In the energy sector this included commitment to: tariff adjustments and management of NEPCO's debt; diversification of fuel supply resources and the power generation mix and promoting energy efficiency. In the water sector this included commitment to: increasing sector revenues through improved collection of bills, raising tariffs; reducing costs of service delivery through improving energy efficiency; optimizing water resource allocations through increasing wastewater treatment capacity and encouraging its reuse for agriculture as well as managing ground water abstractions.

71. **MoPIC played a key role in aligning development partners with a common set of reforms, shaping prior actions to ensure they were realistic, and, monitoring sector progress against actions and targets.** Based on the anchor program agreed with the IMF, MoPIC ensured that other development partners were aligned with the IMF Structural Benchmark Plan (2013-2017). MOPIC took an active role in shaping the detail of reform actions to ensure that they were both aligned and practical – aiming to anticipate implementation problems up front based on a solid understanding of the two sectors. For example, while the initial Bank proposal was to liquidate NEPCO and WAJ debt this was instead modified to avoid additional financial burden of debt repayment. In the renewable energy and efficiency domain, initial proposals were for JREEEF to introduce a series of financing windows but these were transformed into financing programs (for households, institutions etc).

(b) Implementing Agency or Agencies Performance

72. **Rating: Satisfactory. All of the agencies across energy and water sectors were highly engaged on all aspects of the reforms, with coordination between sectors being the greatest emerging challenge.** Coordination within energy sector institutions (MoEMR, EMRC, NEPCO etc) and within the water sector (MoWI, WAJ, regional utilities) was very strong with all reform actions under their control being implemented efficiently. The biggest challenge was in resolving the impact of higher electricity prices on the water sector. This would have benefitted from better communication among energy, water and MoF to resolve both short-term solutions (balancing electricity and water tariffs with subsidies from MoF) and medium-term solutions such as join water/energy efficiency initiatives.

(c) Justification of Rating for Overall Borrower Performance

73. **Rating: Satisfactory. The strong ownership of reforms ensured that the program was followed through – even when challenged.** Though oil prices rose by much more than anticipated and there were protests against the broader reform process (targeted at the introduction of income tax rises in the summer of 2017) Government

was steadfast – implementing the AETAM in all but two months – driven by the conviction that the short-term pain was in the public interest as it avoided jeopardizing Jordan's fiscal stability as well as its energy and water security.

6. LESSONS LEARNED

74. **Reforming the energy sector which was accumulating debt at nearly 5 percent of GDP a year was essential even though this has made reforming the water sector harder.** Reforming the energy sector at the expense of the water sector was the lesser of two evils. The alternative would have been to reform the smaller problem of financial viability in the water sustainability at the expense of an unsustainable energy sector and the spiraling debt that was incurring.

75. **However, due both to the importance of energy in the water sector as well as the build-up of water sector debt over the past decade macro-economic risk has now been concentrated in the water sector.** While the annual deficit in the municipal water services is only between 1 and 2 percent of GDP, WAJ debt is equivalent to eight percent of GDP and the two BOT PPPs are equivalent to a further seven percent of GDP. WAJ's liabilities are therefore close to 15 percent of GDP growing at between 1 and 2 percent per year, depending on energy prices going forward.

76. **Monitor debt as well as cost recovery – In both the energy and water sector perennial deficits have crystalized as debt and been shifted around institutions: from NEPCO to WAJ and from WAJ to MoF.** This accumulation of deficits and shifting of debt should be monitored carefully across all the MDAs involved in a reform process to understand how reforms in one sector impact on the reforms on other sectors. This will be important going forward in Jordan within the proposed DPL series supporting the 'Five year matrix'.

77. **Automatic policy correction mechanisms can help avoid future financial gaps.** Financial sustainability in the electricity sector was achieved in DPL-1 through a combination of tariff increases, import of cheaper LNG fuel, and fall in global crude oil prices. However, in the absence of an AETAM, the rapid increase in global crude prices during 2018 could have adversely affected the financial viability of the sector. The AETAM ensured that a tariff review was automatically triggered every month by the regulator and a fuel price adjustment was added to the consumer tariffs. As a result, NEPCO would collect an estimated additional JD 257 million during 2018 through the fuel price adjustment clause in the tariff. This has helped Jordan absorb the shock as global Brent oil prices increased from under US$ 50 per barrel when the DPL-2 was approved to nearly US$85 in October 2018.

78. **But ensure tariff adjustment mechanisms in the electricity sector flow through to water sector tariff in small increments.** The municipal water services are now in a difficult position as none of the pressure of higher electricity tariffs has been passed on to water consumers. This has not only led to increasing indebtedness of WAJ but would require a very large water tariff increase to return WAJ to financial equilibrium. Passing on energy increases through an automatic tariff adjustment mechanism in the water sector would have helped keep incremental tariff increases small.

79. **Resolving the sustainability of water services will require combination of central government borrowing to pay down WAJ's more expensive debt and small but steady water tariff increases.** The debt that WAJ accumulated was short-term and at high interest rates compared to the finance that MoF is able to access. Government borrowing to refinance WAJ debt would provide short-term relief from the high interest rates that WAJ faces. In the medium-term Government borrowing can also smooth the transition in bringing water tariffs back up to a sustainable level through tariff increases.

80. **While WAJ is weaned off subsidy medium-term efficiency measures in the water sector are needed to reduce the energy intensity of the sector and to reduce non-revenue water are required.** Replacing old inefficient pumps and introducing renewable energy into the water sector is a good start to reducing energy costs. However, it is clear that there is interest from both the water and energy sectors to identify further synergies including: i) directly connecting heavy loads such as water pumping stations to the grid ii) time of day pricing for water pumping iii) increasing water storage to reduce the need for 24/7 pumping. All these and other synergies require detailed technical analysis and planning based on improved data on water sector energy use. Providing experts to facilitate dialogue would help speed this process up by generating a series of projects that could be outsourced as performance contacts.

81. **Cost reduction in the energy sector is also an important complement to tariff increases for addressing financial sustainability gaps.** Financial sustainability of the electricity sector in Jordan was achieved through a combination of tariff increases and efforts to reduce costs. Indeed, the planned tariff increases for 2016 and 2017 were found unnecessary as NEPCO had achieved cost recovery in Q4 of 2015. This was facilitated by import of LNG through the new terminal at Aqaba, a fall in global crude oil prices, and the introduction of the debt management plan for NEPCO. Tariffs increases were then resumed in 2018 when global oil prices started to rise again. However, a continued focus on minimizing costs through least cost investment plans, competitive pressures, and proper economic signals to producers as well as consumers (for demand management), and diversification of sources of supply for energy security is essential to ensure that costs do not start to mount up again.

82. **Subsidy reforms can potentially lead to cross-subsidy issues later.** While increasing the average electricity tariff to meet the cost of service, Government of Jordan chose to exempt lowest tariff blocks for households as well as some other consumer categories. As a result, the burden of tariff increases was passed disproportionately to the large consumers. This led to an increase in the levels of cross-subsidy across consumers, which subsequently raised the problem of high electricity tariffs for productive sectors and an adverse impact on the competitiveness of the Jordanian economy. This is illustrated in below (figure 5a and 5b). The Tariff Subsidy Index (defined as the share of overall revenue requirement that is provided as a subsidy by the Government or needs to be accounted as a loss or deficit) was brought from 55 percent in 2011 to zero in 2016. However, the Tariff Cross-Subsidy Index (defined as the share of total tariff revenues that is provided as a cross-subsidy by cross-subsidizing consumers) rose from 17.6% in 2011 to 26.4% in 2016. The highest tariffs charged increased from 1.46 times the cost of service in 2010 to 2.84 times the cost of service in 2016. This indicates that the efforts to address subsidy actually led to the rise of cross-subsidies.

Figure-5a: Tariff Subsidy Index

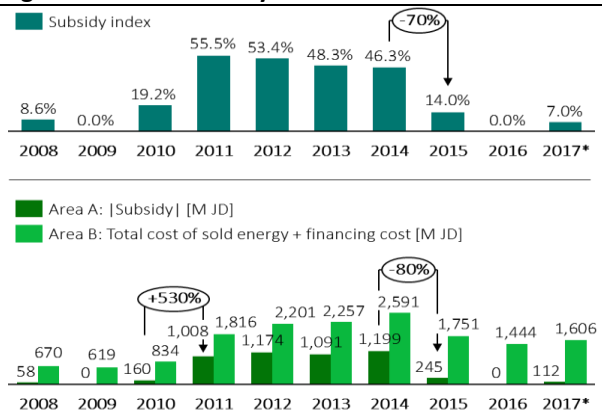
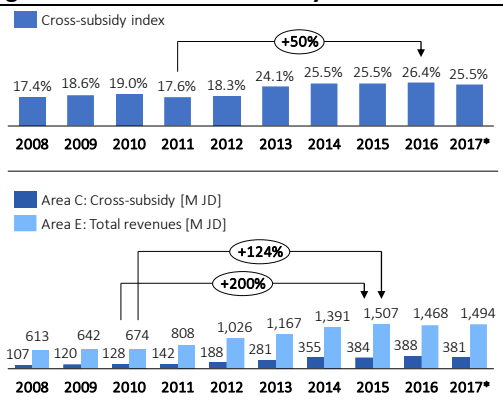


Figure-5b: Tariff Cross-Subsidy Index



83. **Policy reforms in the electricity and water sectors are typically a lengthy process spanning several years and multiple policy interventions.** For example, the present DPL series in Jordan built upon the earlier reforms in the energy sector which involved unbundling of the vertically integrated sector, setting up the regulator, private sector participation in generation and distribution, and enabling renewable energy generation. The first DPL brought the sector to cost-covering levels of tariffs, while the second DPL put in place an automatic tariff adjustment mechanism to ensure that tariffs would not fall short of cost of service going forward. This was followed by the 'First Equitable Growth and Jobs Creation' DPL in June 2018, which in the electricity sector aimed at policy reforms to address high cross-subsidies. The Government of Jordan and the World Bank are currently finalizing a 'five-year reform matrix' which, in the energy sector, is aimed at addressing high cross-subsidies, need for open access to grid network in face of rapidly falling global cost of renewable energy, strengthening regulatory practices, and strengthening energy security. Thus, a multi-stage policy reform spanning across multiple operations is only to be expected in basic service sectors such as energy and water.

84. **The high level of alignment with, and donor coordination around, the Government reform program in energy and water propelled reform.** Anchored in the IMF Structural Benchmark Program, the Government expressed a clear preference for policy over project lending and demanded a high-level of alignment among DPL donors around common reform actions and targets. This level of coordination also worked well for development partners, by lowering transaction costs and stitching together a relay of policy operations with consistent objectives. For example, though the Bank only had a series of two DPLs, this built on the previous IMF SBA and EFF, was complemented by other DPLs during implementation (JICA, AfD and KfW) and followed up with by sector DPLs from AFD and KfW. Furthermore, there were also sector projects funded by donors that complemented the DPLs with TA and investment targeting improvements in capacity and efficiency in both sectors.

85. **Yet even with this high level of coordination the impact of energy sector reform on the water sector's financial viability proved hard to resolve and may have benefitted from a continuous World Bank presence.** Coordination within energy sector institutions and within the water sector was strong with all reform actions under their control being implemented efficiently. However, resolving the impact of higher electricity prices on the water sector proved more challenging as it acted across sector boundaries. A continuous Bank presence – acting with other agencies such as AfD, KfW and USAID who do have a sector specialist in-country presence – would have provided additional convening power to facilitating dialogue among energy, water and MoF to resolve both short-term solutions (balancing electricity and water tariffs with subsidies from MoF) and medium-term solutions such as join water/energy efficiency initiatives.

7. COMMENTS ON ISSUES RAISED BY BORROWER/IMPLEMENTING AGENCIES/PARTNERS

86. The ICR report's main findings were discussed on the November 7th 2018 at a water sector coordination meeting co-chaired by the Secretary General for MoWI and the Donor Group lead from AFD. Comments and feedback from the meeting were incorporated into this report. Minor comments were also received in writing from NEPCO on December 18th 2018 which have also been incorporated in the ICR.

ANNEX 1: BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION PROCESSES

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Husam Beides	Lead Energy Specialist	GEE03	Task Team Leader
Caroline van den Berg	Lead Water Economist	GWA04	Task Team Leader
Ferhat Esen	Senior Energy Specialist	GEE01	Team Member
Iyad Rammal	Senior Infrastructure Specialist	GWA05	Team Member
Wissam Harake	Senior Economist	GMTMN	Team Member
Lea Hakim	Senior Economist	GMTMD	Team Member
Africa Olojoba	Lead Environmental Specialist	GEN07	Team Member
Concepcion Otin	Senior Financial Officer	FABBK	Team Member
Jad Raji	Senior Financial Management Specialist	GGOMN	Financial Management Specialist
Maya Karam	Senior Counsel	LEGAM	Team Member
Evarist Baimu	Senior Counsel	LEGES	Team Member
Tania Meyer	Resident Representative	MNCJO	Team Member
Mark Njore	Program Assistant	GEE05	Team Member
Nada Abou-Rizk	Senior Program Assistant	MNCLB	Team Member
Mikul Bhatia	Senior Energy Economist	GEE05	Team Member
Joern Huenteler	Senior Program Assistant	GEE01	Team Member
Tracy Hart	Energy Specialist	GEN01	Team Member
Jad Mazahreh	Senior Environmental Specialist	GGOMN	Team Member
Fatiha Amar	Operations Analyst	GSP05	Team Member
Sharon Faulkner	Senior Program Assistant	GWA05	Team Member
Vivien Foster	Lead Economist	GGIVP	Team Member
Sepehr Ahmadi	Senior Procurement Specialist	GGOPM	Procurement Specialist
Maiada Kassem	Finance Officer	WFACS	Finance Officer
Georges Rjaily	Finance Analyst	WFACS	Finance Analyst
Supervision			
Husam Beides	Lead Energy Specialist	GEE03	Task Team Leader

Caroline van den Berg	Lead Water Economist	GWA04	Task Team Leader	
Ferhat Esen	Senior Energy Specialist	GEE01	Team Member	
Iyad Rammal	Senior Infrastructure Specialist	GWA05	Team Member	
Wissam Harake	Senior Economist	GMTMN	Team Member	
Lea Hakim	Senior Economist	GMTMD	Team Member	
Africa Olojoba	Lead Environmental Specialist	GEN07	Team Member	
Concepcion Otin	Senior Financial Officer	FABBK	Team Member	
Jad Raji	Senior Financial Management Specialist	GGOMN	Financial Management Specialist	
Maya Karam	Senior Counsel	LEGAM	Team Member	
Evarist Baimu	Senior Counsel	LEGES	Team Member	
Tania Meyer	Resident Representative	MNCJO	Team Member	
Mark Njore	Program Assistant	GEE05	Team Member	
Nada Abou-Rizk	Senior Program Assistant	MNCLB	Team Member	
Mikul Bhatia	Senior Energy Economist	GEE05	Team Member	
Joern Huenteler	Senior Program Assistant	GEE01	Team Member	
Tracy Hart	Energy Specialist	GEN01	Team Member	
Jad Mazahreh	Senior Environmental Specialist	GGOMN	Team Member	
Fatiha Amar	Operations Analyst	GSP05	Team Member	
Sharon Faulkner	Senior Program Assistant	GWA05	Team Member	
Vivien Foster	Lead Economist	GGIVP	Team Member	
Sepehr Ahmadi	Senior Procurement Specialist	GGOPM	Procurement Specialist	
Maiada Kassem	Finance Officer	WFACS	Finance Officer	
Georges Rjaily	Finance Analyst	WFACS	Finance Analyst	

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
Total:	92.86	623973.14
Supervision/ICR		
Total:	26.81	211857.88

ANNEX 2: LIST OF SUPPORTING DOCUMENTS

GoJ 2013. Structural Benchmark - Action Plan to Reduce Water Sector Losses.

MoWI 2015. Jordan Water Sector Facts and Figures.

MoWI 2016. Structural Benchmark - Action Plan to Reduce Water Sector Losses. Progress Report No. 1

MoWI 2017. Structural Benchmark - Action Plan to Reduce Water Sector Losses. Progress Report No. 2

MoWI 2018. Jordan Water Sector Facts and Figures.