



Report Number : ICRR0021535

1. Project Data

Country

Jordan

Practice Area(Lead)

Energy & Extractives

Programmatic DPL
Planned Operations: 0

Approved Operations: 0

Operation ID

P154299

Operation Name

JO-Energy/Water Sector Reforms DPL

L/C/TF Number(s)

IBRD-85300

Closing Date (Original)

30-Sep-2016

Total Financing (USD)

250,000,000.00

Bank Approval Date

18-Sep-2015

Closing Date (Actual)

30-Sep-2016

IBRD/IDA (USD)
Co-financing (USD)

Original Commitment

250,000,000.00

0.00

Revised Commitment

250,000,000.00

0.00

Actual

250,000,000.00

0.00

Prepared by

Fernando Manibog

Reviewed by

Victoria Alexeeva

ICR Review Coordinator

Ramachandra Jammi

Group

IEGSD (Unit 4)

Country

Jordan

Practice Area(Lead)

Water

Operation ID

P160236

Operation Name

Second Programmatic Energy and Water DPL (P160236)



L/C/TF Number(s)	Closing Date (Original)	Total Financing (USD)
IBRD-85300,IBRD-86730,TF-A4035	31-Dec-2017	250,000,000.00
Bank Approval Date	Closing Date (Actual)	
01-Dec-2016	31-Dec-2017	
	IBRD/IDA (USD)	Co-financing (USD)
Original Commitment	225,000,000.00	25,000,000.00
Revised Commitment	225,000,000.00	25,000,000.00
Actual	225,000,000.00	25,000,000.00

2. Program Objectives and Policy Areas

a. Objectives

To improve the financial viability and increase the efficiency gains in the energy and water sectors in Jordan

This same Program Development Objective (PDO) is stated on page 1 of the respective Program Documents dated August 17, 2015 for the first loan and November 9, 2016 for the second loan that financed the First and Second Programmatic Energy and Water Sector Reforms Development Policy Loans (DPLs).

For the purposes of this ICR Review, the results of this DPL series will be assessed based on the following sub-objectives:

Objective 1: To improve the financial viability of the energy and water sectors

Objective 2: To increase the efficiency gains in the energy and water sectors

The PDO cannot be parsed further in terms assessing the energy and water sectors separately, because those two sectors are strongly interdependent in Jordan. Energy use for water pumping and treatment account for half of the costs in the water sector. In fact, the water sector claims 15 % of Jordan's total electricity generation and is the largest single energy consumer. Consequently, policy and operational changes in one sector directly impact the other sector, hence careful coordination between them is required.

b. Pillars/Policy Areas



The DPL series supported a policy program that was structured around two pillars—corresponding to Objectives 1 and 2 indicated above—under which significant reforms were to be pursued:

Pillar One: Improve the financial viability of the electricity and water sectors

Under Pillar One, the reform aspects were to:

1. Achieve electricity tariff cost recovery
2. Resolve the debt of the National Electric Power Company (NEPCO)
3. Enhance cost recovery in the water sector

Pillar Two: Increase the efficiency gains in the energy and water sectors

4. Diversify to cleaner fuel supply for power generation and scale up the development of domestic renewable energy resources and energy efficiency
5. Reduce electricity distribution network losses
6. Scale up energy efficiency and renewable energy in the water sector
7. Optimize the allocation of water resources

c. Comments on Program Cost, Financing, and Dates

Program Cost. The total commitment for the DPL series was US\$425 million, of which US\$250 million was for the First DPL and US\$225 million was for the Second DPL.

Financing. The First and Second DPLs were financed through IBRD loans that were disbursed respectively in a single tranche as budgetary support to the Borrower. The actual disbursements were US\$249.38 million for the First DPL and US\$224.44 million for the Second DPL. Co-financing of US\$25 million on a grant basis was also provided from the Concessional Financing Facility—a partnership sponsored by the World Bank, the UN, and the Islamic Development Bank Group intended to mobilize the international community to meet the financing needs of middle-income countries that are hosting large numbers of refugees.

Borrower Contribution. There was no Borrower contribution.

Dates. The First DPL was appraised in July 6, 2015, approved in September 18, 2015, and closed about a year later in September 30, 2016 (a midterm review was conducted in May 27, 2016). The Second DPL was appraised in September 23, 2016, approved in December 1, 2016, and closed over a year later in December 31, 2017 (a midterm review was conducted in May 8, 2017).

3. Relevance of Objectives & Design



a. Relevance of Objectives

The objectives of the DPL series were derived from the Government's own priority to reform Jordan's energy and water sectors, which was shared by the Bank. The statement of the objectives was clear and measurable. On the Government's side, the policy reforms were aligned fully with the Jordan 2025 Vision document that called for self-reliance and financial sustainability through the enhancement of productivity and financial sustainability across economic sectors. Moreover, the objectives were a necessary response to the major challenges on both the electricity and water sectors stemming from the influx of refugees from Syria. The Syrian refugee crisis has added pressure on the electricity and water sectors by accelerating demand growth and possibly reducing collection rates. Electricity consumption grew by 4.8 percent and water pumping by 3.8 percent, on the average, between 2010 and 2015. Northern governorates that were most affected by the Syria crisis showed an additional increase of 2.3 percent compared to governorates in other parts of Jordan. Water was already being rationed before the Syrian crisis, yet with the massive refugee influx, demand increased sharply by about 40 percent in the northern governorates. The cost of supply increased because of high-cost supply mechanisms such as water trucks, and groundwater extraction and overexploitation accelerated. Consequently, by 2014, the Government had been able to recover only 70 percent of its water sector expenditures from revenues. In 2015, when the Government reduced significantly its transfers to the water sector, the debt of the Water Authority of Jordan (WAJ) increased to 1.4 percent of GDP.

On the Bank's side, the program of policy reforms in the DPL series supported the key objectives of the Bank's FY2017-2022 Country Partnership Framework (CPF), which aims to improve the quality and equity of services delivery, under the CPF's second pillar. The CPF specifically emphasized energy and water sector management as critical sectors for strategically promoting service delivery improvements, fiscal discipline, and private sector development. Successful reforms would contribute to the Bank's twin goals of reducing poverty and promoting shared prosperity, by creating the incentives for improved cost recovery and increased efficiency in the two sectors. The inability to recover costs and persistent inefficiencies were key factors leading to fiscal and sector deficits.

Tackling the two sectors together underlined the substantial relevance of the DPL program's objectives. It was important to reform the energy sector, which was accumulating debt at a rate of nearly 5 percent of GDP per years, but this has made reforms in the water sector more difficult, due to the high amounts of energy use in the water sector. Although the water sector had a financial viability problem, it was smaller compared to propping up the energy sector's spiraling and unsustainable debt, which would have had much more serious macro-fiscal consequences.

In addition to the appropriate formulation of cross-cutting objectives for both the energy and water sectors, the Program Documents (PDs) for the two DPLs also addressed "realism", i.e., the PDs considered "capacity in the country" and "what is a reasonable expectation for the PDO given the possible wide range of constraints in the operational context", as required by IEG's assessment guidelines. Page 17 of the ICR assessed the level of the Government's commitment to reform, as well as the partnerships between the Government, the



Bank and other donors. The ICR indicated, for example, that DPL loans from multiple agencies were also premised on, or were closely related to, the same prior actions as the DPL series. Paragraph 54 of the ICR briefly assessed the regulatory framework and the Bank's continuing role in strengthening the regulatory process.

Rating
High

b. Relevance of Design

The prior actions were selected appropriately and ranged from substantial to high quality. The criticality of some prior actions was evident. For example, the approval of a 7.5 percent electricity tariff increase in 2015 led to full cost recovery by the fourth quarter of 2015; without that increase, it would have been considerably more difficult to counter the sector's losses from 2016 onwards. The institutional depth of the prior actions was also clear. For example, the introduction of the Automatic Electricity Tariff Adjustment Mechanism (AETAM) helped address what had been a repeatedly difficult process of obtaining approval for a tariff increase from the Council of Ministers and thereafter implementing it. The prior actions also had high value-added. Beyond just the approval of a Debt Management Plan for the National Electricity Power Company, four concrete lines of action were also implemented, including NEPCO using tariff revenues to service the interest on all its outstanding debt and repaying the advances it has received from the Ministry of Finance.

The reform aspects and prior actions of the DPL series – such as the approval of policies and action plans, tariff adjustments, allocation of funding, and activating a fund for renewable energy development and mainstreaming of energy efficiency -- all directly support and were causally linked to the achievement of the program's objectives. The strong causal linkages and direct attribution stems from the thorough and robust macroeconomic and energy sector analytical work that formed the basis for designing the DPL series. A range of institutions including the IMF conducted the in-depth macroeconomic analysis, leading to the consensus that Jordan's fiscal stability was at serious risk because of the level of energy and water sector subsidies. The DPL series was anchored in the IMF's Structural Benchmark Program, in which the Government expressed a clear preference for policy over project lending and required strong coherence among DPL donors around common reform actions and targets. Moreover, the energy sector analysis included the financial modeling of the past impacts and future implications on the delivery of electricity services of debt accumulation and poor cost recovery. The Poverty and Social Impact Assessment for both energy and water also provided insights into the possible impacts of tariff increases on the affordability of energy and water to the poorest households.

The choice of the DPL instrument was also appropriate, given the magnitude of the reforms that straddled two major sectors. The DPLs gave the Government some necessary space to address structural cost recovery issues while (i) continuing to provide services and (ii) keeping up the pressure to continue reforms at the design stage and during the intervening year between the two DPLs. More specifically, the Bank's DPLs – together with budget support operations of JICA, KfW and AFD -- helped to bridge fiscal deficits, especially in



the energy sector, while tariffs were being increased progressively to more closely reflect electricity production costs. The DPLs also freed up some cash that were used to make efficiency improvements, such as installing energy-efficient pumps in water utilities. In this regard, the DPLs complemented and were coordinated with development partners (AFD, GIZ, KfW, USAID and NGOs) who extended medium-term project financing for efficiency improvements such as reducing non-revenue water and electricity network losses. By choosing the DPL instrument, the Bank avoided competing within an already crowded project investment financing space that had high transaction costs.

In sum, the relevance of the design of the DPL series is substantial. The design relied on strong coordination among donors and their high level of alignment with the Government reform program in energy and water sectors, to continue propelling reform. Close donor coordination helped decrease transaction costs and link together a sequence of policy operations with internally consistent objectives.

Rating
Substantial

4. Achievement of Objectives (Efficacy)

Objective 1 **Objective**

To improve the financial viability of the electricity and water sectors in Jordan.

Rationale

Methodological Note. In assessing the two DPLs' efficacy in achieving Objectives 1 and 2, this IEG review has placed emphasis on: (a) the quality of the prior actions (under each DPL) in terms of directly supporting concrete outcomes; and (b) the sustainability of the reforms.

Consequently, this Efficacy section is organized as follows:

- (a) under each of the Objectives 1 and 2 (which are the two policy Pillars), the corresponding reform aspects are presented.
- (b) Under each reform aspect, the quality of the prior actions is assessed, focusing specifically on their causal and direct contribution to achieving intermediate outcomes.
- (c) Each reform aspect section is capped by a discussion of final outcomes and the medium- to longer-term outlook for that specific reform aspect's sustainability.

(Note: The DPL "outputs" would correspond to the completion of the prior actions. For "outcomes", the extent to which intermediate and final outcomes were achieved are assessed under each prior action.)



Theory of Change. The causal chain for the first DPL pillar is clear and transparent. To achieve and sustain cost recovery in the electricity sector, the Government would adopt a solid cost pass-through mechanism that would avoid the difficulties experienced during the 2011-2014 price shocks. Moreover, to achieve and sustain the goal of restoring NEPCO's creditworthiness, the Government would approve, and NEPCO would implement a multi-year debt management plan. In the water sector, the sustained implementation of the Government's program would be achieved by increasing various water tariffs with a view to expanding revenue flows. Moreover, to achieve O&M cost recovery, billing and collection efficiencies would be improved. The causal links leading to the targeted development outcomes are logical and direct.

Efficacy Assessment

Pillar One – To improve the financial viability of the electricity and water sectors

Reform Aspect 1: Achieving Electricity Tariff Recovery - Achieved

First DPL - Prior Action

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.

Intermediate Outcomes:

Under the Government's Electricity Tariff Adjustment Plan (2013-2017), wholesale tariffs increased from an average of 64 fils/kWh in 2012 (fil is 1/1000 of a Jordanian Dinar) to 81 fils/kWh in 2016, via three tariff increases adopted in August 2013, January 2014, and February 2015. This has resulted in raising NEPCO's annual revenues by about JD300 million, thus enabling it to reach cost recovery ahead of the Fourth Quarter 2015 target.

Second DPL - Prior Action

The Borrower's Energy and Minerals Regulatory Commission (ERMC) has adopted an electricity tariff adjustment mechanism, to sustain cost recovery taking into consideration consumer affordability.

Intermediate Outcomes:

Following through on the three tariff increases of 2013-2015, and NEPCO's achievement of cost recovery at the end of 2015, both as mentioned above, there was no need for further tariff adjustment.

Final Outcomes and Outlook for Sustainability



To sustain NEPCO's cost recovery, EMRC has adopted a tariff adjustment mechanism that allows EMRC to pass the cost increases through to the final consumers. On October 5, 2016, EMRC activated the fuel clause in the tariff designed to ensure full cost recovery. Since November 2017, the tariff adjustment mechanism has been applied consistently every month.

At the time of the completion of the DPL series in December 2017, a cost recovery level of 103 % had been achieved, compared to the target of 100 % (the baseline in 2014 was 56 %). Based on information from the ICR team, performance vis-à-vis this reform aspect is significant, because before the introduction of AETAM in October 2016, each tariff increase involved much difficulty to obtain and implement. According to the ICR Team Leader: "The Council of Ministers approval of the 7.5% increase in Feb 2015 was particularly important as it led to full cost recovery being achieved by 2015 Q4 despite that it coincided with falling global oil prices [and] the switch from oil to natural gas as main fuel for power generation - a point at which political appetite for increasing tariffs might well have buckled. This was particularly significant as global oil price decline in 2015 was followed by a spike. Without the February 2015 increase, the sector losses from 2016 onwards would have been more difficult to counter.

In terms of outlook, the Government remains committed to regularly applying the Automatic Electricity Tariff Adjustment Mechanism (AETAM). At the same time, the lower energy costs (from the revival of piped natural gas from Egypt in end-2019) and the resulting increase in energy security may lead to an incrementally smaller role for AETAM.

Reform Aspect 2: Resolving NEPCO's debt – Achieved

First DPL – Prior Action

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 NEPCO.

Intermediate Outcomes:

The Government's inter-ministerial Higher Ministerial Committee on Public Debt developed a Debt Management Plan for NEPCO's accumulated commercial loans and advances from the Ministry of Finance (MOF), which in 2015 amounted to JD4.9 billion or 18.8 % of GDP.

Second DPL – Prior Action

The country's Council of Ministers approved a multi-year Debt Management Plan for NEPCO.

Intermediate Outcomes:

The NEPCO Debt Management Plan was adopted as part of the Second DPL.



Final Outcomes and Outlook for Sustainability:

At the completion of the DPLs in December 2017, NEPCO's Debt Management Plan was implemented and the debt reduction target for 2017 was almost fully met (JD84 million target compared to JD83 million actual). The Plan was aligned with Jordan's overall debt management strategy and has four lines of action:

- (1) NEPCO would service interest on all outstanding debt through tariff revenues;
- (2) Starting 2018, NEPCO would repay the MOF advances of JD2.8 billion through annual repayments of JD90 million over 32 years;
- (3) NEP would refinance commercial debt with debt of longer average maturity; and
- (4) NEPCO would use any available profits to repay part of the commercial debt.

In terms of outlook, the liquidation of NEP debt is expected to remain a challenge, even though NEPCO's legacy debt has been stabilized and interest is being serviced regularly, and NEPCO has been refinancing and consolidating its numerous commercial loans.

Reform Aspect 3: Enhancing cost recovery in the water sector - Achieved

First DPL - Prior Action

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.

Intermediate Outcomes:

To address the worsening issue of over-abstraction of water (estimated at 385 MCM per year)—which had led to increased salinity levels in highland groundwater—tariffs were increased at two levels:

- 10 fils/m³ for abstractions of 75,000 m³ to 200,000 m³ per year for production wells
- 100 fils/m³ for abstractions above 200,000 m³ per year

Second DPL – Prior Action

Further action was taken by the Council of Ministers to approve measures to increase water sector revenues to enhance O&M cost recovery, also in accordance with the Borrower's "Structural Benchmark Government Action Plan to Reduce Water Sector Losses" dated August 2013.

Intermediate Outcomes:



The Government implemented the Structural Benchmark Action Plan cited above. The Water Authority of Jordan (WAJ) achieved an operating cost recovery ratio of 87% in 2016 and 89% in 2017 as targeted in the action plan. The original target was 100% that was subsequently revised.

Final Outcomes and Outlook for Sustainability:

At the completion of the DPL series, the water user tariff covered 89% of the operations and maintenance (O&M) costs of the WAJ and the three regional water companies. This exceeded the formally revised target of 85% (the baseline under the Second DPL was 70%).

However, although revenues have increased, costs of electricity use have also increased since 2017, which has cancelled out the additional revenues. This puts the outcome at some risk. WAJ and its utilities expect a JD135 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. (ICR, page 25) The Government agreed with the IMF to update, adopt and publish the Structural Benchmark Program with the aim of full O&M cost recovery by 2021.

In the future, WAJ will need to continue increasing water tariffs to sustain service delivery. Water tariffs would need to increase by at least 40 percent—a significant increase—to sustain operation and maintenance costs (ICR, para 60). By the end of 2017, WAJ deficits had resulted in JD2.4 billion of debt that needs to be managed. Moreover, in 2018 after the Second DPL closed, electricity costs charged to WAJ increased by more than 40 percent.

Rating
Substantial

Objective 2

Objective

To increase efficiency gains in the electricity and water sectors in Jordan.

Rationale

Theory of Change. The causal links between activities and outcomes for the DPL's second pillar are direct and logical. For the electricity sector, the outcomes relating to efficiency gains consist of diversification of fuel sources for power generation, and reduction in electricity distribution losses. The activities that are expected to achieve these objectives include the implementation of a medium-term fuel supply strategy to increase the shares of natural gas and renewable energy in total power generation. Specifically for renewable energy, activities would be implemented to: (i) increase the transparency of renewable energy development, partly through bylaws for submitting direct proposals; (ii) establish a public data room; (iii) adopt standardized operating protocols that would lead to greater integration of renewable energy in the electricity grid; and (iv) operationalize the financing programs of the Jordan Renewable Energy and Energy



Efficiency Fund (JREEEF) in order to deliver institutional finance for both energy efficiency and renewable energy. For the water sector, the increase in the quality of water treatment to allow for reuse of treated wastewater, as well as additional support and incentives to maintain the progress in ongoing water sector reforms, could be expected to lead to achievement of the DPL's efficiency objective. The efficiency of energy use in the water sector is key to reducing the costs of producing and distributing water in Jordan, made even more critical by the need to avoid a trade-off between future fiscal resiliency and meeting the demands of Syrian refugees.

Pillar Two – To increase the efficiency gains in the electricity and water sectors

Reform Aspect 4: Diversification to cleaner fuel supply for power generation and scaling-up of the development of domestic renewable energy – Achieved or Exceeded

First DPL - Prior Actions

NEPCO has assigned adequate number of staff and implemented a capacity building program for the staff to manage LNG supply to power generation.

The Borrower's Council of Ministers has approved on May 3, 2015, bylaws No. 50 for 2015, on renewable energy direct proposals.

The Borrower's Council of Ministers has approved on May 3, 2015, the Jordan Renewable Energy and Energy Efficiency fund (JREEEF) bylaws No. 49 for 2015; the JREEEF board of directors has approved the business plan for JREEEF; and the Borrower has allocated financing to operationalize JREEEF.

Intermediate Outcomes:

Since 2015, Jordan has been importing LNG under multi-year contracts and the spot market. In 2016, natural gas accounted for 86% of power generation. These have helped reduce fuel costs and achieve cost recovery from tariffs.

The approved bylaws for direct proposals on renewable energy were followed up with Instructions and Requirements for Proposal Preparation and Submission.

Following through on the JREEEF prior actions, JREEEF emerged as a key institution for renewable energy and energy efficiency projects in Jordan.

Second DPL – Prior Actions

NEPCO adopted a strategy for diversification of fuel sources for power generation that relies more heavily on cleaner energy sources.

MEMR established a public data room for renewable energy development to improve transparency.



NEPCO adopted standardized operating protocols for intermittent renewable energy to be integrated into agreements with new renewable energy producers.

Intermediate Outcomes:

NEPCO adopted and started implementing the fuel sources diversification strategy. NEPCO has revived the supply of piped natural gas from Egypt since September 2018. NEPCO also signed a contract for the supply of piped gas from the Leviathan gas field starting in 2019.

MEMR has issued new regulations for renewable energy procurement and has developed an energy web portal to allow public users to access a wide range of data on Jordan's energy sector.

NEPCO has adopted operating procedures in the National Control Center for integrating power generated from renewable energy into the transmission grid. NEPCO has also incorporated these operating procedures in the standardized Transmission Operating Protocols that signed with each renewable energy operator as part of IPP agreements.

Final Outcomes and Outlook for Sustainability:

The target of 3 natural gas import contracts materialized (the baseline was 1 contract) was achieved. The share of gas supply in power generation reached 85.7%, thus exceeding the target of 70% (the baseline in 2014 was 7%).

The share of renewable energy is also increasing rapidly. The JREEEF financing programs were operationalized. JREEEF has restructured itself to align with 7 programs defined by end-user groups, such as households, industry, tourism, etc. Each program has a dedicated program manager. The MEMR annual report includes the JREEEF annual report. Financial information is available in separate quarterly reports.

The share of renewable energy capacity in the overall supply mix was 14.2%, thus exceeding the target of 10% (the 2014 baseline was zero).

In terms of future outlook, Jordan – through independent power producers (IPPs) -- is now a leader in private sector-owned renewable energy investments in the region, with 30 IPP projects totaling 1,374 MW in various stages of development. Sustaining this progress would depend on the Government's ability to procure new capacity cost-effectively and integrate variable renewable energy generation into the grid. The National Energy Efficiency Action Plan (NEEAP) aims to achieve energy savings of 20% from existing consumption levels and increase the share of renewable energy to 10 percent of national energy consumption by 2025.

Reform Aspect 5: Development of a Loss Reduction Program for Electricity Distribution Networks - Exceeded

Second DPL (when this Reform Aspect was introduced) – Prior Actions



The Energy and Minerals Regulatory Commission (EMRC) and selected distribution companies agreed on a multi-year Network Loss Reduction Plan that includes specific yearly loss reduction targets for 2016 and 2017.

Intermediate Outcomes:

The issuance of licenses for distribution companies require EMRC to finalize loss reduction targets every two years. At the end of 2015, EMRC finalized loss reduction targets for 2016 and 2017, which were agreed with the three distribution companies. Loss reduction targets for 2018 and 2019 were agreed at the end of 2017.

Final Outcomes and Outlook for Sustainability

A program was developed and is still under implementation. Losses in the electricity distribution network were reduced to 12.05%, which exceeded the target of 13.25% (the 2014 baseline was 138 % without a program).

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

First DPL-Prior Actions

The Borrower's Council of Ministers has approved on June 2, 2015, an energy efficiency and renewable energy policy for the water sector.

Intermediate Outcomes:

In 2016, following the 2015 policy mentioned above, the Ministry (MoWI) issued a policy for Energy Efficiency and Renewable Energy in the water sector and implemented an investment program to increase renewable energy sources and improve efficiency especially of water pumping.

Second DPL – Prior Actions

In 2016, MoWI embarked on a program of investment to implement the 2015 Policy.

Intermediate Outcomes:

Energy savings in the water sector increased, as the Action Plan of the Efficiency and Renewable Energy Policy was being implemented.

Final Outcomes and Outlook for Sustainability:



The savings amounted to 84 GWh, which exceeded the target of 50 GWh (the 2014 baseline was zero). The 80-MW Ma'an windfarm was commissioned, reaching 66 MW in June 2016, together with 14 MW of other renewable energy projects.

However, in terms of outlook, the total electricity costs of WAJ and the Jordan Valley Authority are expected to continue rising, partly due to the dismantling of energy subsidies and increases since 2017 in global energy costs that are transmitted through NEPCO's tariff adjustment mechanism. The water sector has responded by investing directly in renewable energy development.

Reform Aspect 7: Optimizing allocation of water resources – Exceeded

First DPL-Prior Actions

In 2016, the Borrower's Minister responsible for water and irrigation has approved a policy aimed at regulating surface water utilization in Jordan.

Intermediate Outcomes:

The 2016 Surface Water Utilization Policy guided stakeholders on the optimal use and protection of surface water. The Policy also included necessary measures to promote integrated management.

Second DPL – Prior Actions

MoWI adopted a Water Substitution and Reuse Policy. In addition, the Ministry also adopted a Wastewater Treatment Plant - National Plan for Operation and Maintenance, which includes the use of performance-based operation of wastewater treatment plants.

Intermediate Outcomes:

Based on MoWI's 2016 policy, the amount of treated wastewater used for non-domestic purposes increased, which allowed the re-direction of surface water to municipal use.

Final Outcomes and Outlook for Sustainability

Surface water used for municipal water use reached 131.3 MCM, which exceeded the target of 128 MCM (the 2014 baseline was 123 MCM). The increase in reclaimed wastewater that has become available for agriculture has enabled additional surface water to be directed to municipal use.

As a result of operational improvements at wastewater treatment plants, especially the expansion of As Samra, the volume of treated wastewater used for non-domestic uses reached 144.2 MCM, which exceeded the target of 135 MCM (the 2014 baseline was 110 MCM).



In terms of outlook, the population growth of both host and refugee populations has led to a steady fall in the per capita availability of renewable water resources. As a result, Jordan has depended disproportionately on the over-exploitation of groundwater resources. MoWI's National O&M Plan for wastewater treatment has improved the operation and management of the 33 wastewater treatment plants in Jordan, as they are key in the reuse policy and in improvements to energy efficiency. The Government has also expanded two, performance-based wastewater treatment plants in South Amann and the Zaatari refugee camp, which, together with the Phase III expansion of the large As Samra WWTP under a BOT contract, has expanded the amount of reclaimed water available to agriculture and industry by over 34 MCM per year. This, in turn, has enabled an additional 8.3 MCM of surface water to be channeled to municipal water uses.

Rating
Substantial

5. Outcome

The relevance of objectives First and Second DPLs is **high**. The relevance of design is **substantial**. The efficacy of achieving the two objectives is **substantial**; the targets under the first objective were achieved and under the second one- achieved or slightly exceeded. The efficacy sub-ratings are as follows:

Objective 1: To improve the financial viability of the electricity and water sectors in Jordan - **Substantial**

- Reform Aspect 1: Achieving electricity tariff recovery - *Achieved*
- Reform Aspect 2: Resolving NEPCO's debt - *Achieved*
- Reform Aspect 3: Enhancing Cost recovery in the water sector - *Achieved*

Objective 2: To increase efficiency gains in the electricity and water sectors in Jordan - **Substantial**

- Reform Aspect 4: Diversification to cleaner fuel supply for power generation and scaling-up the development of domestic renewable energy - *Achieved or Exceeded*
- Reform Aspect 5: Development of a loss reduction program for electricity distribution networks - *Exceeded*
- Reform Aspect 6: Scaling-up of energy efficiency and renewable energy in the water sector - *Exceeded*
- Reform Aspect 7: Optimizing allocation of water resources - *Exceeded*



Significant reforms were achieved. Notably, the First DPL brought the sector to cost-recovering tariff levels, while the Second DPL established an automatic tariff adjustment mechanism to ensure that tariffs would not fall short of the cost of service. The overall outcome rating of the DPL series is **satisfactory**.

a. Outcome Rating

Satisfactory

6. Rationale for Risk to Development Outcome Rating

Financial. The Government has maintained its strong commitment to energy and water sector reforms. However, the delay in the transfers from the Government to the Water Authority of Jordan (WAJ), and the freeze in municipal tariff increases since 2016, have resulted in further accumulation of WAJ's arrears in 2018, thus jeopardizing its financial viability. According to the ICR (paragraph 63, page 30), these constraints could be addressed through government borrowing to pay down WAJ's more costly debt, incremental but continuous tariff increases, and accelerated efforts to improve efficiency in the water sector. Water sector reforms are likely to be maintained; however, additional reforms are needed to ensure that water tariffs increase in response to increases in energy costs. In addition, more actions are needed improve efficiencies in water services delivery, given non-revenue water loss levels that are still around 50 percent. For the energy sector, while no reversal of reforms is foreseen, an energy sector investment plan is needed containing a clearly prioritized and properly sequenced set of projects that: (i) has been approved by the Energy and Minerals Regulatory Commission (ERMC); (ii) has been agreed in consultation with stakeholders; and (iii) is supported by an agreed, transparent and competitive tendering process.

Social and Political. Social and political risks remain. Para 61 of the ICR indicates that there have been recent civic protests over the removal of subsidies and the proposed increase in income taxes, which severely constrain the political space for maneuver.

a. Risk to Development Outcome Rating

Substantial

7. Assessment of Bank Performance

a. Quality-at-Entry

The design and appraisal of the DPL series had strong analytical underpinnings and involved active policy dialogue with the Government and other development partners, including the IMF, JICA, KfW, AFD and others. These close consultations led to a consensus on the energy and water sector challenges within Jordan's specific macroeconomic context. The prior actions for DPL loans from other agencies and the IMF's Extended Financing Facility were based on the same or closely related prior actions as the Bank-



financed DPL series. The DPL program's quality was further enhanced by building upon the knowledge base of the Bank's Energy Global Practice, specifically its TA program to support tariff rationalization and NEPCO's debt management, which was underpinned by a detailed financial model for tracking the financial viability of the sector.

Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

The Bank's supervision missions served to monitor closely the program's reform impacts and foster continuous policy analysis and dialogue. The regular short missions to prepare the Second DPL, which was advanced at the Government's request, helped maintain the pressure to continue implementing reforms. The Bank team engaged with the Ministry of Planning and International Cooperation (MoPIC), the sector agencies, and the development partners that were financing parallel policy lending operations. According to the ICR (paragraph 68, page 31), progress in the energy sector "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." The ICR (paragraph 68) notes that 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 and a greater presence on the ground would have been beneficial.

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

8. Assessment of Borrower Performance

a. Government Performance

The Government has shown its ownership, commitment, and willingness to take actions – even when challenged -- to implement fundamental structural reforms keyed toward strengthening the financial sustainability of the energy and water sectors.

In the energy sector, the reforms involved tariff adjustments and management of NEPCO's debt, fuel supply diversification, and the promotion of energy efficiency. Despite protests, the Government remained steadfast in implementing the Automatic Electricity Tariff Adjustment Mechanism within two



months, convinced that the short-term pain was in the public interest as it would help avoid fiscal instability and was therefore in the public interest.

In the water sector, reforms included improvements in collection of bills to increase revenues, cost reductions in service delivery by improving the efficiency of energy use, and the optimization of water resource allocations through increased wastewater treatment capacity, reuse for agriculture, and management of groundwater abstractions.

The Ministry of Planning and International Cooperation (MoPIC) played an active and central role in mobilizing other development partners and building consensus around a commonly shared set of reforms. This involved ensuring the alignment of other development partners with the IMF Structural Benchmark Plan (2013-2017), based on the anchor program agreed with the IMF. MoPIC also helped formulate realistic prior actions, monitor progress in meeting targets, and anticipate implementation problems based on a solid understanding of the two sectors. This was evident from the modification of the initial the initial Bank proposal to liquidate NEPCO and WAJ debt, so that the additional financial burden of debt repayment can be avoided. Another example was to transform into financing programs (for households, institutions, etc.) the earlier proposals to launch a series of renewable energy/energy efficiency financing windows under the Jordanian Renewable Energy and Energy Efficiency Fund.

Government Performance Rating

Satisfactory

b. Implementing Agency Performance

The energy sector institutions (Ministry of Energy and Mineral Resources, Energy and Minerals Regulatory Commission, National Electric Power Company, and others) and the water sector institutions as well (Ministry of Water and Irrigation, Water Authority of Jordan, regional utilities) all coordinated very strongly and implemented efficiently all the reform actions under their control. Within their respective sectors, these agencies were engaged intensively on all of their respective reform aspects. However, coordination between the sectors proved more challenging. There could have been better communications across the two sectors and the Ministry of Finance (MoF) to resolve short-term issues, such as balancing electricity and water tariffs with MoF subsidies, as well as seeking joint water and energy efficiency initiatives and other medium-term solutions (ICR, para 72, page 32).

Implementing Agency Performance Rating

Satisfactory

Overall Borrower Performance Rating

Satisfactory



9. M&E Design, Implementation, & Utilization

a. M&E Design

MoPIC had the central oversight responsibility for M&E, while the sectoral agencies were charged with regular data collection and reporting. MoPIC convened monthly and quarterly meetings with sector working groups and development partners to monitor progress. The M&E design centered on clear and verifiable quantitative indicators complemented by specific actions related to policies and legislation. According to the ICR (paragraph 19, page 18): “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. M&E Implementation

The M&E system was implemented across the sector agencies, its implementation partners, and the Government, with a view to promoting dialogue that was focused on results. To facilitate this, the financial viability indicators were aligned across the stakeholders, such that there were only minor differences across the Government’s and the sector agencies’ M&E frameworks, and the DPLs or investment projects of other development partners.

c. M&E Utilization

The M&E results fed into the dialogue during and after the DPL series. Sector data was also updated regularly as part of the due diligence for operations supported by other development partners, which had different dates and procedures for releasing their respective budget support. After the DPL operations closed, the energy and water sector agencies have been continuing to monitor most of the M&E system’s indicators and outcomes, such as debt levels, cost recovery, and energy savings.

M&E Quality Rating

Substantial

10. Other Issues

a. Environmental and Social Effects



The Program Documents for both the First and Second DPLs discussed at length the adequacy of environmental institutions, regulations and compliance in Jordan. The highlights are presented below. The ICR did not discuss ex post environmental and social aspects. The Program Documents for the DPL loans indicated that: “As per OP 8.60, the World Bank assessed whether specific country policies supported by the DPL series are likely to cause significant effects on the country’s environment, forests, and other natural resources. The assessment concluded that the policies supported by the proposed DPL are not likely to have negative impacts on the country’s natural assets. The tariff reform programs ... can also help in curb the growth in energy and water demand resulting in less environmental degradation. Similarly, efficiency gains (and) promoting growth in REEE development and deeper utilization of natural gas in power generation instead of the more polluting fuel oil and diesel will noticeably improve air quality by reducing energy-related emissions, by as much as 23.5 mt CO₂, thus improving air pollution and reducing the related impacts on human health.” (Program Document of the First DPL, August 17, 2015, pages 32-33)

Over the last 15 years, the Government has made significant improvements in mainstreaming environmental sustainability in projects. This started with the Environmental Protection Law (EPL) 1 of 2003 followed by the Environmental Impact Assessment (EIA) regulations of 2005. The EIA Regulations No. 37 approved in 2005 clearly defined the process and requirements for the EIAs and created screening, review, and oversight structures for implementation; under the overall supervision of the EIA Directorate in the Ministry of Environment. Large-scale private sector energy and water infrastructure development projects have an excellent record of compliance with national environmental and social impact assessment requirements. In smaller, municipal-level or donor-funded projects, compliance is in general good and improving. Finally, many features of the Jordanian Environmental Assessment (EA) system are compatible with the World Bank EA Policy (OP 4.01) as well as with the European Commission EIA Regulations No. 97/11. (Program Document of the Second DPL, November 9, 2016, pages 37-38)

The reform program supported by the DPL series is closely aligned with the Intended Nationally Determined Contribution (INDC) that Jordan submitted to the United Nations Framework Convention on Climate Change in 2015. Under the INDC, Jordan expressed its climate change mitigation intentions in the energy sector, which involves (i) diversifying sources of energy and natural gas imports; (ii) expanding renewable energy development; (3) activating JREEEF to attract private sector energy investments; and (4) rationalizing energy consumption in all sectors and improving their efficiency. Prior actions 2.1 and 2.3-2.9 contribute to these mitigation actions by way of Jordan’s stated intention to: (i) reform water pricing; (2) use groundwater more efficiently; (3) improve wastewater treatment plants; and (4) recycle wastewater. Prior actions 2.3 and 2.10-11 are resilience actions that address climate-related risks and contribute to Jordan’s INDC adaptation commitments. Achieving the planned program results will have a significant impact on greenhouse gas emissions from the power sector. Cumulatively over the period 2016-2030, each percent increase in the share of natural gas in fossil-fueled power generation (results indicator B1) reduces CO₂ emission by an estimated 660,000 tons; each MW of additional renewable energy capacity (results indicator B2) reduces CO₂ emissions by an estimated 21.88 tons; and each 0.1 percent reduction in distribution losses would save and estimated 179,600 tons of CO₂ (results indicator B3). (Program Document of the Second DPL, November 9, 2016, pages 37-38)



b. Fiduciary Compliance

Similarly, although the ICR does not discuss fiduciary compliance as such, the Program Document for the Second DPL indicates that: “Public financial management (PFM) reforms are at the heart of the priorities of the Government of Jordan. In recent years, Jordan has made significant progress in PFM reforms. Among the key reforms with importance in the fiduciary context, notable progress has been achieved in particular, with regard to the following:

- (a) Implementation of Treasury Single Account
- (b) Adoption of an early budget preparation calendar (starts in January of each year) that allows more time for budget policy and strategy analysis and development
- (c) Adoption of a robust budget classification system
- (d) Maintenance of a robust system for monitoring progress of line ministries toward achieving their strategic objectives as per the published budget law using specific key performance indicators
- (e) Transparent and comprehensive budget documentation
- (f) Completion of the rollout of the Government Financial Management Information System (GFMS) for budget preparation and execution to all 53 budget units (ministries, departments, and regional financial centers)
- (g) Establishment of mechanisms designed to facilitate regular monitoring of arrears and introduction of a more effective commitment control system to prevent arrears accumulation
- (h) Establishment of a unified Financial Controls Bylaw that is applied to all government institutions, including independent institutions aiming to address the redundancies and multiplicity of controls

However, while many PFM reforms have been progressing, some issues remain. The initial strategic budget planning phase needs to be developed further and more improvements are required in the subsequent budget preparation stage, where spending plans and budget requests largely exceed the eventual budget settlement. The macro-fiscal framework should be strengthened, and sector strategy review and planning should be effectively integrated into the budget process. (Program Document, Nov 9, 2016, pages 38-39)

c. Unintended impacts (Positive or Negative)

Paras 57 to 62, pages 29 to 30 of the ICR are not really unintended impacts as such, since they discuss WAJ’s accumulated operational deficits and debt burden.

d. Other



11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	---
Risk to Development Outcome	Substantial	Substantial	---
Bank Performance	Satisfactory	Satisfactory	---
Borrower Performance	Satisfactory	Satisfactory	---
Quality of ICR		High	---

Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

12. Lessons

The ICR derives the following key lessons from the DPLs' preparation and implementation experience (with some paraphrasing by IEG):

Debt and cost recovery need to be monitored in both the energy and water sectors when these are interdependent. Persistent deficits could become debt and be shifted around institutions (in the case of Jordan, from NEPCO to WAJ, and from WAJ to MOF). This deficit accumulation and consequent debt shifting needs to be monitored carefully across all the institutions engaged in reform processes to understand how reforms in one sector impact on the reforms on other sectors and adjust accordingly.

Automatic policy correction mechanisms can help avoid future financial gaps. The First DPL helped achieve financial sustainability in the electricity sector through tariff increases, import of cheaper LNG fuel, and the fall in global crude oil prices. Without the automatic electricity tariff adjustment mechanism (AETAM), the rapid increase in global crude prices in 2018 could have adversely affected the financial viability of the sector. The AETAM automatically triggered the regulator's monthly tariff review, resulting in a fuel price increase in the consumer tariffs. This fuel price adjustment clause helped NEPCO collect an additional JD 257 million during 2018, thus helping the country absorb the shock of oil prices increasing from under US\$50 per barrel when the Second DPL was approved in December 2016 to almost US\$85 in October 2018.

There is a need to ensure that tariff adjustments in the electricity sector flow through to water sector tariffs in small increments. None of the pressure of higher electricity tariffs has been passed on to water consumers. Consequently, the municipal water services are now in a difficult position – leading not only to increased indebtedness of WAJ but also the necessity of a very large water tariff increase to return WAJ to financial equilibrium. Passing on the energy tariff increases through an automatic tariff adjustment mechanism in the water sector would have helped keep incremental tariff increases small. Achieving financial



sustainability in water services will require a combination of central government borrowing to pay down WAJ's more expensive debt and small but steady water tariff increases.

While weaning the water sector from subsidies in the medium-term, efficiency measures needed to reduce the water sector's energy intensity and non-revenue water. Good starts for reducing energy costs would be to replace old inefficient pumps and introduce renewable energy into the water sector. The water and energy sectors need to identify further synergies such as: (i) directly connecting water pumping stations and other heavy power loads to the grid; (ii) time-of-day pricing for water pumping; and (iii) increasing water storage to reduce the need for 24/7 pumping. To harness these synergies, detailed technical analysis and planning required based on improved data on water sector energy use. Technical experts are needed to facilitate this cross-sectoral dialogue and generate a series of projects that could be outsourced as performance contracts. At the same time, there is a need to ensure that efforts to address subsidies do not actually led to the rise of cross-subsidies.

To address financial sustainability gaps, cost reductions in the energy sector need to complement tariff increases. The financial sustainability of Jordan's electricity sector was achieved through a combination of tariff increases and cost reduction efforts. To ensure that costs do not rise again, it is essential to continue focusing on minimizing costs through least-cost investment plans, allowing competitive pressures, giving proper economic signals to producers as well as consumers to manage demand, and diversifying supply sources for energy security.

Policy reforms in the electricity and water sectors are lengthy processes spanning several years and requiring multiple policy interventions. The DPL series built upon the earlier reforms in the energy sector to unbundle the vertically integrated sector, set up the regulator, promote private sector participation in generation and distribution, and enable renewable energy generation. This DPL series was followed in June 2018 by the 'First Equitable Growth and Jobs Creation' DPL, which aimed at policy reforms to address high cross-subsidies in the electricity sector. The Government and the Bank are finalizing a 'five-year reform matrix' which, in the energy sector, would continue to address the high cross-subsidies, and meet the need for (i) open access to the grid network given the rapidly falling global cost of renewable energy, (ii) strengthening regulatory practices, and (iii) enhancing energy security. In summary, a multi-stage policy reform process across multiple operations is characteristic of improving basic service sectors such as energy and water.

13. Assessment Recommended?

No

14. Comments on Quality of ICR



The ICR is comprehensive and clearly written. Section 1 on the project context provides an analytically well-grounded and persuasive discussion of the context and specific issues that justified the DPL series. The relatively minor changes in the triggers between the First and Second DPLs, as delineated in Section 1.3, were transparent and succinct. The table presented from pages 13 to 16 provides a detailed and adequate account of the performance and status of the Prior Actions for each of the reform aspects, across the two DPLs; the substantive discussion provided in the table closely aligns with the theory of change for the DPL series, thus providing a solid basis for assessing the program's results. The efficacy section is thorough, based on detailed and robust evidence (for which eight Figures were provided), and focused on accountability as well as lesson-learning. The lessons are derived directly from the experience of preparing and implementing the DPL series, many of which are of broader relevance and applicability for DPL operations in the energy and water sectors. Although long at 36 pages for the main text, with some missing words and several typographical errors, the document is consistent with the Bank's guidelines for ICR preparation.

a. Quality of ICR Rating

High