



**Power Sector Financial Vulnerability Assessment**  
Impact of the Credit Crisis on Investments in the Power Sector  
Hashemite Kingdom of Jordan

Currency Equivalents

1 USD = 0.71 JD

1000 Fils = 1 JD

Fiscal Year

January 1 – December 31

Abbreviations and Acronyms

BOO	Build, own, operate
CCGT	Combined-cycle gas turbine
CEGCO	Central Electricity Generating Company
DFIs	Development financial institutions
EDCO	Electricity Distribution Company
ERC	Electricity Sector Regulatory Commission
FY	Fiscal year
GOJ	Government of Jordan
GWh	Gigawatt-hour (one billion watt-hours)
GT	Gas turbine
HFO	Heavy fuel oil
IDECO	Irbid District Electricity Company (Distribution)
IPP	Independent power producer
JEPCO	Jordan Electric Power Company (Distribution)
JD	Jordanian dinar
kWh	Kilowatt-hour (one thousand watt-hours)
MEMR	Ministry of Energy and Mineral Resources
MENA	Middle East and North Africa
MW	Megawatt (one million watts)
NEPCO	National Electric Power Company (Transmission)
PPA	Power purchase agreement
Samra	Samra Electric Power Generation Company
ST	Steam turbine

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### **Acknowledgements**

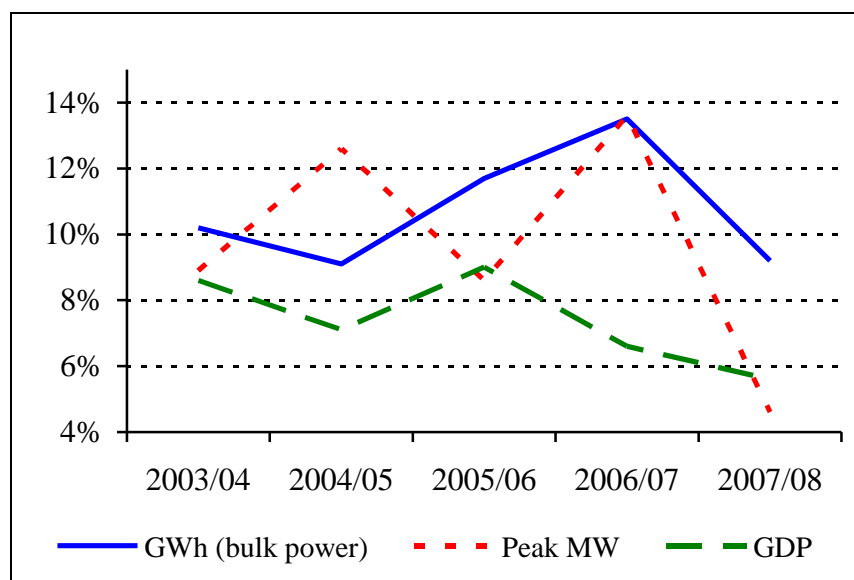
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## Introduction

- **At the end of 2009, the electric power sector in Jordan comprised two operating private power generation companies (CEGCO<sup>1</sup> and AES PCS Jordan), a state-owned generation company (Samra), a state-owned transmission company, system operator and single-buyer (NEPCO), and three private distribution companies (JEPCO, EDCO and IDECO).** Under this sector structure, the private sector is substantially responsible for power generation and distribution. The public sector is exclusively in charge of transmission, with a limited involvement in generation. The sector is regulated by an independent Electricity Sector Regulatory Commission (ERC); its main duty is setting electricity tariffs.
- **Demand for electricity** – measured by bulk sales from NEPCO to distribution companies and large users -- **has been growing on average 10.8 percent per annum**, from about 7,660 GWh in 2003 to about 12,770 GWh in 2008. Corresponding to the demand growth, overall peak demand has grown 9.7 percent per annum on average, from 1,428 MW in 2003 to 2,260 MW in 2008. Electricity demand growth has exceeded Jordan's GDP growth, which averaged 7.4 percent over the same period<sup>2</sup>.

**Figure 1: Jordan's Electricity Demand vs. GDP Annual Growth**



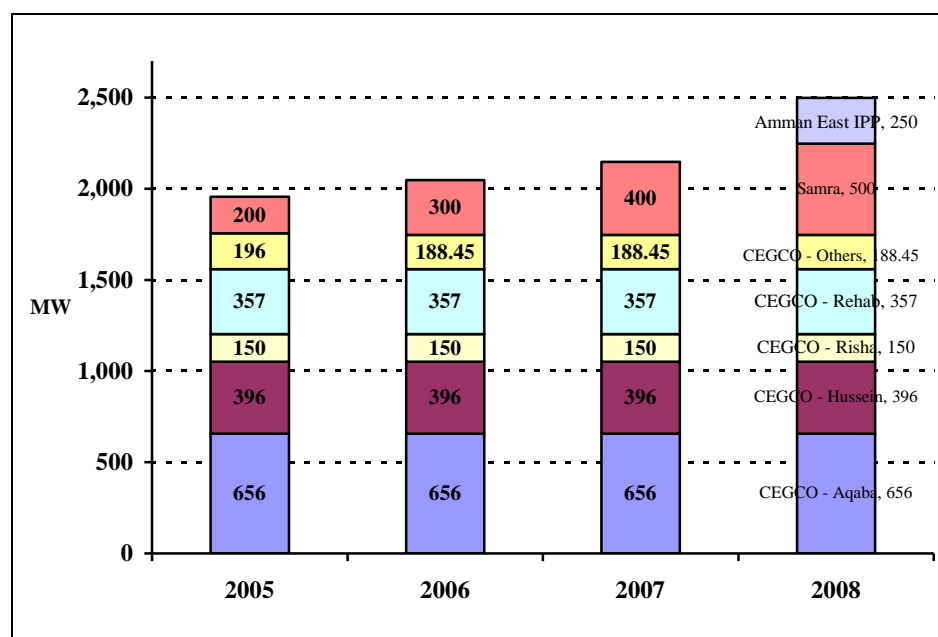
Source: NEPCO; World Development Indicators

<sup>1</sup> CEGCO was privatized in 2007 and is currently 51 percent privately-owned.

<sup>2</sup> Source: World Development Indicators.

- To keep up with the growing demand, **electricity generation capacity has been added, reaching 2,524 MW by end 2008**. This generation capacity is complemented by interconnections with Egypt and Syria, which in 2008 provided 282 MW of the 2,260 MW peak.
- A relatively small electric system, Jordan's **generation capacity is concentrated in five power stations**. Their combined installed capacity totaled 2,159 MW by end 2008, accounting for 85 percent of the country's available generation capacity. The incumbent CEGCO owns Aqaba and Hussein power stations, which are older steam power stations using natural gas and heavy fuel oil (HFO) as primary fuels. Newer CCGT power stations have been added in recent years, namely CEGCO's 297 MW CCGT unit at Rehab and Samra's first 300 MW CCGT unit<sup>3</sup>. The Amman East IPP, the first greenfield IPP, just achieved full CCGT operation in August 2009. Jordan started importing natural gas from Egypt in 2003, which paved the way for more natural gas-based power generation, including by the more efficient CCGT units<sup>4</sup>.

**Figure 2: Main Power Stations in Jordan (MW)**



Source: CEGCO, Samra, Amman East IPP.

<sup>3</sup> Samra is currently implementing its second 300 MW CCGT unit, which is scheduled to bring totaled installed capacity to 600 MW CCGT units by 2010. By end 2008, 200 MW GTs of the planned second 300 MW CCGT are operational.

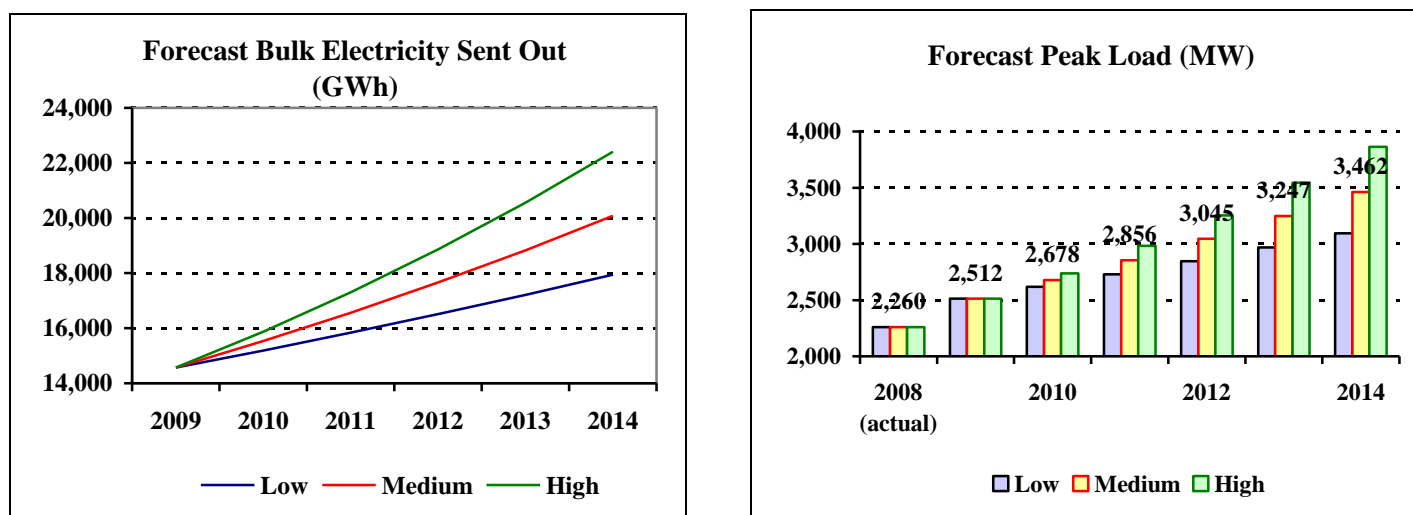
<sup>4</sup> By 2008, imported Egyptian natural gas used in power generation amounted to about 2.7 billion cubic meters (bcm), while locally available gas added 0.2 bcm. Source: MEMR, CEGCO.

## Section 1 – Power Sector Investment Plan

Over the next five years, the growth in Jordan’s power demand is projected to decline from that of the past five years, which averaged 10.8 percent per annum. This section discusses a recent power demand forecast, which while projecting a decline in demand growth, still calls for as much as 1,300 MW of incremental generation capacity in the next five years. The required investment in the power sector is estimated at about JD 2.1 billion (US\$ 3 billion) during this period.

1. A revised electricity demand forecast envisages slower demand growth over the next five years. The *low demand growth* scenario estimates NEPCO’s bulk electricity sales<sup>5</sup> growing around 4 percent per year on average; the *medium growth* scenario projects demand growth averaging around 6 percent (compared to 10.8 percent during 2003-2008).
2. This projected decline in demand growth translates into an estimated incremental peak load of about 100 – 130 MW per year in the low demand growth scenario and about 160 – 220 MW in the medium growth scenario.

**Figure 3: Power Demand Projections 2009-2015**



Source: NEPCO’s March 2009 power demand forecasts

<sup>5</sup> From NEPCO (the transmission company) to distribution companies and large users.

3. For the next five years, this demand growth is expected to be met by new generation capacity which began coming online in 2009. This new generation capacity is to include:
- i. 370 MW Amman East CCGT power station, the first greenfield IPP in Jordan that achieved full commercial operation in August 2009;
  - ii. Completion of Samra's second 300 MW CCGT unit by 2010, and third 300 MW CCGT unit by 2012;
  - iii. 373 MW Al-Qatrana CCGT power station, the second IPP with scheduled full commercial operation in 2011;
  - iv. Up to 40 MW wind IPP at Kamsha<sup>6</sup>;
  - v. Up to 250 MW wind IPP at Fujeij;
  - vi. Up to 100 MW new power station to meet peak demand; and
  - vii. Up to 100 MW concentrated solar thermal power station in southern Jordan
    - The third IPP is expected to be developed but may not achieve full commercial operation by 2014.

**Figure 4: Estimated Power Generation Capacity (MW) in Jordan 2009 – 2014**

	2008	2009	2010	2011	2012	2013	2014
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Beginning available MW		2,524	2,644	2,998	3,352	3,552	3,752
<i>Addition:</i>							
370 MW Amman East IPP	250	120					
373 MW Al Qatrana IPP			254	119			
300 MW Samra 2nd expansion	100		100				
300 MW Samra 3rd expansion				200	100		
35 MW Kamsha wind				35			
100 MW Fujeij wind					100		
[370 MW] IPP 3							250
[100 MW peaking plant]						100	
100 MW CSP						100	
<i>Retirement:</i>							
150 MW (3x50) Risha GTs							
363 MW Hussein STs							
33 MW Hussein diesel turbines							
Ending available MW	2,524	2,644	2,998	3,352	3,552	3,752	4,002
Peak load (medium growth)	2,230	2,512	2,678	2,856	3,045	3,247	3,462
Reserve margin (medium growth)	12%	5%	11%	15%	14%	13%	13%

<sup>6</sup> Jordan's National Energy Strategy calls for 10 percent of the country's energy mix to come from renewable energy resources by 2020. Wind and solar power generation are being planned to support this objective. Source: Ministry of Energy and Mineral Resources. February 2010

Source: Annual reports of NEPCO, Samra and CEGCO; Staff estimate. *Note:* (i) Retirement of existing generating units may be subject to extension of power purchase agreements. As such, this assessment indicates major units that may be retired, but does not count them as retired; (ii) Reserve margin excludes interconnections with neighboring countries.

4. There will also be additional investment in electricity transmission and distribution. The following table provides an indication of required capital expenditures in the Jordanian power sector.

**Figure 5:** Estimated Power Sector Capital Expenditures in Jordan 2009 – 2014

Description	Responsible entity	Estimated investment value (JD million)						Total (JD million)
		2009	2010	2011	2012	2013	2014	2010 - 2014
<b>Generation</b>								
373 MW Al Qatrana	Kepeco/Xenel	110	110	110				220
300 MW CCGT	Samra (2nd block)		85					85
300 MW CCGT	Samra (3rd block)		85	85	85			256
35 MW Kamsha wind	Private sector		25	25				50
100 MW Fujeij wind	Private sector		47	47	47			142
[370 MW] IPP 3	Private sector					158	158	315
[100 MW peaking plant]	Private sector				43	43		85
100 MW CSP	Private sector				142	142		284
<i>Total - generation</i>		110	352	267	317	342	158	1,437
<b>Transmission</b>								
Generation connection	NEPCO	1	8	1	0	0	2	12
Transmission lines	NEPCO	39	31	19	14	38	14	117
Substations	NEPCO	59	53	20	13	13	9	107
Control & communication	NEPCO	1	0	1	0	0	1	3
<i>Total - transmission</i>		100	92	42	27	51	26	238
<b>Distribution</b>								
JEPCO area	JEPCO	50	50	50	50	50	50	250
EDCO & IDECO area	EDCO & IDECO	40	40	40	40	40	40	200
<i>Total - distribution</i>		90	90	90	90	90	90	450
<b>Grand Total</b>		<b>300</b>	<b>535</b>	<b>399</b>	<b>434</b>	<b>483</b>	<b>274</b>	<b>2,125</b>

Source: NEPCO; Samra; JEPCO; Kingdom Electric; World Bank staff estimates.

5. In aggregate, the power sector is estimated to require as much as half a billion dinars per year of new capital expenditures in the coming five years. If electricity demand growth were to decline beyond what is projected, some investment could be delayed or phased, especially on larger projects such as the Samra 3<sup>rd</sup> expansion and IPP3.



- **In generation, required private sector financing (debt and equity) could reach as much as JD 1 billion (US\$ 1.4 billion) between 2010 and 2014.** Assuming a 75:25 ratio of debt to equity financing, this translates into about JD 750 million of debt and JD 250 million of equity financing for private projects.
- **In transmission, NEPCO’s cash flow from operations was on the order of JD 20 – 50 million (US\$ 28 – 70 million) per year during 2005 – 2007. Assuming JD 30 million per year of self financing, NEPCO will therefore need to raise an estimated JD 90 million (US\$ 126.8 million) during 2010 - 2014.**
- In distribution, customer contributions remain a main source of financing, providing as much as a half of required financing. The remaining amount is largely funded by internal cash resources of the distribution companies.

### Summary Financial Situation of the Power Sector Entities

#### 6. In the generation sub-sector:

- The most testing project, the financing of the second IPP Al-Qatrana project, successfully closed its financing in October 2009. As much as US\$ 340 million of project financing was reportedly raised, including direct loans from the Export-Import Bank of Korea (KEXIM), the Islamic Development Bank and from commercial lenders<sup>7</sup>. KEXIM provided risk coverage, which facilitated lending by at least two commercial international lenders new to Jordan’s power sector<sup>8</sup>.
- The financing of Samra has to date been met by development finance institutions (DFIs) and local lenders. According to the company, it is now searching for financing of its third CCGT block (starting with 2 gas turbines, with an estimated financing need of about US\$ 200 million). It is expected that financing will be provided by DFIs, supplier credits, and perhaps local lenders.
- The financing of wind IPP is on the horizon, namely the Al-Kamsha and the Al-Fujeij projects. According to the Ministry of Energy and Mineral Resources (MEMR), Al-Kamsha financing may receive financing support from DFIs. As for Al-Fujeij, the financing phase is expected to follow bidder pre-qualification currently being implemented by MEMR.

#### 7. In the transmission sub-sector:

- 2008 was a financially difficult year for NEPCO, as it shouldered the historic high cost of liquid fuels but its selling tariffs were not adequately adjusted. Consequently, NEPCO recorded a loss of JD 40.5 million (6.6 percent of sales; US\$ 57 million) in that year. It is understood that NEPCO should have recovered part of the loss in 2009 as liquid fuels cost has declined vis-à-vis NEPCO’s selling tariffs.

<sup>7</sup> Source: Project Finance International and World Bank staff assessment.

<sup>8</sup> BNP Paribas and KfW IpeX-Bank. Source: Chadbourne & Parke LLP and World Bank staff assessment.

- As of early 2010, it is likely that NEPCO’s liquidity situation has returned to a more normal circumstance. Despite the loss in 2008, NEPCO remains financially sound with strong capitalization (total liabilities-to-equity ratio at 2.1) supported by a cost-reflective electricity tariff system<sup>9</sup>, and the implicit support of the government as the sole shareholder in the company. Its operating cash flow, which ranged from JD 20 million to JD 50 million (US\$ 28 – 70.4 million) per year during 2005 – 2007, will eventually be available to partially self-fund future investment.

#### 8. In the distribution sub-sector:

- The distribution companies have in recent years used little debt financing, therefore, there is no immediate funding gap.
- Following the privatization of EDCO and IDECO, new loan was obtained from DFIs in early 2009 which should address any immediate financing requirements<sup>10</sup>.
- For JEPCO, the company may need to review its debt strategy due to the upcoming changes to its concession terms in 2012. One major change concerns JEPCO’s return on investment: beginning in 2012 its return will be determined based on the regulatory assets base instead of on paid-in capital. Consequently, JEPCO may have to consider using more debt financing to optimize its return, and thus may need to tap the debt market in the next two years in preparation of this change<sup>11</sup>.

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<sup>9</sup> The regulator is now working on introducing an automatic fuel price adjustment mechanism to complement the tariff formula. This mechanism is expected to address a situation of an unforeseen large fuel price increase such as in 2008.

<sup>10</sup> The IFC proposed loan to EDCO of about US\$ 49 million was approved in March 2009. Source: IFC.

<sup>11</sup> By end 2007, JEPCO’s assets totaled JD 362 million, equity totaled JD 96 million, and liabilities totaled JD 266 million. Of the liabilities, commercial debt amounted to about JD 16 million.

## Section 2 – Jordan’s Fiscal Space and Power Sector

*The current decade has seen declining public sector involvement in the domestic power sector. Of the estimated JD 2.1 billion (US\$ 3 billion) in capital expenditure required for 2010-2014, the public sector portion is estimated at JD 0.6 billion (US\$ 0.8 billion), solely in power generation and transmission. The GOJ’s exposure to the sector is limited to (i) debt guarantee of public power companies (and some outstanding debt of privatized companies) and (ii) contingent liabilities from power purchase arrangements with IPPs. This assessment has found that the government’s potential incremental exposure in the power sector is not substantial. As such, the Jordanian government is in a position to prudently assume the fiscal risk that arises from the power sector.*

**1. Gradual elimination of the oil subsidy significantly helped Jordan’s fiscal position in recent years.** The Government took a decision to gradually eliminate the subsidy scheme as part of its fiscal consolidation plan under the National Agenda. As a result, oil prices increased by almost 270 percent between July 2005 and April 2006, and the oil price subsidy was completely eliminated as of February 2008.

**2. The improving fiscal position was reversed in 2008.** After falling from 14.0 percent of GDP to 6.6 percent between 2003 and 2006, the budget deficit (excluding grants) has increased to 9.4 percent in 2008 due to higher expenditures.

**Figure 6: Jordan’s Fiscal Position 2003 - 2008**

	2003	2004	2005	2006	2007	2008
Domestic revenues (% GDP)	23.2	26.5	28.6	30.1	30.1	26.7
Grants (% GDP)	13.0	10.0	5.6	2.9	2.8	4.8
Primary expenditures (% GDP)	33.8	35.6	35.9	33.7	34.6	33.6
o/w oil subsidies	1.2	3.2	5.9	2.0	2.5	1.3
o/w food subsidy	0.0	0.0	0.8	0.7	1.7	1.5
o/w social assistance	0.7	0.8	1.5	2.3	1.8	1.4
o/w social safety net	0.0	0.0	0.0	1.1	0.9	0.3
Interest expenditures (% GDP)	3.7	2.8	3.0	3.0	3.0	2.5
Fiscal deficit excl. grants (% GDP)	-14.3	-11.9	-10.2	-6.6	-7.6	-9.4
Primary deficit excl. grants (% GDP)	-10.6	-9.1	-7.3	-3.6	-4.5	-6.9
Public debt - Gross (% GDP)	99.7	91.8	84.0	77.4	74.2	62.4
Public debt - Net (% GDP)	98.2	88.8	83.7	69.9	68.0	56.8

Source : Official data

**3. Economic activity is expected to have slowed significantly in 2009.** In the first quarter of 2009 (Q1-09), GDP is reported to have increased by 3.2 percent, well below the trend. According to preliminary figures, foreign direct investment (FDI) to Jordan declined by 80 percent<sup>12</sup> in the first quarter of 2009 (y-o-y)—data available for the past ten years show that a change in international oil prices has a strong effect on the country's FDI, exports of goods to the Arab countries, exports of services and remittances.

**4. Preliminary data confirm the adverse impact of the economic slowdown on Jordan's fiscal balances.** While income tax revenues increased by 30.0 percent in the first seven months of 2009 (y-o-y), all other revenues declined, with a particularly large decline in land registration fees (39.0 percent). The overall increase in domestic revenues during this period is limited to 2.2 percent (down from 14.6 percent for the same period in 2008) while the increase in expenditures is at 14.4 percent, despite some savings from budgetary subsidies due to sharp decline in international commodity prices. These figures imply a significant divergence from the initial 2009 budget law, prepared before the onset of the global economic crisis, which projected a 15.3 percent increase in revenues and a 13.3 percent increase in expenditures. The actual result is a higher overall budget deficit, excluding grants, which is expected at 9.3 percent of GDP in 2009. Among the actions the GOJ is considering that would contain the overall budget deficit at this level is a reduction in this year's capital expenditures by 1.9 percent of GDP (from 9.1 to 7.2 percent), thus bringing the implementation rate of the capital budget close to recent averages of about 85 percent. Public consumption would also be reduced by 1.2 percent of GDP (from 18.0 to 16.8 percent).<sup>13</sup>

**5. A gradual economic recovery is projected over the medium term.** Following an estimated decline in real GDP growth to 3.2 percent in 2009, in 2010 growth is projected to recover gradually (to about 4 percent), reaching 5.0 percent in 2012. This trend would be at par with the long-term growth potential of Jordan's economy<sup>14</sup> but is well below the pre-shock average growth performance (see Table 2).

**6. Jordan's public debt can be kept on a sustainable trajectory provided that fiscal adjustment continues.** Public debt was significantly reduced in 2008, with debt to GDP ratio dropping by over 10 percentage points to 62.4 percent. This reduction is thanks to the Paris Club debt buyback as well as rapid nominal GDP growth. The Government's Medium-Term Fiscal Framework<sup>15</sup> for 2010-2012 envisages further significant reductions in public expenditures in terms of GDP at 1.4 percentage points compared to 2009. Overall, the successful fiscal and debt sustainability policies implemented over the past decade make the achievement of the projected future fiscal adjustments over the medium term plausible: as an example, the debt to GDP ratio was successfully reduced by about 40

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<sup>12</sup> This large decline partly reflects the inclusion of a large one-time sale of Aqaba port land in the corresponding FDI figures for Q1-08. Excluding this transaction, the FDI in Q1-09 declined by 56 percent (y-o-y).

<sup>13</sup> The Government of Jordan has revised the budget for 2009, taking stock of net effects of the drop in revenues, and subsidies and transfers, and also envisaging (i) a less ambitious increase in public investment (to offset potential negative impacts of the global economic slowdown on growth); and (ii) containment of public consumption. Domestic revenues in 2009 are declining because of the slowdown in activity; decline in prices of goods (decline in sales tax) and decline in FDI (drop in real estate registration fees).

<sup>14</sup> The long term growth for Jordan over the period 1992-2008 has been 4.8 percent on average per year.

<sup>15</sup> The Medium Term Fiscal Framework provides the basis (including aggregate expenditure ceilings and deficit targets) for a roll-out of the Medium Term Expenditure Framework, which collectively feed into Jordan's Budget Law that is being prepared on a three-year basis starting in 2008.

percent between 1999 and 2008, as the primary deficit (including grants) was, on average, in balance during this period.

**7. The government's debt guarantee obligation to the power sector is counted towards government debt and guarantee.** The estimated amount of debt guarantee obligation for the next five years is small relative to estimated overall government public debt. As such, the government is capable of managing its power sector debt obligation under Jordan's fiscal framework. As for contingent liabilities, to date the Amman East project is the first and only operating IPP in Jordan. The plant is valued at about JD 213 million (US\$ 300 million), which will be substantially depreciated over the next 25 years. In the worst-case scenario of governmental default or force majeure, the government may be obliged to buy out the power plant. The buyout price is substantially limited to the value of the plant after depreciation.

**Figure 7: Jordan's Fiscal Operations, Government Debt and Power Sector Exposures**

	2007	2008	2009	2010	2011	2012	2013
	Actual	Preliminary	Projections	Projections	Projections	Projections	Projections
Total budgetary revenue and grants (JD mil.)	3,920	4,690	4,974	5,053	5,405	5,778	6,228
Total budgetary expenditures (JD mil.), of which	4,531	5,415	5,798	6,130	6,509	6,923	7,380
Current expenditures	3,741	4,513	4,591	4,894	5,217	5,576	5,986
<b>Capital expenditures</b>	<b>744</b>	<b>875</b>	<b>1,145</b>	<b>1,180</b>	<b>1,236</b>	<b>1,298</b>	<b>1,350</b>
Overall budgetary balances (JD million)	(694)	(865)	(816)	(1,077)	(1,104)	(1,145)	(1,152)
<i>% of GDP</i>	-5.9%	-6.1%	-5.3%	-6.5%	-6.3%	-6.1%	-5.6%
Government debt and guarantee (JD mil.)	8,205	8,528	9,274	10,269	11,270	12,293	13,319
<i>(% GDP)</i>	70.0%	60.1%	60.4%	62.1%	63.9%	65.0%	65.3%
GDP at market prices (JD mil.)	11,722	14,190	15,354	16,536	17,637	18,913	20,397
<b>Estimated power sector exposure (upper ceiling)</b>							
			<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
			<b>Projections</b>	<b>Projections</b>	<b>Projections</b>	<b>Projections</b>	<b>Projections</b>
Debt guarantee - generation (for Samra)			0	170	85	85	0
Debt guarantee - transmission (for NEPCO, net of self-financing)			65	57	7	-8	16
Total			65	227	92	77	16
Incremental power sector exposure / GDP			0.4%	1.4%	0.5%	0.4%	0.1%

Source: IMF Jordan 2009 Article IV Consultation (May 2009); World Bank staff estimate

### Section 3 – Sources of Debt Financing

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*Jordan's power sector has benefited from both local and offshore debt financing. The range of products available from financial markets is comprehensive, including working capital, corporate and long-term project financing facilities. Development financial institutions have historically been a major source of debt financing; however, commercial debt financing has increased along with more private sector participation in the sector. Debt capital market instruments remain of little use in the sector.*

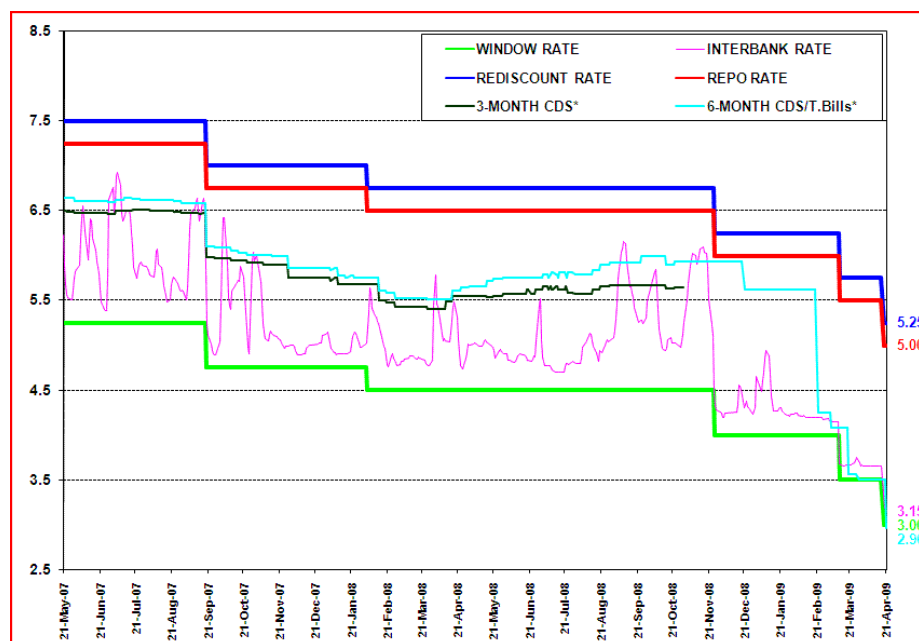
#### 3.1 In-country sources

##### 3.1.1 Local banks

- Local commercial banks, including foreign bank branches, have been providing project finance, corporate finance and working capital loan to the power sector.
- The commercial banking sector in Jordan is dominated by Arab Bank (total assets JD 21.2 billion at end 2007), which is four times the size of the second largest bank, Housing Bank (total assets JD 5 billion). However, at end 2007 less than 20 percent of Arab Bank's assets were located in Jordan. Assuming that 20 percent of Arab Bank's loans were in Jordan, this would amount to about JD 2 billion (almost the same as the outstanding loan of the second-largest Housing Bank). The next largest seven banks had total assets ranging from JD 1 to 1.6 billion.
- Total outstanding loans in local banks amounted to JD 18.4 billion at the end of 2007 (164 percent of GDP). However, removing Arab Bank's estimated overseas loans would reduce the total bank loans to about JD 10.5 billion (94 percent of GDP). The average net loans to deposit ratio in the local banking system was a low 60 percent.
- Local-currency corporate term loans are commonly lent on a floating interest rate basis. The prime lending rate for commercial banks was about 8.5 percent at end 2008. In the power sector, the Central Bank of Jordan's 6-month certificates of deposit and treasury bills interest rate is a common benchmark for long-term local-currency loans. For example, CEGCO is paying 6-month T-bill + 1.5 percent on its 5-year term loan obtained in 2004, and Samra is paying 6-month T-bill + 0.4 percent on its 10-year loan obtained in 2006<sup>16</sup>.

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<sup>16</sup> Source: Company annual reports.

**Figure 8: Selected Interest Rates in Jordan**

Source: Central Bank of Jordan

- For Amman East IPP, one local bank participated in the syndication of a US\$ 45 million project loan. The loan is denominated in US dollars and the terms and conditions follow international project financing practices. As such, the maturity of the loan was in excess of ten years, which was attractive to project developers. The second IPP has just closed its financing. To date, there have been no local-currency loans made to IPPs.

### 3.1.2 Local debt capital market and non-bank financial institutions

- Debt capital market (DCM) instruments – bonds, debentures, etc. – have not been used by power sector entities for fund raising up to now. The government is the main DCM issuer in Jordan. By end 2008, outstanding treasury bills and bonds amounted to JD 4.4 billion (US\$ 6.2 billion) or about 31 percent of GDP<sup>17</sup>. The size of the corporate bond market is small

<sup>17</sup> Source: Central Bank of Jordan  
February 2010

with the value of traded bonds at JD 0.6 million (US\$ 0.8 million). As for DCM investors, commercial banks are the largest DCM investor; they hold as much as 80 percent of the outstanding T-bills and bonds. Other institutional investors, namely insurance companies and pension funds, are smaller (see section 4.1).

- As the corporate bond market deepens in Jordan, NEPCO could be a significant bond issuer given its position as a key state-owned enterprise with large and continuing financing needs. Such a move would help diversify NEPCO's sources of fund for the future. Moreover, distribution companies may also tap the bond market to complement bank financing.
- However, DCM is not expected to play a major role on the power generation side over the next five years.

## 3.2 Offshore sources

### 3.2.1 Commercial lenders

- Offshore commercial lenders are a relative newcomer to Jordan's power sector. The first IPP, the 370MW Amman East CCGT project, obtained about US\$ 45 million of commercial loans out of the total US\$ 225 million project loan<sup>18</sup> in 2007. At the time of this assessment, financing of the second IPP Al-Qatrana project had just closed, and it is expected that more offshore commercial lenders will be participating in project financing.
- Interviews with a number of international commercial lenders indicate that banks are more selective than in the past. The majority of bankers interviewed view Jordan as a small lending market compared to other lower- and middle-income MENA countries. However, the prevailing global credit and liquidity constraints make the situation of international lenders more challenging. Currently, international lenders are expected to focus on sizable transactions, existing banking relationships, and risk coverage (provided by DFIs and the insurance market) for future transactions.

### 3.2.2 Development FIs and Multilateral Development Banks (DFIs)

- DFIs have been a major source of debt financing to the Jordanian power sector, as elaborated below:
  - In generation, DFIs are the largest lending group to domestic generation companies. By end 2008, loans from DFIs accounted for about 72 percent of CEGCO's outstanding long-term loans and about 86 percent at Samra<sup>19</sup>. In addition, about 80 percent of project loans for the Amman East IPP were provided by DFIs.
  - In transmission, DFIs accounted for about 57 percent of NEPCO's outstanding long-term loans by end 2008<sup>20</sup>.

<sup>18</sup> Development financial institutions provided the remaining amount. Source: World Bank staff assessment.

<sup>19</sup> By end 2008, CEGCO loans totaled JD 229 million and Samra loans totaled JD 165 million. Source: Company annual reports.



- In distribution, the GOJ has facilitated on-lending of DFI loans to all three distribution companies. However, by end 2007, all three distribution companies had very small amounts of outstanding loans.
- Following the privatization of EDCO and IDECO in 2008, in early 2009 the IFC provided a loan of approximately US\$ 40 million to EDCO.
- Jordan’s power sector has received support from a diverse group of DFIs, including institutions from the region (such as the Arab Fund, the Islamic Development Bank, the Kuwait Fund), as well as bilateral institutions (Export-Import Bank of Korea, JICA, JBIC, KfW, OPIC) and multilateral institutions (World Bank Group). Public entities or projects have benefited from concessional financing, while private projects have received promotional financing and risk coverage for financiers.
- A regional concentrated solar power (CSP) investment plan was approved by the Clean Technology Fund (CTF) in 2009. The CTF intends to provide up to US\$ 750 million of soft financing for CSP investments in the MENA region, of which US\$ 112 million is the indicated amount available for these investments in Jordan.

### 3.2.3 Debt capital market

- To date, no bonds have been issued by Jordanian power sector entities in the international debt capital market. A most likely scenario for this channel to be tapped would be bond issuance by NEPCO, either to refinance its existing debt or to raise new funding. However, this may not occur in the near future since the amount of NEPCO’s overall required debt financing may be too small for a robust international bond offering program (NEPCO’s debt stock totaled JD 320 million [US\$ 450 million] at end 2008). Other potential issuers are IPPs.

### 3.3 Overall debt financing market situation:

- The market for **local-currency lending** is liquid and available for power sector entities, particularly for working capital and corporate debt facilities.
- Local-currency long-tenor project financing is also available; however, the depth of the market is limited due to the relatively small size of the local banking sector. According to a bank interview conducted for this assessment, a US\$ 300 million equivalent project loan (for example, for a greenfield IPP) is considered large. Such a loan would require syndication among multiple local lenders, and the local market could not absorb multiple large transactions concurrently. Moreover, local-currency loans are primarily issued on a floating interest rate basis. The first two greenfield IPPs in Jordan do not yet have a mechanism to incorporate a floating interest rate.

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<sup>20</sup> By end 2008, NEPCO loans totaled JD 174 million. In addition, NEPCO has utilized more local bank overdraft facilities in recent years with an outstanding of JD 54 million at end 2008. Source: Company annual reports.

- **International commercial lenders** are much more restricted in lending to an emerging economy such as Jordan. Project financing loans are being offered selectively; loan tenor is shorter (often less than 10 years), banking on future refinancing; lending margin is higher due to liquidity and perceived risk premium (for US dollar loans, the lending margin to MENA countries has increased from the order of 100+ basis points to over 300 basis points); and require risk mitigation from DFIs or the insurance market. Specific to MENA, the Gulf Cooperation Countries (GCCs) are generally perceived as a less risky market, thus putting Jordan and other non-GCC countries below them in a lower tier of lending targets.
- DFIs have historically been very involved in the financing of Jordan’s power sector. Through the 1990s, when the sector was substantially in the public domain, DFIs provided concessional financing support to much of the investment that happened in the sector. The decade 2000-2009 saw substantial involvement of private financiers, with local lenders providing more support to power entities and offshore commercial lenders participating in IPPs. At the same time, DFIs have remained involved as a pioneering lender to newly privatized entities, as a co-financier alongside private lenders, or as a provider of risk mitigation solution. The prevailing economic downturn once again calls for involvement of DFIs in the sector.

## Section 4 – Sources of Equity Financing

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*The power sector in Jordan has historically benefited from both public and private equity financing. The first privately-owned power company was established in the 1930s; the company is still in operation today and is a publicly-listed company on the Amman Stock Exchange. The decade 2000-2009 saw further sector privatization, which has attracted offshore private equity into the sector. Moreover, greenfield power stations are also being developed by the private sector.*

### 4.1 In-country sources

#### 4.1.1 Government-owned power companies and other public entities

- **Samra** is wholly-owned by the GOJ, having registered and paid-in capital of JD 50 million (US\$ 70.4 million). This seed capital is supplemented by long-term loans, which totaled JD 160 million (US\$ 225.4 million) at end 2008. As Samra continues to execute its capital expenditure program (it is currently implementing the final phase of the second 300MW CCGT block), its internally-generated cash flow is being used for servicing existing debt. As such, Samra is not in a position to provide fresh equity for new investment.
- **NEPCO** is also wholly-owned by the GOJ. Its cash flow from operations was on the order of JD 20 – 50 million (US\$ 28 – 70.4 million) per year during 2005 – 2007. NEPCO therefore has been self-financing part of its investment program, supplemented by debt financing.
- The key non-bank financial institution active in Jordan power sector is the **Jordan Social Security Corporation (SSC)**. In generation, following the privatization of state-owned power companies, the SSC has taken minority ownership in the post-privatized generation company CEGCO, representing public ownership with a 9 percent stake. In distribution, the SSC owns about 8 percent in JEPSCO. The SSC is the largest institutional investor in Jordan with a total assets of JD 4.9 billion (US\$ 6.9 billion) at end 2008.
- Specific to IDECO, its minority shareholders are municipalities and a local investment fund.

#### 4.1.2 Other investors

- JEPSCO, currently the largest distribution company responsible for the greater Amman area, is privately-owned and publicly-listed on the Amman Stock Exchange. The company was established in 1938, and by year end 2007 had paid-in capital of JD 66 million (US\$ 93 million), following a capital increase of JD 6 million during the year.

- A Jordanian company, United Arab Investors Co (UAIC), owned 30 percent of Kingdom Electricity Company (KEC), which is the holding company that owns EDCO and IDECO. UAIC is the largest investment company listed on the Amman Stock Exchange with a market capitalization of around US\$400 million<sup>21</sup>. UAIC has now divested such shareholding in KEC.
- Other local non-bank FIs, namely insurance companies and specialized FIs, are not active in Jordan’s power sector. By end 2008, the combined assets of insurance companies totaled JD 0.6 billion (US\$ 0.85 billion)
- According to MEMR, other Jordanian investors are becoming more interested in the power sector. The MEMR has observed more Jordanian investors expressing interest in Jordan’s IPP program. Some of these potential investors are established business groups engaged in other sectors in Jordan.

## 4.2 Offshore sources

### 4.2.1 Greenfield IPPs

- The first two IPPs have attracted considerable interest from international power sector companies and power sector commercial investors, evidenced in the fact that each received three or four responsive final bids from major international power companies. For the Amman East IPP, an estimated US\$ 75 million of private capital was provided by the project sponsors<sup>22</sup>.

### 4.2.2 Existing power entities

- The privatization of the generation company CEGCO, concluded in 2007, saw a private holding company taking a 51 percent stake in this formerly wholly-government-owned company. According to the Jordan Executive Privatization Committee, the sale was valued at about US\$ 140 million<sup>23</sup>.
- The privatization of the distribution companies EDCO and IDECO was finalized in 2008. In effect, 100 percent of the government’s share in EDCO and 55 percent<sup>24</sup> in IDECO were sold, with a combined value of US\$ 104 million<sup>25</sup>.
- As a result of the above privatizations, a key investor in Jordan power sector is now Jordan Dubai Energy and Infrastructure (JDE), an energy-sector investment arm of Jordan Dubai Capital, which in turn is an affiliate of Dubai

<sup>21</sup> Source: IFC – *KEC Summary of Proposed Investment, April 2008*

<sup>22</sup> Source: World Bank Project Appraisal Document – *Amman East Power Plant Project, February 2007*

<sup>23</sup> Source: <http://www.epc.gov.jo/EPC/Home/JPPCompleted/tabid/96/Default.aspx>

<sup>24</sup> By end 2007, IDECO’s other major shareholders were municipalities and an investment fund. Source: Company annual report.

<sup>25</sup> Source: <http://www.epc.gov.jo/EPC/Home/JPPCompleted/tabid/96/Default.aspx> ; Jordan Dubai Capital

International Capital. JDE is the majority owner in the holding company Enara, now owning 51 percent in CEGCO. It is also the majority owner in another holding company, Kingdom Electricity, that owns EDCO and IDECO.

#### 4.3 Overall equity financing situation:

- The Jordanian power sector has to date been successful in attracting new private equity into the sector. In generation, the first two greenfield IPPs (financing closed in 2007 and 2009) will have attracted not less than US\$ 150 million of new private equity. In distribution, JEPSCO's capital increase in 2007 amounted to US\$ 8.5 million, and the EDCO/IDECO privatization was valued at about US\$ 140 million. This amount is substantial, particularly when compared to average foreign direct investment inflow to Jordan of about US\$ 1.6 billion per year (2003-2007)<sup>26</sup>.
- Additional equity is envisaged for future IPPs, both in renewable and conventional power. For the next five years, the amount of equity required for each project is estimated not to exceed US\$ 150 million per project, or on the order of US\$ 350 million in total (JD 250 million – *see Section 1*). Given the extended project implementation timeframe, this amount of equity seems feasible.

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<sup>26</sup> Source: World Development Indicators  
February 2010

## **Section 5 – Funding Gap Analysis and Potential Supports**

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*The global economic downturn, credit and liquidity constraints have had limited immediate impacts on the financing of Jordan's power sector. There has been no major project cancellation to date, with large projects under implementation receiving the financing that was previously committed. Furthermore, many transactions have obtained the support of development financial institutions, which facilitated commercial financing. While the lending margin has substantially increased, the lower benchmark interest rates (e.g. the US\$ LIBOR) have compensated for the higher margin, resulting in a commercially-viable all-in financing cost to a borrower.*

*The next five-year (2010-2014) capital expenditure is estimated at JD 2.1 billion (US\$ 3.0b). Of this amount, private investment is estimated at JD 1.5 billion and public is JD 0.6 billion. Financing of large projects will be challenging, and is likely to require more participation of local financiers and risk mitigation support from the government, DFIs and the insurance market. Planned investments are spread out over time and the estimated required financing is not very large; therefore, a large financing gap is unlikely.*

**In addition to the detailed investment plan elaborated in Section 1, this section focuses on planned generation projects with initial operations scheduled by FY 2014.** The assessment below is related to the following Figure 9 .

- 5.1 Private sector investment is expected to lead the power generation investment program in the next five years (2010-2014). This investment is expected to include: (i) about 500 MW of thermal power stations, with estimated project costs of about US\$ 600 million; (ii) over 100 MW of wind farm power, with estimated project costs of about US\$ 270 million; and (iii) about 100 MW of concentrated solar power station, with estimated project costs of at least US\$ 400 million.
- 5.2 Public sector investment is envisaged for the third round expansion of the Samra power station. A 300 MW expansion is planned, which upon completion will bring Samra's total installed capacity to about 900 MW. The estimated project cost is about US\$ 360 million.

**Figure 9: Estimated Power Generation Investment & Financing Requirements 2010 – 2014**

Project	MW	Technology	Implementation Status	Estimated Cost	Estimated Debt	Estimated Equity	Expected Initial Operation	Note on financing
<u>Projects obtained financing in 2009</u>				US\$ million	US\$ million	US\$ million		
Al Qatrana IPP	373	CCGT	Under construction	460	322	138	2010	Debt financing from IsDB, Export-import Bank of Korea, commercial lenders
<u>Upcoming public projects</u>								
Samra 3rd expansion	300	CCGT	Financing Stage	360	324	36	2011	Debt financing from Arab Fund and Kuwait Fund.
<u>Upcoming private projects</u>								
Kamsha wind IPP	35	Wind	Financing Stage	70	49	21	2011	Private financing. May include loan and/or risk coverage from
Fujeij wind IPP	> 100	Wind	Developer selection stage	> 200	140	60	2012	export credit agencies, bilateral development financial institutions,
IPP 3	370	CCGT	Planning stage	444	311	133	2014	multilateral development banks (e.g. World Bank), and the private market.
Peaking plant	100	[Steam]	Planning stage	120	84	36	2013	
Concentrated solar IPP	100	CSP	Planning stage	400	280	120	2013	
<i>Total - private</i>	<i>&gt; 705</i>			<i>&gt; 1,234</i>	<i>864</i>	<i>370</i>		

## Financing Challenges

- 5.3 The development timeframe of private projects is spread out over time, which will help reduce the financing bottleneck. In addition, the projected lower electricity demand growth may allow some projects to be delayed, which will lessen financing pressure. Thanks to cost-reflective electricity tariffs in Jordan, the financial position of the single-buyer entity NEPCO is relatively sound, which helps address commercial risk concerns of private investors.
- 5.4 However, financing challenges do exist, especially in the international commercial project financing market. This group of lenders is expected to focus on sizable transactions, existing banking relationships, and acceptable risk coverage (provided by DFIs and the insurance market) for future transactions. As a result, the earlier projects to come to market (the Kamsha wind and the Fujeij wind IPPs) are likely to receive substantial support of DFIs, including direct credit and risk coverage products. **As the required debt financing amount is not very large on these projects, a financing gap seems unlikely.** The later projects should benefit from a more stabilized commercial financing market in the next two years.
- 5.5 For public investment in Samra's third expansion, the company has obtained a partial financing commitment from its existing lenders (Arab Fund and Kuwait Fund). The company and the government are expected to identify additional financing in the coming months. It is likely that the project's EPC contractors will also help attract some financing to the project. **As such, a large financing gap is also unlikely.**

## Potential Support from the World Bank Group

- 5.6 The World Bank provided partial risk guarantee (PRG) to support the financing of the first greenfield Amman East IPP in Jordan, which achieved financial closure in 2007. A second PRG was prepared in 2009 for the Al-Qatrana IPP; however, this PRG was subsequently dropped from the project financing plan due to a delay in the Bank's appraisal process. In the case of future requests from the government or private financiers, the PRG remains an effective risk mitigation product that can supplement upcoming project financing plans.
- 5.7 Specific to renewable energy and energy efficiency activities, the Bank facilitated various rounds of technical assistance that led to the passage of the Renewable Energy Promotion Law. This new law will allow the Jordan Renewable Energy and Energy Efficiency Fund to be established, which will help channel financial resources to renewable energy and energy efficiency activities in Jordan. As for the upcoming Al-Fujeij wind IPP project, the IBRD partial risk guarantee, IFC and MIGA guarantees can help support the financing of the project.
- 5.8 The IFC is a pioneering lender to the post-privatized power distribution companies EDCO and IDECO. The IFC is keen to support the next private power investment in Jordan, and has acted as financial advisor to the winning bidders for CEGCO's privatization and for Kamsha wind IPP. Moreover, the IFC sub-national financial products offer financial alternatives to sub-national entities such as Samra and NEPCO. MIGA products will also be relevant for future private power projects in Jordan.
- 5.9 A regional concentrated solar power (CSP) investment plan was approved by the Clean Technology Fund (CTF) in 2009. The CTF intends to provide up to US\$ 750 million of soft financing for CSP investments in the MENA region, of which US\$ 112 million is the indicated amount available for Jordan to support the planned 100 MW CSP power station in the Ma'an province and to finance a reinforcement of the Jordanian 400 kV electricity transmission corridor to accommodate renewable energy projects. The World Bank Group is an implementing agency of the CTF and will be assisting Jordan in accessing the fund.
- 5.10 Promotion of Regional Integration: The Bank's Arab World Initiative supported regional energy integration studies, including Jordan. The Mashreq Energy Integration Study identified potential electricity and gas cross border interconnections to facilitate regional energy integration in the Mashreq. The Bank is also now finalizing arrangements for a joint study with the League of Arab States on the institutional and regulatory framework for electricity trade. The study will assist Arab countries develop and set-up a harmonized legislative structure for promoting electricity trade among Arab countries and with targeted neighboring regions including Europe.
- 5.11 Cross Border Interconnection: The Mashreq study also identifies capacity expansion of the Arab Gas Pipeline (AGP) and in the longer term potential construction of Iraq-Jordan gas pipeline connection to the AGP as a strategic investment for promoting regional integration. The Bank can further facilitate the promotion and development of these projects including providing finance from its own funds, and mobilizing resources from other donors and the private sector.



## **Summary of required support for the power sector in Jordan**

### Generation:

- The upcoming IPPs will require risk mitigation and possibly co-financing by DFIs.
- The government may also need technical assistance to determine whether a floating interest rate mechanism should be provided to IPP.
- The financing of Samra may need the support of export credits and commercial lenders, supplementing concessional loans provided by DFIs.
- Some potential IPP investors may need risk mitigation support for their equity investment.

### Transmission:

- NEPCO will be looking for debt financing for its investment program in the coming five years. A combination of commercial and concessional loans is envisaged. Commercial lenders may be interested in some form of liquidity or credit support to facilitate lending.

### Distribution:

- JEPCO may need technical assistance on enhancing its corporate debt strategy in preparing for the change in its concession terms in 2012.

### Commercial lenders:

- Apart from risk mitigation support, some commercial lenders may need liquidity support, especially for longer-tenor project financing loans.

### Equity investors:

- Equity investors may need risk mitigation supports from DFIs and from the insurance markets.

NEPCO (Transmission Company & Single-buyer of Electricity) in Figures

	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
	actual	actual	actual	actual	prelim.
	thousand Jordanian dinars				
Electricity sales	291,090	327,100	375,268	442,023	606,059
EBITDA	25,667	19,058	26,850	37,792	(30,409)
Net Income	1,788	(2,924)	96	(2,058)	(49,703)
Total assets	476,854	506,056	517,494	550,940	576,166
Total liabilities	253,325	284,246	295,419	324,011	401,337
Total equity	223,524	221,812	222,074	226,929	174,829
Electricity sales margin	14.0%	10.6%	11.6%	13.6%	-1.8%
EBITDA margin	7.2%	4.7%	5.3%	6.5%	-5.3%
Net margin	0.5%	-0.7%	0.0%	-0.4%	-8.2%
DSCR	1.4	1.0	1.1	1.6	(1.0)
Current ratio	0.9	0.8	0.7	0.7	0.6
Liabilities-to-equity ratio	1.1	1.3	1.3	1.4	2.3

Source: NEPCO

Distribution Companies in Figures

	<u>JEPCO</u>		<u>EDCO</u>		<u>IDECO</u>	
	<u>2006</u>	<u>2007</u>	<u>2006</u>	<u>2007</u>	<u>2006</u>	<u>2007</u>
<b>Financial Statements</b>						
	<i>thousand Jordanian dinars</i>					
Total assets	315,867	362,292	174,311	183,525	82,921	93,266
Total liabilities	224,797	266,359	124,295	133,098	76,022	85,341
Total equity	91,070	95,932	50,016	50,426	6,899	7,925
Electricity sales	268,546	303,775	70,704	81,190	57,986	64,374
EBITDA	24,480	22,932	846	3,495	2,391	4,013
Net Income	15,967	11,531	(1,375)	442	(116)	1,580
<b>Physical Units</b>						
Electricity sold (GWh)	5,393	6,031	1,560	1,776	1,327	1,464
Electricity purchased (GWh)	6,157	7,104	1,793	2,023	1,481	1,650
<b>Average Tariffs and Margin</b>						
Electricity sales JD / kWh <b>sold</b>	0.0498	0.0504	0.0453	0.0457	0.0437	0.0440
<i>US\$ equivalent</i>	<i>0.0701</i>	<i>0.0709</i>	<i>0.0638</i>	<i>0.0644</i>	<i>0.0616</i>	<i>0.0620</i>
Electricity purchases JD / kWh <b>purchased</b>	0.0361	0.0367	0.0348	0.0344	0.0334	0.0334
<i>US\$ equivalent</i>	<i>0.0508</i>	<i>0.0517</i>	<i>0.0491</i>	<i>0.0484</i>	<i>0.0471</i>	<i>0.0470</i>
Electricity sales margin JD / kWh <b>sold</b>	0.0086	0.0071	0.0053	0.0066	0.0064	0.0064
<i>US\$ equivalent</i>	<i>0.0121</i>	<i>0.0100</i>	<i>0.0074</i>	<i>0.0093</i>	<i>0.0090</i>	<i>0.0090</i>
<b>Financial ratio</b>						
Electricity sales margin	20.8%	16.4%	13.2%	16.8%	17.1%	16.9%
EBITDA margin	9.0%	7.4%	1.2%	4.2%	3.9%	5.9%
Net margin	5.9%	3.7%	-1.9%	0.5%	-0.2%	2.3%
DSCR	5.0	6.7	0.7	3.0	1.4	10.9
Current ratio	0.7	0.6	1.8	2.0	1.0	1.2
Liabilities-to-equity ratio	2.5	2.8	2.5	2.6	11.0	10.8

Source: JEPCO, EDCO, IDECO