

IMPACT OF PPP IN LEBANON

ON GROWTH AND JOB CREATION

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Potential Infrastructure Projects in Lebanon

- Projects that can be contemplated for PPP tendering include the following:
 - Electricity Sector
 - Conventional power plants
 - Green power plants
 - Water Sector
 - Dams
 - Transportation Sector
 - Bus rapid transit
 - Railway
 - Highway
 - Underground Parking
 - Law Enforcement
 - Prisons

Spending on Electricity Sector Projects

■ Conventional Power Plants

- Capacity: 2,500MW
- Cost: \$ 2,500m

■ Green Power Plants

- Total Capacity: 665MW, total cost: \$1,945m
 - Wind farms 100MW Total cost: \$ 195m
 - Hydraulic power 40MW Total cost: \$ 200m
 - Solar PV 500MW Total cost: \$ 1,500m
 - Waste to Energy 25MW Total cost: \$ 50m

Spending on Transportation Sector Projects

- **Bus Rapid Transit System**
 - Connecting Amchit to Beirut
 - Cost: Gussed at \$400m
- **Railway**
 - Connecting Beirut to Damascus (147 km)
 - Cost: Gussed at \$350m
- **A2 Highway**
 - Connecting Antelias to Maameltain (13.5km)
 - Cost: \$263m
- **Underground Parking**
 - Seven parking lots of capacity 500 cars each
 - Cost: $7 \times 500 \times \$50,000^{(1)} = \$175m$

Source: http://www2.lbl.gov/Workplace/transportation/assets/doc/WC08-2572_Parking_Structure_Memo_012909.pdf

Spending on Water Sector and Law Enforcement Projects

■ Dams

- Capacity: 640 million m³
- Cost: \$ 920m

■ Prisons

- 2 prisons
- Cost: \$35m each, total cost: \$70m

**Implied potential total spend on PPP infrastructure projects:
\$6.22 billion**

Impact of PPP on Lebanon's Economic Growth

- According to the World Bank ⁽¹⁾, the elasticity of economic growth to investment in infrastructure in the MENA region, measured with a 95% certainty factor is as follows:

$$0.115 \leq \varepsilon_{(Y/Infra)} \leq 0.323$$

- Applied to Lebanon, this means that a GDP growth of 1% would require an increase in the stock of infrastructure between:
 - 8.7% at the lower boundary of 0.115; and
 - 3.1% at the upper boundary of 0.323
- Using a factor of 70% of GDP to estimate the value of the infrastructure stock ⁽²⁾ in Lebanon, we arrive at an **infrastructure stock value of \$31.5 billion** ⁽³⁾.
- Therefore, spending \$6.22 billion on PPP projects would **increase Lebanon's GDP by 2.3 to 6.45%** or, to simplify, by an average of **4.38%**.

Source: (1) World Bank, *Infrastructure and Employment Creation in the Middle East and North Africa* (2013); (2) McKinsey & Company, *Infrastructure Productivity: How to save \$1 trillion a year* (January 2013); (3) Using an estimated GDP of \$45 billion for 2014.

Job Creation Measurement Methods

- For the Construction phase, which is assumed to last 3 years on average, we calculate Total Jobs (referred to as Type II jobs), which include:
 - **Type I Jobs:**
 - **Direct Jobs:** Jobs created directly in the funded infrastructure projects. They are calculated using the ratio of the amounts spent on projects to the cost of creating a direct job in the relevant sector.
 - **Indirect Jobs:** Jobs created in other businesses as a result of the spending on the infrastructure projects. They are calculated using the Indirect Jobs Multiplier, which uses historic comps that derive the ratio of indirect plus direct jobs to direct jobs.
 - **Induced Jobs:** Jobs created in the wider economy as a result of the investment in the infrastructure projects. They are typically calculated based on the elasticity of economic growth to spending and the elasticity of job creation to economic growth.
- For the Maintenance phase, which is assumed to last 20 years on average, we use a spending **ratio of Maintenance Spending to Non-Depreciated CapEx of 2.5%**.

Cost of a Direct Job (2009)

	Construction						
	Electricity	Building	Roads and bridges	Water and sewage	Electricity stations	Others	Transport and communications
Djibouti	11,606	9,522	1,528	3,945	8,229	8,360	17,011
Egypt, Arab Rep.	21,700	17,805	2,858	7,376	15,387	15,632	31,808
Jordan	40,266	33,036	5,302	13,688	28,552	29,006	59,020
Lebanon	78,151	64,120	10,291	26,567	55,414	56,296	114,551
Morocco	26,872	13,526	3,539	9,135	19,054	19,358	39,388
Tunisia	36,251	29,742	4,773	12,324	25,705	26,113	53,135

Source: World Bank, *Infrastructure and Employment Creation in the Middle East and North Africa (2013)*

Cost of a Type II Job (2009)

Country	Construction						
	Electricity	Building	Roads and bridges	Water and sewage	Electricity stations	Others	Transport and communications
Djibouti	7,789	5,841	1,402	3,260	6,095	5,193	9,347
Egypt, Arab Rep.	14,564	10,924	2,621	6,096	11,398	9,709	17,476
Jordan	27,024	20,268	4,865	11,312	21,149	18,015	32,428
Lebanon	52,449	39,338	9,441	21,955	41,048	34,967	62,940
Morocco	18,035	13,526	3,246	7,549	14,114	12,024	21,642
Tunisia	24,329	18,247	4,379	10,185	19,040	16,219	29,195

Source: World Bank, *Infrastructure and Employment Creation in the Middle East and North Africa (2013)*

Lebanon – Job Creation / Sector – Construction Phase

		Infrastructure Spending (\$ Mn)	Cost of a Direct Job (\$)	Number of direct job-years created	Cost of Type II Job (\$)	Total Number of jobs created
Electricity projects		4,445	55,414	80,214	41,048	108,288
Water Projects		920	26,567	34,629	21,955	41,904
Transportation Projects	Railway	350	10,291	34,010	9,441	31,141
	A2 Highway	263	10,291	25,556	9,441	27,858
	Parking Lots	175	64,120	2,729	39,338	4,449
Law Enforcement Projects		70	64,120	1,092	39,338	3,305
Total		6,223		178,231		216,945

Note: The jobs calculated here using the IMPLAN methodology refer to number of jobs created during the construction phase regardless of length of employment.

Maintenance Phase Jobs

- During the Maintenance Phase, following construction, and extending for an average of 20 years, the jobs which will be created by the PPP infrastructure projects are estimated at:

$$216,945 \times 2.5\% = 5,424 \text{ "permanent" jobs}$$

$$\text{or } 5,424 \times 20 = 108,480 \text{ job years}$$

- Note that these jobs relate only to maintenance. They do not include jobs related to the operation of industrial or technical facilities.

Syrian Labor Employment

- In relative terms, Lebanon currently has the lowest unskilled labor cost likely in its history. The Syrian migrants constitute an important pool which would likely be depleted once the rebuilding activity in Syria picks up. It is therefore important to take advantage of the current situation as quickly as possible to benefit from their presence to build the infrastructure that Lebanon so desperately needs.
- The Syrian refugees in Lebanon are almost equally divided among men (49%) and women (51%) and just over half of them (52.8%) are under 18 years old ⁽¹⁾
- If we assume that out of 1.2 million refugees, some 900,000 are newcomers that did not work in Lebanon before. This implies that some 208,000 employable men (not counting women) have been added to the country's 1.0 million workforce.
- The construction phase of Lebanon's infrastructure projects would create 216,945 new jobs. Some 60% of these new jobs can be assumed to be unskilled and thus largely open to Syrian workers.
- Thus, PPP infrastructure projects could provide more than **130,000** jobs to Syrians refugees.

Source: (1) Shifting Sands, Joint Research Report, Oxfam and Abaad, Sept. 2013

Skilled Labor

- Skilled labor jobs overall, which here include jobs for university graduates, could be estimated at 40% of the total. These jobs could be expected to be filled by Lebanese citizens. The estimate may look as follows:

Construction Phase: $216,945 \times 40\% = 86,778$ jobs

Maintenance over 20 years: $5,424 \times 40\% = 2,170$ jobs

or $108,480 \times 40\% = 43,392$ job years
