

EMPLOYMENT RESEARCH BRIEF

EMPLOYMENT IMPACT OF INFRASTRUCTURE INVESTMENTS IN TUNISIA

This country brief provides insights into the various employment outcomes of European Investment Bank (EIB)-financed investment projects in different infrastructure sectors in Tunisia. The study focused on the two sectors of transport and energy where one project was studied in each sector. In the transport sector the project was the Urban Priority Roads V, while in the energy sector, the study focused on the construction of the Power Station C in Sousse.

Infrastructure Development

Tunisia's infrastructure quality ranked favourably in the Global Competitiveness Report 2011/2012, despite the political and social revolution of 2011. Out of 142 countries, Tunisia ranked 43 in the quality of infrastructure, 46 in quality of roads and 40 in quality of electricity supply ranking.

Tunisia also, has a strong construction industry, which represents 6.5% of the national GDP¹. The sector grew by 5.58% annually between 2008 and 2012 and valued \$5.7 billion in 2012. The growth in the sector is supported by the government commitment to improving the country's infrastructure, developing efficient transport system, protecting Tunisian cities against floods, and increasing development in electricity grids and natural gas pipelines. This is reinforced by public and private investments in infrastructural, residential, industrial, and commercial construction projects.

Tunisia's **Road Transport Infrastructure** can be summarized as follows: The country is served by a road network of about 20,000 km that links production sites in the country to consumption areas². Of this network:

- 360 km are motorways.
- 3,938 km of national roads
- 5,117 km of regional roads, and
- 2,453 km of local roads

Of the total roads, around 12,750 km are paved and representing about 65% of the total roads in the country. In addition, a rural track network with a length of about 60,000 km is present.

In terms of **Energy Infrastructure**, electrical power is provided mainly by state-owned Tunisian Company for Electricity and Gas (STEG). The total domestic electricity supply amounted to 14,800 Gwh in 2012. Although electricity production market was opened to independent power producers in 1996, STEG remains the largest supplier in the country with a market share of 88%. The combined electrification rate (rural and urban) is approximated at 99.5 % in 2012, serving the country's 10.8 million inhabitants³. In response to electricity consumption demands, STEG invests in installing additional electricity generation and transmission facilities.

Although, natural gas is the main fuel for power production, the country has plans to invest in renewable energy through the "Tunisian Solar Plan (PST)" encompassing 40 technology projects in solar power, wind power and energy efficiency.

Construction Activity

Overview of potential and challenges

Tunisia has a strong construction sector, which represents about 6.5% of the national GDP⁴. According to the National Association of Builders, the sector employs around one-third of the country's work population and ranks the fourth largest contributor to the economy after textiles, food, and agriculture. It is composed of more than 26,000 enterprises, of which over 80% are self-employed individuals.

Given the large number of small and medium-sized licensed contractors, small-sized projects are predominantly conducted through domestic expertise. For example, the housing construction is almost entirely run by Tunisian contractors, manpower, and expertise. Activities of foreign construction firms in Tunisia, on the other hand, are almost exclusively limited to large and sophisticated construction projects. A large number of unlicensed informal builders and others self-employed in building trades also exist.

¹Strategic Analysis, 2013

²EIB Project Proposal Document, July 2008

³Tunisia Energy Situation, 2013

⁴11th National Development Plan

The country has been successful in attracting significant investments for some major high profile projects mainly funded by foreign capital; prominently investments from the United Arab Emirates. The \$5 billion mixed-use Tunis Sport City project, an Emirati funded project for instance, is scheduled for completion in 2025.

Tunisian construction firms have high hopes that the arrival of a string of foreign investors and mega-projects will activate the sector significantly. It is estimated that over \$60 billion will be invested in mega projects in Tunisia in the next 15 year. Those mega projects will be a catalyst to the government's strategy to turn Tunisia into a leading trade, transport, and tourism center in the region.

Approach and Methodology

Two research methods were employed to quantify the employment impact of EIB infrastructure investments in Tunisia. The first method examined specific case studies of projects funded by EIB. It aimed to answer the below four questions about direct employment through structured interviews, site visits, and document review.

1. How many direct jobs are created during construction, operation, and maintenance?
2. Who gets the jobs?
3. What kinds of jobs are created?
4. Do the jobs go where they are most needed?

The second method was a macroeconomic study that used a multiplier analysis based on accounting frameworks such as the latest Input-Output table and Social Accounting Matrix. The macroeconomic study was used to capture direct, indirect and induced effects on production, income and employment. (Findings using the macroeconomic study approach can be found under the section direct, indirect, and induced impacts of the projects).

Projects Under Study

The Urban Priority Roads V

The Urban Priority Roads V is composed 12 sub-projects; 7 in Tunis and 5 in the cities of Grombalia, Kasserine, Gafsa and Kef, with a total value of EUR221 million. It comes under the Five-year Economic and Social Development Plan (2007-2011) which includes two programs to improve roads infrastructure; Greater Tunis Master Plan and the Roads Structuring Program. The Urban Priority Roads V includes the construction of interchanges and diversions in addition to

upgrading of roads to enhance the efficiency of the road network in Tunis and to minimize congestion by separating different types of traffic. The works began as planned in 2009; however, the planned end date of 2012 got extended to 2014 due to the political instability. The project was managed by the General Directorate of Roads and Bridges (DGPC) in the Ministry of Equipment, Housing and Town and Country Planning (MEHAT), and its regional offices in the Governorates.



Ring road bypassing Gafsa (15 km 2x2 lane)



Expressway and an interchange at the Rades channel

The Power Station Sousse C

The Power Station Sousse C involves the construction and operation of a dual-fuel (gas and gasoil) power generation plant. It consists of a single-shaft Combined Cycle Gas Turbine unit of 400 MW to meet the increasing demands on electricity in Tunisia. The project is being built on an existing power plant located 6 km south of the city of Sousse. The project's total budget is EUR388 million of which EUR300 million are allocated for equipment and civil works. The station is being built through a single Engineering, Procurement and Construction contract managed by STEG. Works started in December 2010 and were expected to end 9 months behind schedule, in June 2014.



Power Station Sousse C

Employment analysis

Labour market synopsis

After the revolution of 2011, political and social instability had a strong toll on the Tunisian economy and the labour market. Consequently the unemployment rate increased from 13% in 2010 to about 19% in 2011. It has since improved slightly, however the university graduate unemployment rate remains staggeringly high, especially in governorates.

Although educational reforms have provided wide access to higher education for the Tunisian population, the alarmingly high unemployment rate among university graduates indicates the mismatch with labour supply and demand.

Box 1: Unemployment in Tunisia, Quarter 3/2013

Unemployment rate: 15.7%

Males, Females: 13.1 %, 22.5%

Unemployment among university graduates 33.5%:

Males, Females: 23.1 %, 43.5%

Source: National Statistics Institute, August 2013

This phenomenon is more prominent in less developed governorates as seen in the following table. For example in the governorates of Gafsa, Sidi Bou-Zeid, and Tataouine, unemployment among university graduates is over 55%.

Table 1: Unemployment Rates in Tunisian Governorates

Governorate	Unemployment Rate			Unemployment rate - university graduates
	Males	Females	Total	
Tunis	16.2	23.4	18.6	21.5
Kasserine	21.2	32.6	23.4	46.9
Sidi Bou-Zeid	22.7	30.1	24.4	57.1
Tataouine	31.4	58.2	37.0	55.9
Gafsa	16.3	40.7	22.3	55.0

Source: National Statistics Institute, August 2013

Impact of projects on the job market (Direct employment using the case study approach)

The Urban Priority Roads V project is composed of 12 sub project, of which 5 sub-projects were analyzed. The total resulting direct employment from the 5 sub-projects (3 of which in Tunis, 1 in Kasserine, and 1 in Gafsa) is nearly 1,096 person-years including construction, engineering supervision, and project management services. The Operation and Maintenance employment is estimated at 8.13 jobs for the lifecycle of the project.

The breakdown of direct employment of the Urban Priority Roads V is shown in the table below. Approximately half of the jobs went to skilled labour, technicians and engineers with relatively high education attainment levels.

Table 2: Employment Breakdown of Urban Priority Roads V

Position	Employment Breakdown (%)	Education Level	Average Salary *
Project Managers & Engineers	8%	U: 100%	2,600
Technicians	17%	U: 84% C: 16%	1,550
Skilled Labour	25%	C: 100%	650
Unskilled Labour	25%	S: 100%	525
Security Guard	6%	S: 100%	525
Administrative	19%	U: 60% C: 29% S: 11%	1,050

U: University Degree, C: Community College, H: high school degree,

S: 10-12 years of schooling, D: Less than 10 years of schooling

*Tunisian Dinar per month

Most of the employed were adult males who were hired for the entire duration of the project. An estimated 80% of employment contracts were permanent (for the project duration), and 20% were temporary contracts (casual/daily). Female employment stood at less than 1%, and no data was available for youth employment (ages 16 – 29).

The total resulting employment from Power Station Sousse C is approximately 6,265 person-years. The operations & maintenance employment is marked at 150 permanent positions. Of the total jobs created, 33% were permanent for project duration and 67% were temporary. The breakdown of employment is shown below.

Table 3: Employment Breakdown of Power Station Sousse C

Position	Employment Breakdown (%)	Education Level	Average Salary*
Project Managers	1%	U: 100%	3,550
Engineers	3%	U: 51% C: 48%	4,065
Technicians	48%	U&C: 73% S: 27%	2,225
Skilled Labour	32%	U: 4% C: 9% S: 87%	2,000
Unskilled Labour	1%	S: 100%	1,165
Security Guard	5%	---	---
Administrative	10%	U: 47% C: 24% S: 29%	2,125

U: University Degree, C: Community College, H: high school degree,
S: 10-12 years of schooling, D: Less than 10 years of schooling
*Tunisian Dinar per month

In total, 600 workers were employed on the 5 sub-projects of the Urban Priority Roads V: that were analysed. Using the overall total of 1,096 person-years presented earlier, results in average employment duration of 22 months for each position.

The prime contractor of the Power Station Sousse C employed 1,938 workers for different durations and lengths. Using the overall total employment by the prime contractor of 2,476 person-years, results in average employment duration of 15 months of employment for each position.

Direct, indirect and induced impact of projects (results of the macroeconomic study)

Simulating the impact of Urban Priority Roads V project on output, income and employment using the Input-Output table indicates that the project will generate TD206 million in output and will create a total of 8,464 job opportunities (direct, indirect and induced). On the other hand, simulating the impact of the Power Station Sousse C using the Input-Output table indicates that the project will generate a total output of TD117 million.

Table 4: Direct, Indirect and Induced Effects of the Urban Priority Roads V

Project	Output	Income	Employment
	TD mn	TD mn	Job Opportunity
Urban Priority Roads (TD 486.2 million)	206	76	8,464
T1 (Indirect effects multiplier)*	1.62	1.61	1.34
T2 (Indirect + Induced effects multiplier)**	1.92	1.86	1.57

* T1 is type I Leontief multiplier. $T1 = \text{Sum}(\text{direct} + \text{indirect}) / \text{direct}$.

**T2 is type II Leontief multiplier. $T2 = \text{Sum}(\text{direct} + \text{indirect} + \text{induced}) / \text{direct}$.

Table 5: Direct, Indirect and Induced Effects of the Power Station Sousse C

Project	Output	Income	Employment
	TD mn	TD mn	Job Opportunity
Power Station Sousse C (TD 853.6 million)	117	43	4,622
T1 (Indirect effects multiplier)*	1.35	1.59	1.35
T2 (Indirect + Induced effects multiplier)**	1.61	1.85	1.61

* T1 is type I Leontief multiplier. $T1 = \text{Sum}(\text{direct} + \text{indirect}) / \text{direct}$.

**T2 is type II Leontief multiplier. $T2 = \text{Sum}(\text{direct} + \text{indirect} + \text{induced}) / \text{direct}$.

The tables above indicate that both projects have demonstrated the importance of the indirect effect of investment in infrastructure through the supply chain, and the induced effect for employment creation. It is important to mention that purchase of imported materials and products was estimated at 25% of the total investment of the Urban priority Roads V and 80% of the Power Station Sousse C. This resulted in significant leakages out of the economy, especially in the power station project, and reduced the indirect effects. Additionally, indirect and induced effects on output and income appear higher than that of employment since the the multipliers of output and income are clearly higher than the multipliers of employment.

According to the findings of the simulations, low skilled jobs dominate the employment generated by both projects but a higher proportion of jobs requiring higher levels of education were found in the Power Station.

Concluding remarks

- The findings presented in this paper demonstrate the significant effects of investment in infrastructure on employment, output and income. Consequently, investment in infrastructure remains vital to job creation and economic growth and the anticipated additional investment in the infrastructure of Tunisia will play a vital role in employment generation and economic recovery.
- The construction sector remains a major employer in Tunisia and the lack of qualified labour especially in the specialized job categories such as skilled labour and technicians is a challenge to the contractors. Higher wages in the neighboring Libya is increasing the wages of these categories in Tunisia. This is further exacerbated by the perceived low cultural value of manual work resulting in reducing the supply of the labour force.
- Nearly 40% of construction projects' staffing in the roads sub-sector and 80% in the power station are for the skilled labour category. Therefore, increasing the capacity of the workforce in this category will increase their employability and will enhance the responsiveness of the workforce to the increased job opportunities for skilled labour.
- Significant leakages, in the form of imported material and equipment, reduced the indirect and induced effects of both projects but mainly the Power Station Sousse C where 80% of total investment budget was used for imported materials, equipment and supplies.

through backward linkages will reduce leakage of investment outside the economy and will increase the indirect and induced effects.

Way Forward

Practical recommendations that can enhance the employment impact in the sectors (or sub-sector)

- Improving project management to reduce delays in construction of large infrastructure projects can support the sector's recovery and its employment potential.
- Aligning labour supply and demand by ensuring that the vocational and technical training system graduates sufficient qualified individuals to meet the growing needs of the sector.
- Intensify operation and maintenance efforts of roads to increase direct employment.
- Expansion of local industries in the supply chain required to provide supplies and equipment to construction projects

Key ILO resources

1. Employment Impact Assessment of Infrastructure in three Mediterranean Partner Countries. Final Report – Tunisia. August, 2014.
2. Macroeconomic Employment Impact of EIB Infrastructure investment in Tunisia. Final Report – 2014.
3. ILO Data Guide for Infrastructure Employment Impact Assessment, 2016.

Other Resources

1. National Statistics Institute, www.ins.tn
2. Strategic Analysis of Tunisia, Strategic Analysis, www.strategic-analysis.org, 2013
3. Ministry of Development and International Cooperation, 11th Development Plan (2010-2014)
4. Tunisia Energy Situation, Energypedia, 2013

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For more information on links between infrastructure investment and employment creation, visit the website of the Employment Intensive Investment Programme:

<http://www.ilo.org/global/topics/employment-intensive-investment/lang--en/index.htm>