



International
Labour
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▶ Employment Impact Assessments (EmplA)

Analysing the employment impacts of investments in infrastructure

Employment-Intensive Investment Programme (EIIP)

What is EmpIA?

Employment Impact Assessments (EmpIA) is a process to assess the employment potential and impacts of sectoral policies and investments. While it is possible to conduct EmpIAs in a variety of sectors, this note specifically focuses on the Employment-Intensive Investment Programme's (EIIP) EmpIAs on investments in infrastructure, in the construction and related sectors. EmpIAs consider both the quantitative (number of jobs created) as well as the qualitative effects (types and quality of jobs created) of the employment generated. EmpIAs conducted by the EIIP also aim to identify appropriate project segments where employment-intensive methods can be applied to generate more and better jobs.

Investments in infrastructure are driven by specific development goals, such as economic growth, social development, poverty reduction, improved access to goods and services, poverty reduction or preserving biodiversity, reducing pollution, climate change adaptation or mitigation. These investments are all relevant to the Sustainable Development Goals (SDGs) and they can also stimulate employment creation and income generation - this is generally acknowledged and often emphasized by policy makers. However, the employment potential and impact of infrastructure policies and investments are not always well understood, assessed, quantified or monitored. Because of this, the employment effects attributed to infrastructure investments are often inaccurate and not supported by sufficient evidence.

Why conduct EmpIA?

EmpIAs facilitate the understanding of the employment impacts of infrastructure investments. Through informing policy-makers about how infrastructure investments impact on the various dimensions of employment and the labour market, they support the development of evidence-based pro-employment infrastructure and environmental policies and strategies that are appropriate to the context of the local or national economy.

EmpIA provides governments with insights to formulate policy options to enhance the employment outcomes of their investments.

Such insights and policy options can include:

- Structuring government investment portfolios to be balanced across different categories of infrastructure to achieve optimal employment outcomes.
- Identifying the skills requirement for executing infrastructure investments and putting in place measures to ensure such skills are available.
- Adopting more employment-intensive methods of construction works for appropriate segments of the infrastructure investment portfolio.
- Adopting policies to increase local inputs and thereby increasing the multiplier effects of infrastructure investment on employment within an economy.¹
- Adopt strategies to address decent work deficits and gender gaps, and promote the participation of vulnerable groups in the construction and related sectors.



What is the EIIP's approach and methodology?

The ILO's has a wide range of tools and approaches for conducting EmpIAs.² These methodologies and approaches vary depending on the nature of the policy or investments to be assessed. The Employment-Intensive Investment Programme (EIIP) has been focusing on, and developing tools and methods for assessing infrastructure investments. The EIIP's approach to EmpIA aims to quantify the employment potential and impact of infrastructure investments, particularly in infrastructure sub-sectors where the use of employment-intensive methods of construction and maintenance are technically feasible and cost-effective. The approach is set out in the The EIIP's *"Guide for Monitoring Employment and Conducting Employment Impact Assessment (EmpIA) of Infrastructure investments"*³ (EmpIA Guide). EmpIA can be

¹ For more information about the ILO's approach to local infrastructure development, see: ILO (2020). ["Local resource-based \(LRB\) approaches and community infrastructure"](#)

² See ILO 2020: [Reference guide for Employment Impact Assessment](#)

³ ILO. (2020). *"Guide for Monitoring Employment and Conducting Employment Impact Assessment (EmpIA) of Infrastructure investments"*

ex-ante, in which case it is used to estimate the number of jobs to be created through infrastructure investment and be integrated into the monitoring and evaluation framework to keep track of the employment created. EmpIA can also be *ex-post* where it is used to evaluate the employment effects generated through the construction related activities after its completion. In the process of conducting an EmpIA the EIIP focuses on answering four sets of questions:

1. **How many direct and indirect jobs are created during construction, operation, and maintenance?** This includes the number of persons employed as well as the duration of their employment as a result of the investment. This can be based on counting the number of persons employed, analysis of project administrative and personnel records and/or on wage levels and the project expenditure on labour. In some cases, it is equally possible to assess the number of indirect jobs created by looking into the project-level supply chain of non-labour inputs of such investments.
2. **What kinds of jobs are created?** This pertains to the categories or occupations of the jobs created.
3. **Who gets the jobs?** This includes determining the profiles and characteristics of the workers, such as their age, gender, level of education and skills, household and previous employment status. This can also include the share of employment benefitting the local population, and whether workers come from areas of high poverty or with high rates of unemployment.
4. **How decent are the jobs?** This includes qualitative aspects of the jobs created from the investment, such as salary/wage levels and types of contracts. The question also pertains to compliance with ILO's fundamental principles and rights at work, minimum labour standards and working conditions, access to health benefits, leave and social security and the extent to which the jobs created can be categorized as formal based on national standards.

Employment impacts

Employment impacts related to the construction of infrastructure are categorized into three types, each of which is assessed separately:

- ▶ **Direct employment:** employment created directly by the infrastructure project, typically in construction and including all workers directly employed by the main contractors and subcontractors.
- ▶ **Indirect employment:** employment created through the increased demand for inputs from supplying sectors generated by the project (Backward linkages), such as tools, materials, plants and equipment along the value chain for the construction of the infrastructure project.
- ▶ **Induced employment:** employment created through *forward* linkages such as households benefitting from additional income through direct and indirect employment and consuming more goods and services in the economy.

Box 2 shows how these three type of impacts are related and what factors influence them.

The direct employment impacts can generally be assessed at the project (micro) level, while the indirect and induced effects are economy-wide and these are generally assessed at the macro level. The approaches used for both the micro and macro levels are presented below.

Depending on the scope of the assessment and data available, the assessment can also show how different groups within the workforce are affected differently. Such analysis is important in assessing which group of workers benefits from a specific public intervention. This type of information can be used to develop strategies to address issues such as skills gaps, gender biases or insufficient participation of youth in the sector.

► **Box 1: Comparative analysis of costs: the origin of EmpIA in Cambodia**

The EIIP has long conducted comparative analyses between using labour-intensive and machine-intensive methods for rural roads works. Such analyses had as their primary objective to compare the costs and benefits of the various approaches, to inform Governments in their policy setting for operations related to rural infrastructure provision. This work laid the ground work for the current EmpIA work.

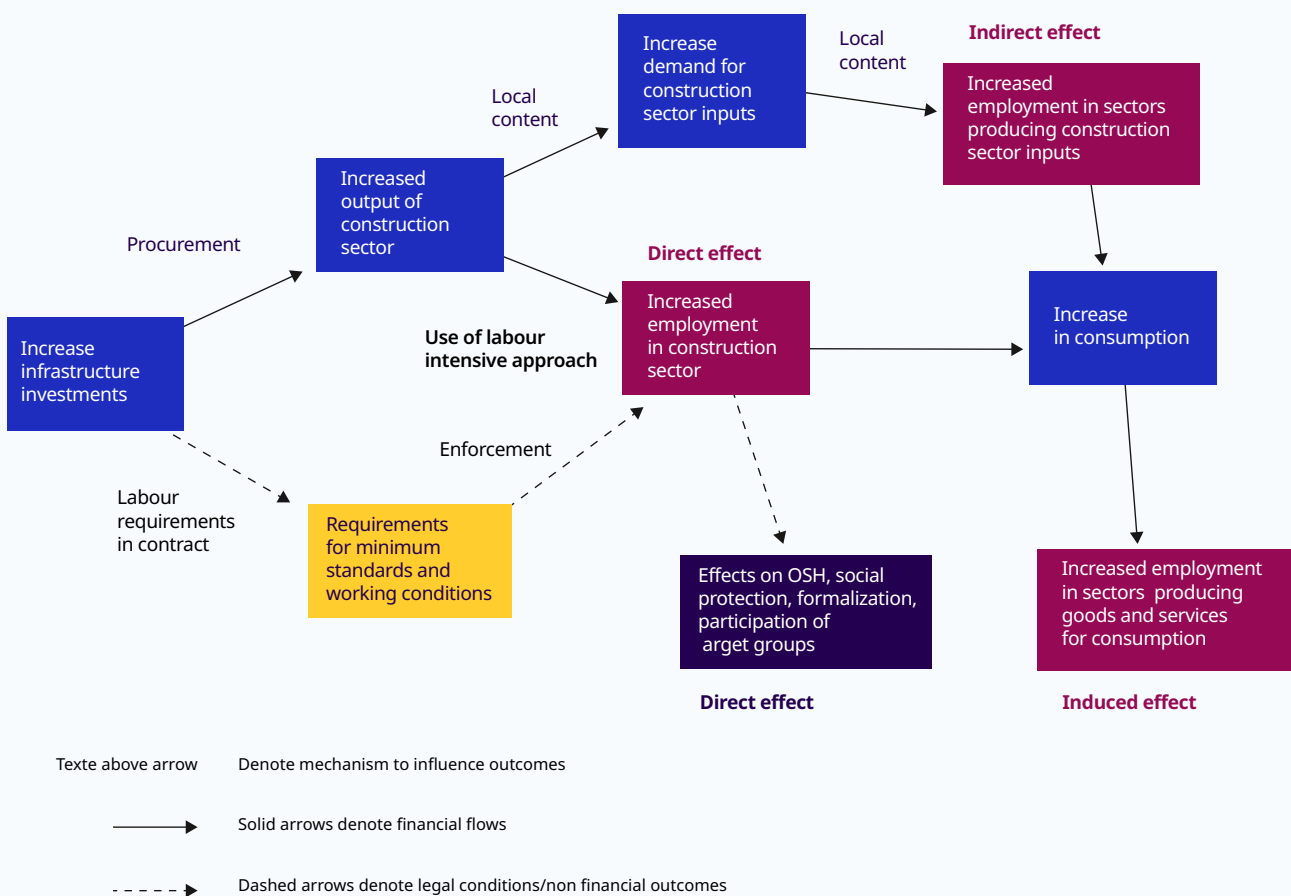
For example, in 2003 in Cambodia, the ILO conducted a study comparing employment- and equipment-intensive projects. The study found that employment-intensive methods for constructing rural gravel surfaced roads in Cambodia were less expensive than works carried out using equipment-based methods, while maximizing also increasing the share of project costs that were paid labour. The table below summarizes the results of this cost comparison and shows the dramatic increase in labour income, for in particular unskilled labour, which result from using employment-intensive methods.

Type	Project type/name	Size	Cost (USD/km)	Unskilled labour	Skilled labour	Materials	Equipment	Miscellaneous
Employment intensive methods	Large-scale (ADB rural infrastructure improvement project)	525 km	14,663	37%	12%	32%	12%	7%
	Small/medium-scale (ILO rural infrastructure works programme)	6.6 km	16,732	29%	11%	30%	30%	0%
Equipment-based methods	Large-scale (Ministry of Public Works and Transport (DPWT) road restoration project)	438 km	19,121	2%	9%	19%	70%	0%
	Small/medium-scale (DPWT urban road restoration project)	11.6 km	20,678	1%	4%	12%	68%	16%

Source: Paul Munters (2003), "Jobs or Machines: Comparative Analysis of Rural Road Works in Cambodia." pp43

► **Box 2: Direct, indirect and induced effects of infrastructure investment on employment during the construction phase**

The flow chart below represents economic effects measured in monetary terms, and legal and non-financial outcomes from increased infrastructure investments in the short-term. Over the long-term, these investments typically have far reaching effects such as lowering production costs and increasing labour productivity (e.g. economy of scale), increasing tax revenues, or creating new business opportunities, which all influence employment prospects.



Source: ILO (2020), "Guide for Monitoring Employment and Conducting Employment Impact Assessments (EmpIA) of Infrastructure Investments."

Project-level assessment (micro level)

Project-level assessment concerns a micro-level understanding of the investment. Such an analysis helps to understand what kinds of jobs the project or programme creates and what it means for the incomes of workers and households. Project level assessments tend to focus on the direct job impacts, but the most important suppliers

can also be part of the assessments, which will also provide insights into the indirect employment creation effects.

Ex-ante estimates at the project level can be done, but these tend to focus mostly on the first question of “how many jobs are estimated to be created”, and “what types of jobs can be anticipated”. However, the question of who gets the jobs, and whether they are decent jobs, are more empirical and can better be explored ex-post.

► **Box 3: EmpIA in Jordan and Lebanon in the transportation sector**

In 2018, the World Bank and the ILO jointly assessed the direct employment impacts of 9 primary and secondary road infrastructure investment projects (5 in Lebanon and 4 in Jordan) for a total budget of 232 million USD, in different phases of construction, rehabilitation, and maintenance.

► **How many direct jobs were created?**

The analysis found that 1,076,152 direct person-days were created through 9 different infrastructure investment projects. The assessment also underscored the different employment impacts of different projects due to varying labour intensities between primary roads and highways, and secondary and rural roads, with the former being between 17 to 22% and the latter being around 33 to 73%.

► **What kinds of jobs were created?**

Direct employment was composed of 20-40% of permanent jobs, which were held by project managers, resident engineers, some administrative staff and specialized technicians. The remaining jobs were all temporary jobs and included those for general technicians, skilled labor, unskilled labor, security guards, and administrative staff.

► **Who got the jobs?**

Women were employed in only 1 to 2% of the jobs created. Furthermore, they were restricted to specific job categories such as project management, engineering, and administration, and rarely employed as technicians, skilled and unskilled labor, or security guards. The assessment also highlighted that non-nationals such as Syrian refugees were mainly employed in semi to low-skilled categories, compared to the nationals.

► **How decent were the jobs?**

Higher category positions received full benefits while lower category benefits were more limited. There was only one ILO EIIP project in which unskilled laborers benefitted from social security. There was a demonstrated clear need for embedding decent work principles such as equal employment opportunities for both women and men, into the project design.

Source: World Bank, ILO (2018), *“Assessment of Infrastructure Investments in Transport and Job Creation -*

Assessing project-level impacts

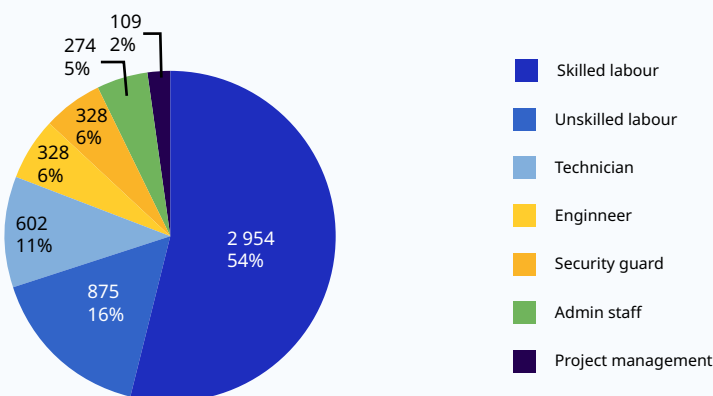
► Box 4: How to collect data to conduct the assessment on employment impacts of infrastructure investment as a third party

Assessment of national/local context	Reviewing available data and documents on the construction and related sectors, investment size and location, labour market, employment policies
Structured interviews	Interviewing key informants: Ministries, national agencies, project management units, contractors, direct beneficiaries etc.
Site visits	Visiting the ongoing and completed projects to address the quality of employment and working conditions
Review of project documents	Reviewing documents including appraisal reports, design reports, site records, bills of quantities (BOQs), and physical and financial progress reports

► Box 5: Project-level Employment Impact Assessment in Jordan

Below is a summary of the results from an EmpIA of an investment of 224.5 million Jordanian Dinars (US\$ 315 million) in the Tafila Wind Farm Project in Jordan. The figures below show the breakdown of the direct jobs created by occupation obtained from a project-level assessment.

Breakdown of direct jobs (5,470 in total)



Project level impacts are generally conducted by a consultant or third party. Box 4 provides an overview of the key activities involved in such an assessment. The EmpIA Guide⁴ provides further guidance on the process, and includes an additional set of suggested indicators relating to employment quality. Managers and assessors can select the most relevant indicators from this Guide. An ex-post project level assessment can be of interest to different stakeholders to help them understand and report the quantitative and qualitative impacts of their infrastructure investments on employment. Such exercises could support the fulfilment of governments' accountability to taxpayers, build support for such investments and present lessons to improve employment dimensions of infrastructure investments. Box 5 provides an example of the types of results a project level assessment can provide, in this case the breakdown of the jobs created by occupation.

Integrating employment impact assessments into project monitoring and evaluation.

The ability to conduct project level analysis can be greatly enhanced by including employment outcomes and related indicators into the results measurement framework of a project and systematically monitoring key employment related indicators. The EmpIA Guide proposes four types of **core data** that should be integrated as standard indicators into an M&E framework of infrastructure projects in order to monitor employment generated as a result of the project the project in a systematic manner. The four core indicators are:

1. **Number of persons employed**, disaggregated by occupations and skills, gender and age
2. **Number of days or months worked**, disaggregated by occupations and skills, gender and age
3. **Total wages** (gross salaries) **paid**, disaggregated by occupations and skills, gender and age
4. **Total project expenditure**

In some contexts, further disaggregation may be necessary to capture the relevant employment impacts, such as disaggregation by the status of migration, disabilities, communities, and others. It is important to note that the information on disaggregated data is

already generated as part of the project and human resource management activities of the project and that what is required is that this information is managed and collected in such a way that is also available for employment reporting.

Secondary indicators can be derived from these four core indicators to provide a more detailed overview of a project's direct employment effects, such as its labour intensity, the average duration of the jobs created and the average wages for those working on the project.

If such data is not collected as part of the regular monitoring, it can also be obtained through a separate project assessment. Even for projects where this type of data is collected, such an assessment can also be conducted to gain further insights into the qualitative dimensions of the employment created.

Economy-wide analysis (macro-level)

Input-Output Tables (IOTs) and Social Accounting Matrices (SAMs) are widely used for macroeconomic multiplier analysis and to assess the economy wide impacts of infrastructure investments. The ILO also uses these tools to estimate Type I (indirect) and Type II (indirect +induced) output multipliers and combines this with labour force survey data to estimate employment multipliers and the short-term indirect and induced employment impacts across the economy.⁵

IOTs and to a lesser extent SAMs are available for most countries, but they are not always detailed enough to conduct a reliable analysis. Furthermore, these tables are not always up to date and updating them generally requires substantial additional work and collaboration with national statistical agencies and authorities, and so in most cases it is more affordable and practical to rely on existing tables. Box 6 also provide the typical results obtained from an economy wide assessment.

4 ILO (2020), "Guide for Monitoring Employment and Conducting Employment Impact Assessments (EmpIA) of Infrastructure Investments."

5 In addition to the EmpIA Guide see also ILO 2015: The employment dimension of infrastructure investments. A guide for Employment Impact Assessment, which preceded the 2020 Guide and provides a broader background to the use of these tools.

► Box 6: Economy-wide Employment Impact Assessment in Morocco

The table below provides the figures on economy-wide effects including the direct, indirect and induced jobs created under the solar energy power plant (500MW) development and construction project in Ouarzazate in Morocco, implemented by the Moroccan Agency for Solar Energy (MASEN). The project is an investment of 9.6 billion Moroccan Dinars (US\$1.08 billion). The multipliers calculated indicate the linkages the investment had with other sectors of the economy. The T1 multiplier provides a measure of the direct and indirect employment and in this case, for every 1 direct job 3.41 indirect jobs are created. The T2 multiplier includes the direct, indirect and induced employment and so in this case for every 1 direct job 3.41 indirect and 0.45 induced jobs are created. Investment in this project had limited impacts on direct job creation with the wage share of only 3% of the total expenditure; however, a number of indirect jobs were created along the value chain.

This study shows that investment in renewable energy does not automatically lead to direct green “job creation” nor, subsequently, a just transition into a greener and fairer economy. Designing the programme to include labour-intensive construction works throughout the value chain is where larger potential for creating larger job opportunities lie. Otherwise, green works¹ may be more suited for a targeted intervention with higher direct employment impacts, if the main objective of the investment is job creation. Green works can have significantly higher labour intensity of investments up to as high as 60% of the total investment.

Indicators (MASEN Solar Energy Project)	Result
T1 multiplier (to estimate indirect effects)	4.41
T2 multiplier (to estimate indirect and induced effects)	4.86
Direct employment (FTE)	39 854
Indirect employment (FTE)	135 902
Induced employment (FTE)	17 934
Total employment (FTE)	193 690

* T1 multiplier = (direct + indirect)/direct

** T2 multiplier = (direct + indirect + induced)/direct

Source: European Investment Bank (EIB). 2015. “Study on the employment impact of EIB infrastructure investments in the Mediterranean partner countries” Summary Report.

¹ ILO (2020), “Green works - Creating decent jobs through investments: Promoting forest restoration, irrigation, soil and water conservation, and flood protection”

Recommendations

Infrastructure investments are often driven by specific development objectives. For this reason, the employment impacts of infrastructure investments are not often well understood or quantified. If development finance institutions (DFIs), governments, social partners, infrastructure partners and stakeholders wish to optimize the employment impacts of their infrastructure investments, it is recommended they conduct EmpIA to better understand how their investments impact on employment. For this purpose, the ILO recommends its partners to:

- **Keep records of disaggregated employment data related to infrastructure investment projects during the implementation phase.**

Recording employment data of a project is common practice as it is required for wage payments and HR administration. It is useful to develop a system¹ to keep track of this data at the beginning of the projects so that information on occupations, hours and days worked, and wages paid can be broken down by gender and age and reported regularly along with the overall expenditure and costs of the project.

- **Conduct EmpIA to help optimize the employment impacts of infrastructure investments.**

EmpIA captures employment impacts in both quantitative and qualitative terms. Results from EmpIA provide stakeholders with estimated employment effects as well as insights for how to use project design, procurement strategies, promotion of local content and the increased use of employment-intensive methodologies to optimize the employment outcomes of their investments.

- **When there are specific concerns such as decent work deficits or lack of participation of vulnerable groups, conduct a more in-depth analysis of selected projects to understand a fuller range of various qualitative employment impacts.**

An in-depth analysis of a project's impact on employment can focus on specific areas of interest or concern, such as whether vulnerable groups are able to access employment opportunities generated by the projects, or the kind of decent work deficits that are still present. It will provide insights into the reasons why some groups are not included or why decent work deficits persist and it will help identify potential measures to address these.

- **Use EmpIA analysis to inform investment strategies and employment policies**

Macro-level assessments will show the interactions between the construction sector and different industries, as well as the employment effects on related sectors and through value chains. Such an analysis can thus help inform sectoral investment strategies of governments, donors and development banks as well as national employment policies. The result can also contribute to evaluating the overall impacts of the investments.

- **Invest in capacity building among staff from government agencies, academics and research institutes**

Building capacity on EmpIA methodology among partner countries' institutions will enable the wider use and mainstreaming of EmpIA in infrastructure planning and development and create a pool of local experts that could manage or undertake the simulation of alternative policy options or the assessment of completed projects.

¹ See ILO (2020), "Guide for Monitoring Employment and Conducting Employment Impact Assessments (EmpIA) of Infrastructure Investments."

Key ILO resources and publications

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► Employment Intensive Investment Programme (EIIP)

- Employment impact assessments
- Public employment programmes (PEPs)
- Public and Private Sector Development
- Green works
- Local resource-based approaches and community infrastructure
- Emergency employment

Contact details

International Labour Organization
Route des Morillons 4
CH-1211 Geneva 22
Switzerland

T: +41 22 799 6111
E: eiip@ilo.org
ilo.org/eiip