

# Extractives-Linked Infrastructure

## Exploring Options for Shared Use of Infrastructure Projects

### KEY MESSAGES

- Extractive industries often require investment in large infrastructure projects (e.g., ports and railways) to be able to successfully bring the resource to market.
- Unless there is active intervention by the government, *enclave* infrastructure investments may only benefit the extraction site, missing the opportunity to leverage economies of scale in the sector or meet the development needs of the community.
- In order to be successful, the possibility of shared use of infrastructure should be considered in the early stages of the extractive project.
- Governments also often use resource revenues to invest in large infrastructure projects, which must be closely monitored to avoid waste.

*“Extraction projects may also require substantial infrastructure which can provide significant benefits in regions where the infrastructure is built. To enhance these benefits, the government, in discussion with companies, should consider making the infrastructure open to multiple users.”*

– Natural Resource Charter, Precept 5

### EXTRACTIVE INDUSTRIES AND INFRASTRUCTURE

Mining, oil and gas projects often require large infrastructure support to extract the product and get it to its final destination. These projects include roads or rail transportation, water systems, power, telecommunications, ports and pipelines. Many of the developing countries where extraction takes place have infrastructure gaps that can make it more challenging to transform resource wealth into long-term development. This reader discusses the impact of infrastructure projects by extraction companies and the use of natural resource revenues to facilitate new infrastructure projects.

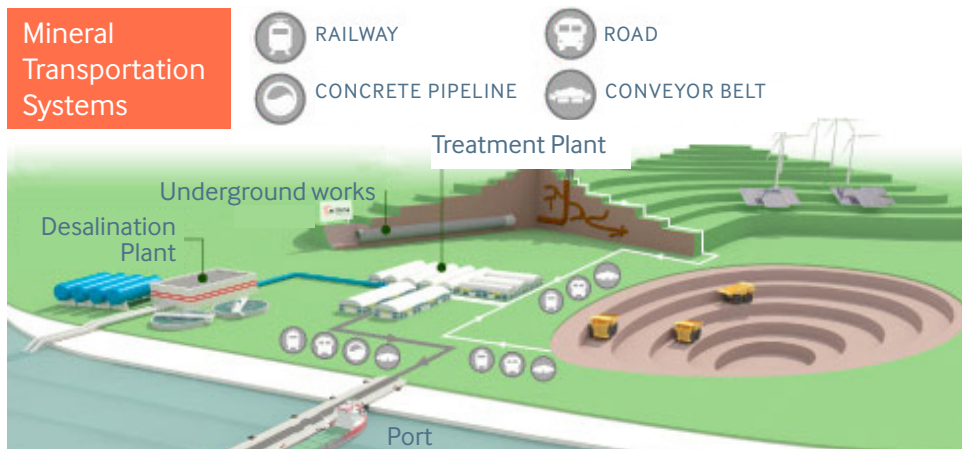


Figure 1. Types of mining infrastructures

Source: Courtesy of Acciona Infrastructure, available at: <http://www.acciona-infrastructure.com/activities/mining.aspx>

This reader is intended for use in conjunction with Precepts 5 and 9 of the Natural Resource Charter.

## INFRASTRUCTURE NECESSARY FOR EXTRACTION

When the infrastructure does not exist, mining companies may find it more efficient to build what they need to extract the minerals and get them to market. This can lead to an *enclave* system of development, in which mining companies make large infrastructure investments that will only suit their needs. In Sierra Leone, for example, all mines built their own power generating systems without linking to either the national electric grid or sharing that electricity with the surrounding communities. In Pilbara, Australia, three mining companies built separate railways in a close geographic space.

Developing infrastructure requires multiple roles. The *owner* of the infrastructure has legal ownership of the property and physical elements. The *operator* controls who has access to the infrastructure during what times and at what cost. The *investor* funds the construction, and sometimes the operation, of the infrastructure. A *regulator* can monitor the use of the transportation system to ensure it is in compliance with the laws and agreements. Either the company or the state can play some or all of these roles, depending on the context.

## WHAT IS SHARED USE?

Shared use infrastructure refers to the opportunity to have mining-related infrastructure meet more than one objective. *Multi-user* infrastructure can increase the *economy of scale* of a particular infrastructure project when several mining companies in a region use a particular infrastructure investment. For example, a multi-user approach would encourage the three mining companies in Pilbara to share a railway instead of constructing three separate ones. *Multi-purpose* projects, such as the rail line built through the Nacala corridor in Africa, combine uses for non-mining purposes. In the Nacala corridor, passenger cars will travel on the same rail lines as coal cars. *Economies of scope* can be achieved when outputs of one type of infrastructure can be used as inputs for another, such as placing telecommunication lines along transportation tunnels.

In a 2013 report, McKinsey Global Institute estimated that as much as \$2 trillion of extractive industries' infrastructure investments could benefit from some form of shared use between 2013 and 2030. It estimates that nearly 70 percent of infrastructure investment could be multi-user, and the remaining 30 percent could be multi-purpose.

## CHALLENGES FOR SHARED-USE PROJECTS

While shared-use projects may sound attractive, the economic advantage is strongly dependent on the specifics of the project. As research from the Columbia Center on Sustainable Investment shows, both the costs and the returns from shared use can range significantly, depending on the type of infrastructure and the type of industry it was developed for. In other words, there can be substantial costs attached to a shared-use approach that must be considered against the potential benefits.

On the other hand, an *enclave* structure can be extremely logical from an investor/operator perspective, especially where the coordination costs for sharing the infrastructure are very high or where coordination reduces the competitive advantages of the operation. In some cases, an extractive company may view acting as the sole operator and user of infrastructure as a competitive advantage for gaining future concessions in the same area. Sharing one type of transportation infrastructure could

*“While shared-use projects may sound attractive, there can be substantial costs attached to a shared-use approach that must be considered against the potential benefits.”*

also increase demand and associated costs for another type of infrastructure. For example, sharing a railway may increase demand at a port and could cause bottlenecks if the state or port operator cannot coordinate effectively. From the perspective of the state, enclave structures could exacerbate the problem of stranded assets and lead to decreased efficiency in minerals exploitation. The lack of a shared-use agreement could also limit the economic and development potential of the region, and lead to a perception of social exploitation.

Development planning across sectors can mitigate some of the risks by identifying multiple opportunities, users or purposes before contract negotiations or tendering the concession. Once there is a single user for infrastructure, it is more challenging to make it multi-functional or multi-user friendly. By planning ahead, governments can assess other options, such as negotiating for higher tax revenues to invest in public infrastructure projects. It should be noted that to the extent that shared infrastructure creates additional costs to the operator, the operator will try to negotiate some trade-offs, possibly seeking concessions on the applicable fiscal regime.

When considering a shared-use project, countries need to decide modalities for ownership, operations, maintenance and financing. The options are for the mining company, the government, or a third party to own and operate the infrastructure. The benefit of the mining company owning the infrastructure is that the company can absorb the large up-front costs and often has a strong incentive to keep costs low while providing reliable infrastructure and services. On the other hand, there is a risk when extraction companies monopolize the infrastructure that they will assert their power to limit access to other users. A middle-road option, *build-operate-transfer (BOT)*, allows the government to retain ultimate ownership (after a time) but leverages financing from the company. A strong government regulator can play a role ensuring that multiple actors can access the infrastructure equitably.

*“Once there is a single user for infrastructure, it is more challenging to make it multi-functional or multi-user friendly.”*

### Case study: Nacala corridor

Extractive companies have recently discovered and started to extract large finds of coal in Mozambique. One of the largest mines, operated by Vale, is in Moatize, 900 kilometers from the nearest port, in Nacala. The logistical challenges of getting coal to market from this remote location have impacted the profitability of the mine and left large stores of coal waiting outside the mine. With financial support from the International Finance Corporation, Vale, the government of Mozambique and the government of Malawi have collaborated to build a railway from the mine through part of Malawi. The project is a combination of building new railways and rehabilitating existing infrastructure. At its peak, Vale is expected to send as much as 14 coal trains along the railway each day. In addition, passenger cars will continue to operate along the same railroads, though less often than previously. At the end of the railway in Nacala, Vale, the government and other partnering companies have built a large new port facility to remove the coal from the railway and put it onto boats. The operation of the railroad and port will be managed by a separate entity owned in part by Vale, the government of Mozambique and other investors. The operator is currently outlining criteria that local businesses from other industries must meet to have their goods transported on the railway. Other large coal mines near Moatize do not have access to the rail line at this time.

## USING RESOURCE REVENUES FOR INFRASTRUCTURE

Countries with infrastructure gaps often aim to use their natural resources revenues to build better infrastructure conduits. As discussed above, countries can even plan to build infrastructure by not requiring shared use and instead negotiating for a higher tax rate. Once the government collects the resource revenues, they can be distributed through the budget or natural resource funds to infrastructure projects. When Malaysia discovered oil in the early 1970s, the government prioritized funding infrastructure projects (and education) with its natural resource revenues. Over the subsequent decades, it allocated large percentages of its resource revenues to roads, bridges and public transportation in the hope that these investments would provide the operating environment for a diverse economy and connect remote areas to the economy.

*“Resource revenues can be distributed through the budget or natural resource funds to infrastructure projects.”*

When countries choose to finance their infrastructure directly through higher taxes or royalties, there can be other challenges. Large public infrastructure projects are notorious sources of corruption and leakage. Governments have found some success by creating transparent budgets and using open, competitive procurement processes. The visible, public nature of these projects can create strong opportunities for civil society oversight and monitoring. Transparent monitoring programs, such as the Construction Sector Transparency Initiative (COST), can be effective in reducing the risk associated with these projects.

As the resource management reader discusses, investing in large infrastructure projects can create other economic challenges. When the *absorptive capacity* of the economy is weak, large investments of foreign funds can lead to inflation, potentially harming other areas of the economy.

---

## QUESTIONS TO ASK

- What kind of infrastructure is the extractive industry developing in my country? Is any of that infrastructure shared use?
- What is the extent of the infrastructure gap in my country?
- Are tax revenues being reinvested in infrastructure development? If so, who is overseeing how they are spent and monitoring the quality of the projects?
- Are measures in place to ensure efficient coordination between infrastructure users?
- Are there regulations in place addressing the long-term implications of the shared infrastructure?

## ADDITIONAL RESOURCES

### *Further reading*

McKinsey Global Institute, *Reverse the curse: Maximizing the potential of resource driven economies* (2013), available at: [http://www.mckinsey.com/insights/energy\\_resources\\_materials/reverse\\_the\\_curse\\_maximizing\\_the\\_potential\\_of\\_resource\\_driven\\_economies](http://www.mckinsey.com/insights/energy_resources_materials/reverse_the_curse_maximizing_the_potential_of_resource_driven_economies)

Toledano, Perrine et. al, *A Framework to Approach Shared Use of Mining-Related Infrastructure* (Vale Columbia Centre on Sustainable International Investment, 2014), available at: <http://ccsi.columbia.edu/work/projects/a-framework-to-leverage-mining-related-infrastructure/>

World Bank, *EI Sourcebook: Public Infrastructure and Mining: A Good Practice Note* (updated August 2013), available at: <http://www.eisourcebook.org/cms/Sept%202013/Good%20Practice%20Note%20for%20Public%20Infrastructure%20and%20Mining%20-%20revised%202013%20August%2013.pdf>

COST, *Transparency and accountability in the construction sector* (April 2011), available at: <http://www.constructiontransparency.org/documentdownload.axd?documentresourceid=46>

The Natural Resource Governance Institute, an independent, non-profit organization, helps people to realize the benefits of their countries' oil, gas and mineral wealth through applied research, and innovative approaches to capacity development, technical advice and advocacy.  
**Learn more at [www.resourcegovernance.org](http://www.resourcegovernance.org)**



Oil, gas and mining for development