



Shared use of mining - related
infrastructure
Opportunities and challenges



**Columbia Center
on Sustainable Investment**

A JOINT CENTER OF COLUMBIA LAW SCHOOL
AND THE EARTH INSTITUTE, COLUMBIA UNIVERSITY

About CCSI and its Infrastructure Work

- 🔥 CCSI: A joint of Columbia Law School and the Earth Institute whose mission is to develop practical approaches and solutions to maximizing impact of FDI for sustainable development
- 🔥 **Our infrastructure – related work** started with policy papers surveying successful models for shared use of mining-related infrastructure.
- 🔥 Consultancy Work with the World Bank: Forecasting the mining industry's energy demand by 2020 and its associated power sourcing arrangements as well as devising policy instruments to further power-mining integration
- 🔥 All work can be found here:
 - 🔥 <http://ccsi.columbia.edu/work/projects/leveraging-infrastructure-investments-for-development/>



Ausaid Grant



Australian Government
AusAID

Australian
AID 

- Grant from Ausaid: Developing a framework for shared use based on former work and in-depth case studies in Liberia, Sierra Leone and Mozambique

- Today:** Expert Workshop to check the quality and usefulness of our analysis

- Workshop Sponsored by :**

- The Natural Resource Charter**

- Practical policy advice to support decision-making that can best harness the economic potential of resource extraction

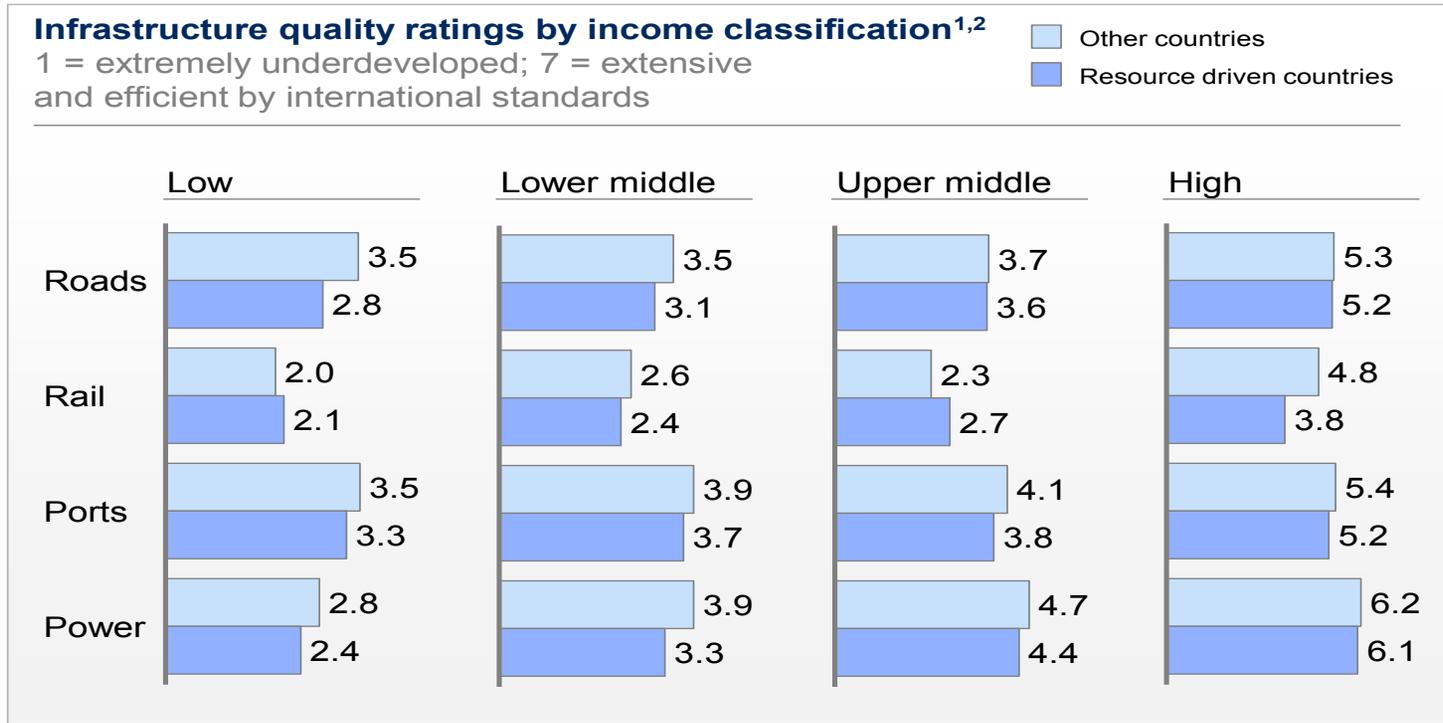


- The Sustainable Development Solutions Network**

- Mobilizes scientific and technical expertise from academia, civil society, and the private sector in support of sustainable development problem solving at local, national, and global scales.



Resource-driven countries have poor infrastructure



¹ Based on the World Economic Forum Global Competitiveness Report. 65 resource-driven countries are included in the sample.

² Classification based on World Bank income group definitions in 2011 - low income is \$1,025 or less; lower middle income, \$1,025 - \$4,035; upper middle income, \$4,035 - \$12,475; and high income is above \$12,475.

SOURCE: World Economic Forum Global Competitiveness Report 2012; McKinsey Global Institute analysis

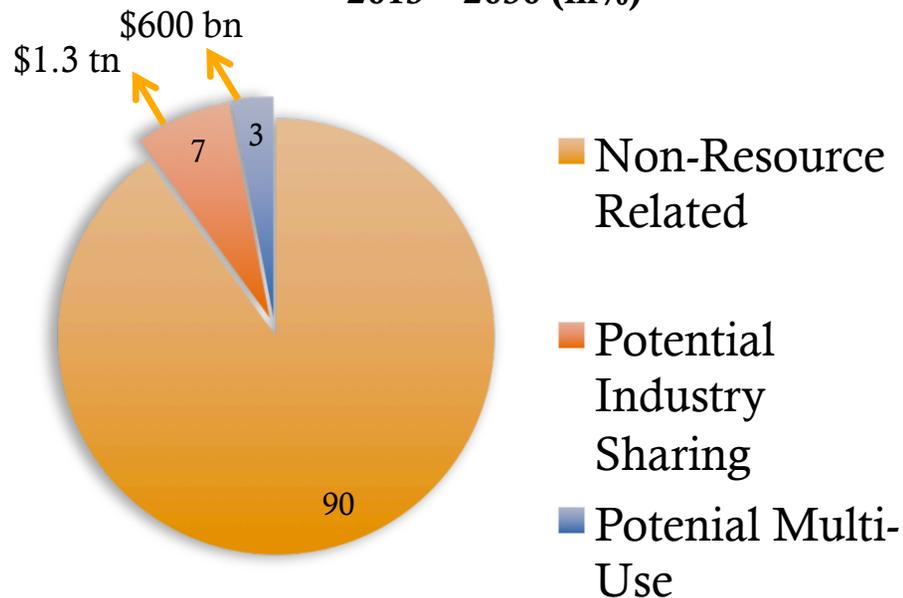
***NEED = \$19 tn of infrastructure investment
over the next 17 years
= 4 times * last -17 year- investment***

(Source: McKinsey Global Institute)



10% of \$19 tn of infrastructure needs relate to resources

Breakdown of Infrastructure Requirements :
2013 – 2030 (in%)



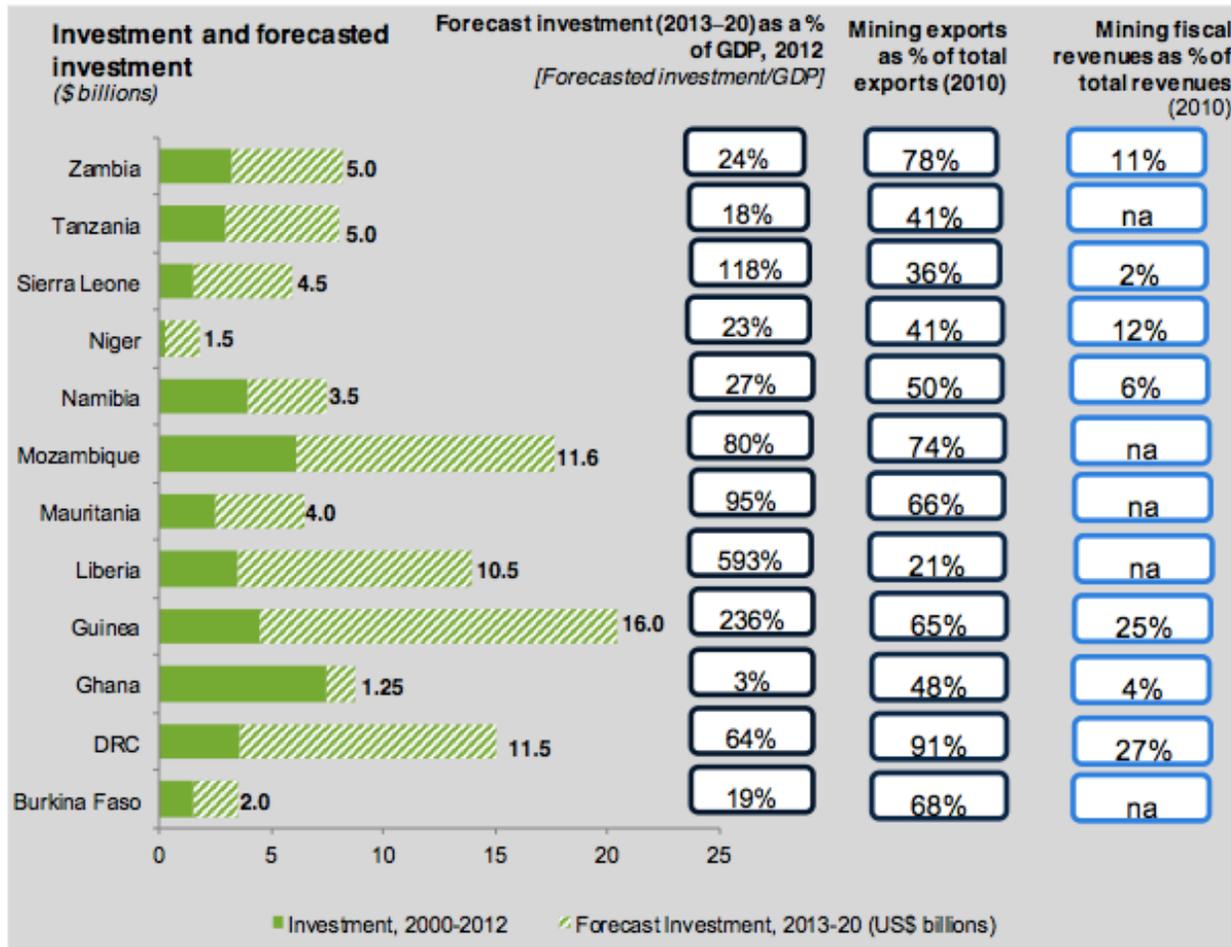
*In bulk mining ,
35%- 60% of capex
is on rails and port
infrastructure*

According to McKinsey Global Institute, \$600 bn amenable to industry sharing and \$1.3 tn to multipurpose



Why is this issue particularly critical in Africa ?

Africa hosts about 30 percent of the planet's mineral reserves, including 40 percent of gold, 60 percent of cobalt, and 90 percent of the world's platinum group metal reserves



Mining development

Opportunity for exports
+
Domestic use for growth
+
Anchor for economic and infrastructure development

Example: 4,000 kms of railway needed for planned iron ore projects in Western and Central Africa = total cost > \$50 billion. (Source: IFC)



An enormous infrastructure gap in SSA

US \$ billion annually

Item	Electricity	ICT	Irrigation	Transport	WSS	Cross-sector gain	Total
Infrastructure spending needs	(40.8)	(9.0)	(3.4)	(18.2)	(21.9)	n.a.	(93.3)
Existing spending	11.6	9.0	0.9	16.2	7.6	n.a.	45.3
Efficiency gap	6.0	1.3	0.1	3.8	2.9	3.3	17.4
Gain from raising capital execution	0.2	0.0	0.1	1.3	0.2	n.a.	1.9
Gain from eliminating operational inefficiencies	3.4	1.2	—	1.9	1.0	n.a.	7.5
Gain from tariff cost recovery	2.3	—	—	0.6	1.8	n.a.	4.7
Potential for reallocation	n.a.	n.a.	n.a.	n.a.	n.a.	3.3	3.3
Funding gap	(23.2)	1.3	(2.4)	1.9	(11.4)	3.3	(30.6)

Source: Briceño-Garmendia, Smits, and Foster 2008.

Note: ICT = information and communication technology; n.a. = not applicable; — = not available; WSS = water supply and sanitation. Parentheses indicate negative values.



Shared use is win-win..

**Infrastructure gap
in a resource-driven
country**

***Shared Use allows Parallel
Development of both the Mine and
the Host Country***

**Onerous
infrastructure
development for
mines**

Opportunities for

**Economies of
scale**

**Economies of
Scope**

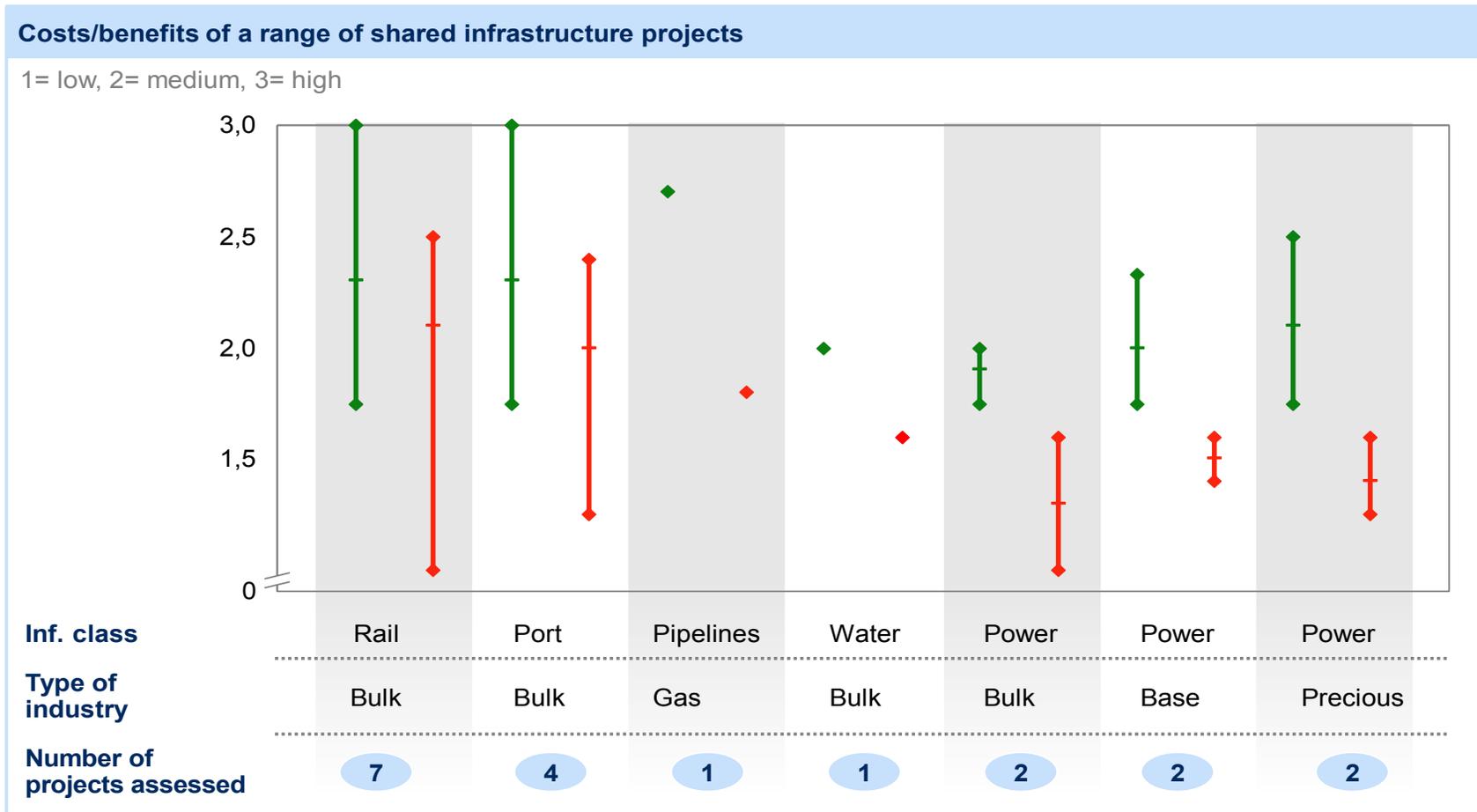
**Stable social
license to
operate**



.... However

While sharing is generally beneficial, the associated costs vary substantially between projects

— Average cost — Average benefit
 ◆ Range of cost ◆ Range of benefit



SOURCE: Vale Columbia Center; McKinsey Global Institute analysis



The benefits of shared use are not a foregone conclusion ...

- 🔥 Therefore to address shared – use of the mining – related infrastructure, Governments need a framework setting out:
 - 🔥 The preconditions for mutually beneficial shared outcomes
 - 🔥 The operational models adapted to the targeted outcomes for the country given its economic situation
 - 🔥 The regulatory models adapted to the institutional maturity of the country and the financial capacity of the government
 - 🔥 The questions to ask and clarify at the table of negotiation



Project timeline

November 2013

December 2013

Summer 2014

2014 and beyond

**Presenting
the
framework on
each type of
infrastructure**

**Getting
experts'
feedback**

Refining the
framework

Organizing
workshops in
Africa to
disseminate
the findings

Promote
advisory work
on this topic

- 1 - Power
- 2 - Water
- 3 - Rail and Port
- 4 - ICT



Expert feedback that applies to all infrastructure

1. Shared use only makes sense if there are significant economies of scale or scope so that extra capacity is inexpensive and there is a substantive market for that marginal low-cost capacity.
2. The government can incentivize shared use on mining related infrastructure by requiring a separation of ownership between the mine and the infrastructure. However, user-concessions (whereby the miner-user also owns the infrastructure) also have their advantages, as they allow for lower hurdle rates in politically risky environments, making the infrastructure project less costly for both the owners and users.
3. If user-concessions are awarded, a strong regulatory system is needed to guarantee shared use and ensure that the infrastructure is designed with additional capacity to accommodate such shared use.



Expert feedback that applies to all infrastructure (2)

4. All user concessions should be granted on a Build–Operate–Transfer (BOT) basis so that after a contractual period of 15-30 years, the infrastructure is transferred to the host government.
5. All miners should be required to bid on infrastructure plans in addition to the typical bidding criteria for a mine.
6. For ‘longitudinal’ infrastructure the host government should always keep control over the right-of-way, which can be commoditized.
7. In return for a mining company to accept shared use on infrastructure it finances/provides guarantees, the government will need to grant founding rights and capacity guarantees.

