

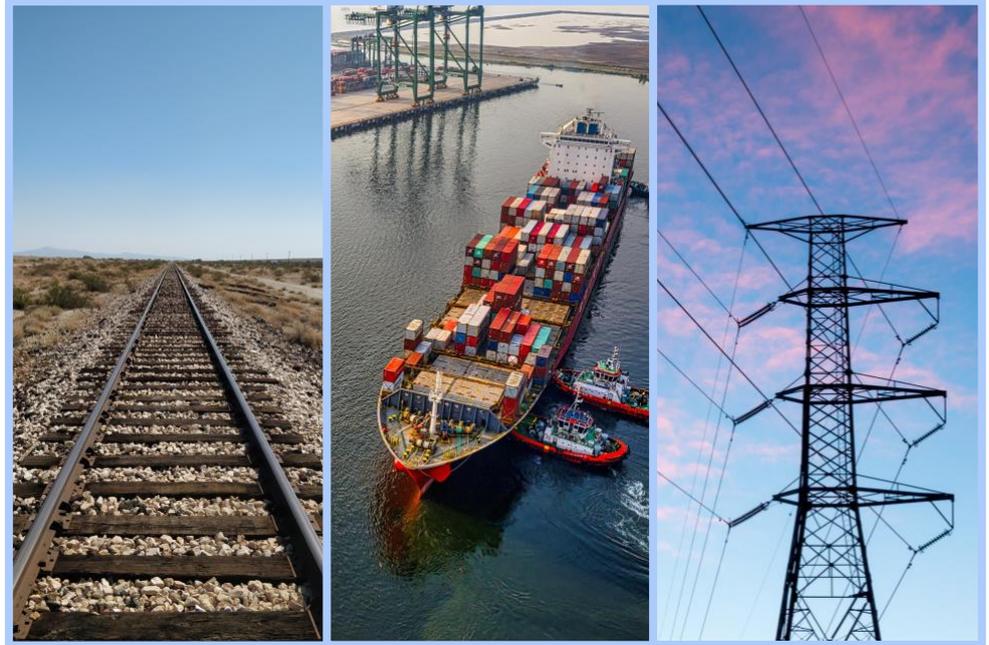
# Columbia Center on Sustainable Investment

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CCSI Policy Paper

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May 2022



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# Legal Provisions on Shared Use of Mining Infrastructure: Rail, Port, and Power

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**Acknowledgments:** The authors are especially grateful to the 2021 Mariellen Dugan Seton Hall Law Summer International Law Fellowship, which provided funding for Logan Hinderliter’s internship and ultimately made this work possible. The authors are very grateful to Edgar Monteiro and Jeff Wood their thorough review.

Photos by [Pradeep Susarla](#) on [Unsplash](#) (rail), [william william](#) on [Unsplash](#) (port), and [Nikola Johnny Mirkovic](#) on [Unsplash](#) (power).

## Please Cite As

Logan Hinderliter, Martin Dietrich Brauch, and Perrine Toledano. *Legal Provisions on Shared Use of Mining Infrastructure: Rail, Port, and Power*. New York: Columbia Center on Sustainable Investment (CCSI), May 2022, <http://bit.ly/shared-use>.<sup>1</sup>

## Key Takeaways

- Building on CCSI’s work, this paper sheds light on the legal, regulatory, and contractual provisions that underpin shared-use mining infrastructure and provides non-exhaustive guidance on how governments might strengthen provisions to advance shared use of railroads, ports, and power.
- Legal provisions establishing the shared use of mining infrastructure in concessions should reflect the legal and regulatory system in which they operate. Where there is little regulation of the mining sector, provisions in concessions need to include objective indicators that establish preconditions for shared use as well as explicitly identify each matter related to access, such as the right to build infrastructure, ownership of infrastructure, third-party and governmental access to infrastructure, priority use, user fees, and dispute resolution.
- While ideally there should be an independent regulator with the authority to make final determinations regarding shared-use disputes, in their absence, concessions should include legal provisions that establish an alternative dispute resolution process that parties can undertake before resorting to local tribunals or formal arbitration.
- Legal provisions related to excess capacity need to contemplate how mining companies design, construct, and operate infrastructure and who bears the cost of excess capacity, especially when governmental or third-party use of the infrastructure depends on their non-interference with companies’ operations.
- Legal provisions should distinguish between bulk cargo, non-bulk cargo, and passenger services, given the different economics of each service. Depending on the context, shared-use negotiations could consider requiring open access to service roads, instead of rail.
- When drafting legal provisions, governments should require that shared use will occur on a non-discriminatory basis where the mining company will not abuse its economic position in dictating terms of access. Enforceability will depend on shifting the burden of proof to companies and ensuring that the regulatory body has auditing capacity.
- Anticipating the economic viability of the conditions of shared use over a 20- to 30-year contract is an impossible undertaking. As in any long-term contract-related issue, contract parties should include periodic review clauses to regularly reassess the conditions of the contract.

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<sup>1</sup> Citations in this paper are meant to provide adequate information for readers to easily access referenced sources. Legal citations do not uniformly follow the Bluebook.

# 1 Introduction

Many developing countries face an infrastructure funding gap:<sup>2</sup> the public sector is unable to finance the construction of vital public works, such as railroads, ports, and power infrastructure. Extractive industry investments in infrastructure can help to narrow the gap.<sup>3</sup> Non-renewable resources serve as a foundation to construct long-term infrastructure assets that support sustainable development.<sup>4</sup> The rub lies in the fact that mining companies have traditionally followed an “enclave model,” building infrastructure for their exclusive use.<sup>5</sup> Although mining infrastructure might eventually be owned by the state, such as through a build–operate–transfer arrangement,<sup>6</sup> the enclave model causes governments to lose the opportunity to take advantage of synergies<sup>7</sup> between the infrastructure and larger national development plans.<sup>8</sup> In turn, shared-use mining infrastructure leverages the investments made in a mining operation’s infrastructure to expand benefits to national and regional communities.<sup>9</sup> This paper looks at legal provisions related to shared-use mining infrastructure to support governments, the private sector, and communities in capitalizing on those synergies.

In 2011, CCSI began to research how mining infrastructure can be leveraged for sustainable development and in 2013 created an economic, legal, and operational framework to generate shared-use benefits from rail, ports, power, water, and internet and telecommunications.<sup>10</sup> CCSI has published many works on shared use in the mining sector.<sup>11</sup> Those works, along with other mining-related

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<sup>2</sup> See Perrine Toledano, Sophie Thomashausen, Nicolas Maennling, and Alpa Shah, *A Framework to Approach Shared Use of Mining-Related Infrastructure* (New York: Columbia Center on Sustainable Investment, 2014), 4, [https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/A-Framework-for-Shared-use\\_March-2014.pdf](https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/A-Framework-for-Shared-use_March-2014.pdf) [hereinafter *Framework*].

<sup>3</sup> Toledano et al., *Framework*, 4.

<sup>4</sup> Toledano et al., *Framework*, 5.

<sup>5</sup> Toledano et al., *Framework*, 5.

<sup>6</sup> Toledano et al., *Framework*, 8–9.

<sup>7</sup> Synergies are created through economies of scale and scope. Economies of scale are “economies that occur when the cost per unit of output diminishes with increasing scale of the project as fixed costs are spread out over more units of production,” and economies of scope “arise when the outputs of one type of infrastructure can be used as the inputs of another type of infrastructure.” Toledano et al., *Framework*, 10.

<sup>8</sup> Toledano et al., *Framework*, 5.

<sup>9</sup> Toledano et al., *Framework*, 4.

<sup>10</sup> Toledano et al., *Framework*.

<sup>11</sup> Toledano et al., *Framework*; Perrine Toledano, *Leveraging Extractive Industry Infrastructure Investments for Broad Economic Development: Regulatory, Commercial and Operational Models for Railways and Ports* (New York: Columbia Center on Sustainable Investment, 2012), <https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/CCSI-Policy-Paper-Leveraging-Mining-Related-Rails-and-Ports-for-Development-May-20121.pdf> [hereinafter *Rail & Port Policy Paper*];

Perrine Toledano, *Leveraging the Mining Industry’s Energy Demand to Improve Host Countries’ Power Infrastructure* (New York: Columbia Center on Sustainable Investment, 2012), <https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/CCSI-Policy-Paper-Leveraging-mining-industry%E2%80%99s-energy-demand-to-improve-host-country%E2%80%99s-power-infrastructure-Sept-2012.pdf> [hereinafter *Power Policy Paper*];

Martin Dietrich Brauch, Nicolas Maennling, Perrine Toledano, Edgar Santos Monteiro, and Felipe Botelho Tavares, *Shared-Use Infrastructure Along the World’s Largest Iron Ore Operation: Lessons Learned from the Carajás Corridor* (New York: Columbia Center on Sustainable Investment, 2020), <https://ccsi.columbia.edu/sites/default/files/content/docs/publications/CCSI-Shared-Use-Carajas-Corridor-Vale-33MB.pdf> [hereinafter *Carajás Report*].

publications<sup>12</sup> and mining concessions available online,<sup>13</sup> ground the analytical framework of this paper, provide insight on the economic drivers of the mining sector, and detail how legal provisions—including laws, regulations, and contractual terms—can forefront shared use.

This paper is part of CCSI’s larger work on extractive industries which endeavors to make mining more beneficial and sustainable for people, private enterprise, and the natural environment. It sheds light on the legal, regulatory, and contractual provisions that underpin shared-use mining infrastructure and provides non-exhaustive guidance on how governments might strengthen them to advance shared use of railroads, ports, and power.

Section 2 provides background information on the basic legal frameworks that underpin shared-use mining infrastructure. Sections 3 and 4 focus on the economic conditions and legal provisions that shape the shared use of railroads, ports, and power. Section 5 concludes the paper by indicating areas for further research.

## 2 Legal Frameworks Related to Shared Use and Mining

States have various legal methods to open mining infrastructure to third-party or governmental use, and the legal provisions detailed in the next sections of the paper evidence the breadth of those methods and their specific language. Before getting to the legal provisions themselves, it is important to understand the basic legal hierarchies underpinning shared-use provisions and how a government can regulate the market to address the shortcomings of the traditional enclave model of mining infrastructure.

A constitution, statutes, and regulations create the general legal framework within which mining companies and governments enter into mining contracts to extract minerals. Contracts do not operate in isolation, but are negotiated and implemented in light of the constitution and the statutes and regulations that govern the mining sector. That is, constitutional, statutory, and regulatory requirements take precedence over the provisions within a specific contract, unless otherwise agreed to by the national government, to the extent such agreements are lawful.<sup>14</sup>

A government can ideally choose from a variety of methods to encourage or mandate shared use—be it through the passage of a nationwide statute that applies to all mining projects, or the inclusion of a bundle of contractual terms within a single mining contract. The benefit of including shared use in statutes is to present the conditions for investment transparently, giving an early signal to investors that the government plans to enforce shared use. For instance, Brazil’s Law No. 8,987 governs criteria and award processes for public service concessions.<sup>15</sup> In Australia, the government legislated that

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<sup>12</sup> International Senior Lawyers Project (ISLP), OpenOil, Columbia Center on Sustainable Investment (CCSI), and Natural Resource Governance Institute (NRGI), *Mining Contracts: How to Read and Understand Them* (ISLP, OpenOil, CCSI, and NRGI, 2014), <https://eiti.org/documents/mining-contracts-how-read-and-understand-them> [hereinafter *Mining Contracts*].

<sup>13</sup> “ResourceContracts.org,” ResourceContracts.org (website), Natural Resource Governance Institute (NRGI), Columbia Center on Sustainable Investment (CCSI), World Bank Group, and Open Oil, <http://www.resourcecontracts.org>. ResourceContracts.org is the largest online repository of publicly available oil, gas, and mining contracts. The site currently holds more than 2700 extractives contracts and associated documents.

<sup>14</sup> See ISLP et al., *Mining Contracts*, 142 (discussing the effects of “stabilization” or “freeze” clauses in mining concessions).

<sup>15</sup> Brauch et al., *Carajás Report*, 79.

infrastructure may become shared use when certain antitrust criteria are met.<sup>16</sup> Even so, shared use needs to be specified in contracts as the feasibility and necessity of shared use is very specific to the project circumstances, such as the commodity type, the economic development of the region of operation, and the presence of other mining investors.

In practice, contracts are the most common legal tool used to encourage or require shared use, as developing countries frequently do not have a well-developed legal framework on shared use.

In this case, contract provisions should be very detailed and explicitly identify each matter related to access,<sup>17</sup> such as: the right to build infrastructure; ownership of infrastructure; third-party and governmental access to infrastructure; priority use; user fees; and dispute resolution. The more explicit a provision's language is, the more successful parties will be in avoiding disputes related to shared use.

### *Ministries, Administrative Agencies, and Their Regulations*

After a law that mandates shared use is enacted, or a specific contract requiring the creation of shared-use infrastructure is signed—or both—the role of the government in supporting shared use is not complete. Achieving shared use is an ongoing process where legal, regulatory, and contractual provisions need to be actively implemented and enforced. In particular, when the mining company submits its mining development plan for approval, authorities have leverage to scrutinize the plan and ensure that the mining infrastructure design anticipates shared use.<sup>18</sup>

While shared use can be supervised by a ministry of mines, governments can also create administrative agencies tasked with regulating access to infrastructure across multiple sectors, such as Instituto Nacional dos Transportes Terrestres (now Instituto Ferro-Portuário) in Mozambique.<sup>19</sup> To reach its full potential, the decision-making of an administrative agency needs to be independent and insulated from political influence. An independent regulatory body is one where key personnel are not appointed by an elected official and decision-making and dispute resolution regarding shared use is neutral and trusted.<sup>20</sup>

After private negotiations fail, parties can file suit or submit to arbitration to try and enforce an obligation for shared use, but both are time-intensive, costly methods. Moreover, while courts may not always be the best equipped to handle a highly technical dispute regarding access to a railroad or port,<sup>21</sup> arbitration (and international arbitration in particular) can be even more problematic because of issues and concerns including high litigation costs and a history of awards to private companies at the expense

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<sup>16</sup> See Toledano, *Rail & Port Policy Paper*, 17.

<sup>17</sup> See Toledano et al., *Framework*, 45 (discussing regulation by contract); ISLP et al., *Mining Contracts*, 14 (discussing the relationship of contracts and generally applicable law in awarding and managing mining concessions).

<sup>18</sup> Tom Mitro, *Who Influences Oil Sector Governance Outcomes? It Depends on When You Ask. Understanding the Shifting Power Dynamics Across Companies, Communities and Host Governments over Project Lifecycles and Their Implications* (New York: Columbia Center on Sustainable Investment, 2021), [https://ccsi.columbia.edu/sites/default/files/content/docs/Who%20influences%20oil%20sector%20governance%20outcomes%20it%20depends%20on%20when%20you%20ask%20\(5\).pdf](https://ccsi.columbia.edu/sites/default/files/content/docs/Who%20influences%20oil%20sector%20governance%20outcomes%20it%20depends%20on%20when%20you%20ask%20(5).pdf).

<sup>19</sup> Toledano et al., *Framework*, 17.

<sup>20</sup> See Toledano et al., *Framework*, 20–21, 27–28.

<sup>21</sup> See Toledano, *Rail & Port Policy Paper*, 36.

of public interests.<sup>22</sup> Instead, national governments can create an alternative dispute resolution process or require that a ministry or administrative agency interpret and implement legal provisions related to shared use—settling disagreements before they need to be taken to a tribunal.

### *Contracts Between Private Entities*

For third parties to access or use mining infrastructure, the mining company needs to enter into additional agreements with third parties.<sup>23</sup> Statutes, regulations, and legal provisions in the original concession shape those agreements: what type of shared use is permissible, and on what terms. For instance, the national government may require that excess electricity be produced but mandate that the mining company only sell the power to a governmental entity.<sup>24</sup> Or a rail mining company might be required to operate a certain amount of passenger trains each day,<sup>25</sup> but the government caps passenger tickets at a certain price.<sup>26</sup> Oftentimes, legal provisions both in investor–state contracts and in contracts between the mining company and third parties relate to balancing the economic interests of the mining company with accessibility. A primary issue for shared-use infrastructure is not just access, but the affordability of access when there is the potential for a lead mining company to abuse its economic power and implement discriminatory pricing.<sup>27</sup>

## 3 Shared Use of Rail and Port Infrastructure

### 3.1 Context and Preconditions

As previously mentioned, a major issue facing shared-use infrastructure in the mining sector is the traditional enclave model, where the transportation, electricity, water, and information and communications technologies (ICT) elements of the project are designed and built exclusively for the use of the mining company.<sup>28</sup> Although the enclave model increases the reliability of a mining operation, the model results in a lost opportunity for the government to take advantage of the synergies between a mining company’s infrastructure investments and the economic development of a region.<sup>29</sup> Counteracting the market’s shortcomings, the government has a key role to play in creating and managing shared-use infrastructure.<sup>30</sup> But, before the government makes the decision to facilitate

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<sup>22</sup> Lise Johnson, Lisa Sachs, Brooke Güven, and Jesse Coleman, *Costs and Benefits of Investment Treaties: Practice Considerations for States* (New York: Columbia Center on Sustainable Investment, March 2018), [https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/Cost-and-Benefits-of-Investment-Treaties-Practical-Considerations-for-States-ENG-mr\\_0.pdf](https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/Cost-and-Benefits-of-Investment-Treaties-Practical-Considerations-for-States-ENG-mr_0.pdf).

<sup>23</sup> If another mining company is accessing the infrastructure for the transport of ore, the infrastructure is considered “multi-user.” If third parties are using the infrastructure to transport goods such as agricultural products, fuel, or timber, or to transport passengers, the infrastructure is “multi-purpose.” Toledano et al., *Framework*, 5.

<sup>24</sup> Independent State of Papua New Guinea, “The Independent State of Papua New Guinea and [Blank] Standard Mining Development Contract Draft,” Section 5.7, (2010), <https://www.mmdaproject.org/presentations/PNG%20Full%20Revised%20Standard%20MDC.pdf> [hereinafter Papua New Guinea Standard Mining Concession].

<sup>25</sup> Brauch et al., *Carajás Report*, 83.

<sup>26</sup> Brauch et al., *Carajás Report*, 84.

<sup>27</sup> See Toledano et al., *Framework*, 8.

<sup>28</sup> Toledano et al., *Framework*, 5.

<sup>29</sup> Toledano et al., *Framework*, 5.

<sup>30</sup> Toledano et al., *Framework*, 12.

the construction and operation of shared-use infrastructure, there are several preconditions to take into account.

For rail, the government first needs to consider if the “proposed development aligns with national and regional infrastructure plans.”<sup>31</sup> If the proposed railroad and port will be in a thinly-populated region, with little foreseen future economic development, requiring shared use does not make sense when public interests would be better served by higher tax revenues.<sup>32</sup> If the region is or will tend to become an economic corridor—because of multiple mining concessions in the region, existing or potential downstream industries, population settlement plans, or land suitable for agriculture or forestry surrounding the infrastructure—then shared use could be a priority.<sup>33</sup> For instance, when Brazil was developing the Carajás Railroad to transport ore from the Carajás deposit to the port in São Luis, the national government had already had three decades of economic development plans for the region.<sup>34</sup> Accordingly, the railroad was designed to carry iron ore and general cargo, transport passengers, and serve downstream industries.<sup>35</sup> Also, the Simfer concession in Guinea explicitly details that the railroad and port must be multi-user, with the infrastructure being made available to third-party users transporting minerals or agricultural products,<sup>36</sup> with access being dependent on several preconditions.<sup>37</sup>

Even when a national government has a plan to develop a region, and shared-use mining infrastructure can help address an infrastructure deficit, there will be little progress without a lead mining company who is willing and able to build the infrastructure.<sup>38</sup> Unfortunately, a lead mining company who is willing to make an infrastructure investment based on the potential profitability of a mine will tend to prefer to build exclusive, vertically-integrated infrastructure. The main driver of mining companies’ opposition to shared use springs from their economic incentive to compete, not creating advantages for other mines through a multi-user arrangement. In turn, multi-purpose arrangements such as the Carajás corridor, which involve other types of bulk cargo, have a better track record of success.

Financiers of mining infrastructure also play a role in disincentivizing shared use, as they prefer the predictability of a single user accessing the infrastructure.<sup>39</sup> In particular, shared-use rail and port infrastructure is the hardest to finance because of the vertically integrated logistics chain between a rail and port.<sup>40</sup> Also, multi-user or multi-purpose infrastructure is inherently riskier than single-user infrastructure because of the increased technical difficulties in operation, resulting in lower efficiency and less profit.<sup>41</sup> Secondary users who enter into long-term take-or-pay arrangements can reduce the

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<sup>31</sup> Toledano et al., *Framework*, 13.

<sup>32</sup> Toledano et al., *Framework*, 6.

<sup>33</sup> See Toledano et al., *Framework*, 13.

<sup>34</sup> Brauch et al., *Carajás Report*, 75–76.

<sup>35</sup> Brauch et al., *Carajás Report*, 76.

<sup>36</sup> Republic of Guinea, “The Republic of Guinea and the Owner of the Infrastructures and the Holding of the Owner of the Infrastructures and the Operator of the Infrastructures and Simfer S.A. and Rio Tinto Mining and Exploration Limited - BOT Agreement Simandou Project,” “Entre La République de Guinée et le Propriétaire des Infrastructures et la Holding du Propriétaire des Infrastructures et l’exploitant des Infrastructures et Simfer S.A. et Rio Tinto Mining and Exploration Limited - Convention BOT Projet Simandou,” Article 14.1, (2014), <https://resourcecontracts.org/contract/ocds-591adf-6237477089/view#/pdf> [hereinafter Simandou Guinea Concession].

<sup>37</sup> Simandou Guinea Concession, Art. 18.

<sup>38</sup> See generally Toledano et al., *Framework*, 15 (explaining the potential stakeholders in mining operations and their interests).

<sup>39</sup> See Toledano et al., *Framework*, 16.

<sup>40</sup> Toledano et al., *Framework*, 7.

<sup>41</sup> Toledano et al., *Framework*, 16.

hesitancy of financiers to support shared use infrastructure,<sup>42</sup> but it is not always clear who will, in fact, take or pay, such as when other mining concessions are still in the exploration phase. Constructing infrastructure with excess capacity without knowing who will use that capacity is a hard sell to financiers because of the potential for wasted returns.<sup>43</sup>

Considering the weight of business interests that oppose shared-use mining infrastructure, national governments have a key role in promoting shared use.<sup>44</sup> However, shared use is a balancing act, and governments need to consider both the benefits and downsides. Importantly, shared use is not absolute and there are middle-ground options—such as “access holidays” that allow the mining company to exclusively use a railroad and port for a defined time period related to profitability.<sup>45</sup> Regardless of whether financial, social, or environmental considerations tip the scale toward requiring that mining infrastructure be shared use during the contract period, governments should ensure that contracts, at a minimum, contain a build-operate-transfer option, where ownership of the railway, port, or power plant transfers back to the government after the expiration of the concession.<sup>46</sup>

## 3.2 *Legal Approaches and Language for Statutes, Regulations, and Concessions*

As outlined in Section 2, a constitution, statutes, regulations, and contracts create the legal framework within which shared-use infrastructure is designed, constructed, and operated. The legal provisions detailed below are divided by the subject area they concern, rather than by the type of legal instrument in which they could or should be included. This organization allows for a more cohesive understanding of how legal provisions can be shaped to facilitate shared use of railroads and ports.

### 3.2.1 *Right-of-Way*

A right-of-way legal provision functions as an easement allowing the government to retain access to, and construct on, a mining company’s land.<sup>47</sup> With a right-of-way, governments may build a road, electric distribution lines, or install telecommunication equipment next to a railway.<sup>48</sup> Installation of infrastructure along a right-of-way next to an extant railway corridor costs “significantly less than building it along a separate route” and “maximizes the use of existing land reserved for transport/transmission infrastructure.”<sup>49</sup> Even if there is little foreseen future economic development along the railway corridor, the government should try and retain a right-of-way for public benefit.<sup>50</sup>

An example of a right-of-way provision can be found in the Cam Iron Mbalam concession in Cameroon. Cameroon’s government retains the right to build on land within the concession area, but that right is limited by the consent of the mining company which will be based on whether the proposed construction will “likely” have a “material adverse effect” on the project’s operations:

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<sup>42</sup> Toledano et al., *Framework*, 16.

<sup>43</sup> Toledano et al., *Framework*, 16.

<sup>44</sup> Toledano et al., *Framework*, 12.

<sup>45</sup> See Toledano et al., *Framework*, 23.

<sup>46</sup> Toledano et al., *Framework*, 8.

<sup>47</sup> Toledano et al., *Framework*, 11.

<sup>48</sup> Toledano et al., *Framework*, 23.

<sup>49</sup> Toledano et al., *Framework*, 23.

<sup>50</sup> See Toledano et al., *Framework*, 23.

For the Term of the Project, the State agrees that if it builds or Grants to any Third Party a right enabling the building of any road, right of way . . . it shall obtain the prior consent of the Project Company . . . provided that any refusal to consent by such Project Company shall only be motivated and reasoned to the extent that the grant of such rights is likely to have a Material Adverse Effect on the Project Operations . . . any such material interference with Project Operations may be deemed a Compensation Event . . . .<sup>51</sup>

If the company claims that there has been a material adverse effect resulting in a purported compensation event related to third-party access—as defined by the concession—the dispute resolution mechanisms of the concession kick in.<sup>52</sup>

In Liberia, the Mittal Steel Holding concession,<sup>53</sup> the China Union concession,<sup>54</sup> and the Western Cluster concession<sup>55</sup> contain similar language regarding the government’s ability to construct infrastructure on the mining company’s land.

### 3.2.2 Excess Capacity

To facilitate shared-use access to rail and port infrastructure by the government or third parties, states can require that the mining company allow others to access and use “excess capacity” of a particular railway or port.<sup>56</sup> Governments can also require that mining companies design, construct, or operate railroads and ports to include excess capacity.<sup>57</sup> The legal provisions related to excess capacity for rail and port infrastructure are very technical, with small nuances having large legal and financial implications. For example, a railway or port that is designed to be expanded to transport goods in excess of those contemplated by the mining company is very different than one designed and constructed with excess capacity, or one designed, constructed, and operated with excess capacity.

Provisions regarding the permissible level of governmental or third-party “interference” with the mining company’s operations also impact the possibility of shared use. Provisions requiring that third-party or governmental use not interfere with the mining company’s transport of ore, versus not

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<sup>51</sup> Republic of Cameroon, “The Republic of Cameroon Cam Iron S.A. Mbalam Convention,” Section 22.3, (2012), <https://resourcecontracts.org/contract/ocds-591adf-6424799341/view#/pdf> [hereinafter Cam Iron Cameroon Concession].

<sup>52</sup> Cam Iron Cameroon Concession, Sections 1, 39.1, and 56.

<sup>53</sup> Republic of Liberia, “An Act Ratifying the Amendment to the Mineral Development Agreement (MDA) Dated August 17, 2005 Between the Government of the Republic of Liberia (The Government) and Mittal Steel Holding A.G. and Mittal Steel (Liberia) Holdings Limited (The Concessionaire),” (2007), 8, Article 7 . . . (5), <https://resourcecontracts.org/contract/ocds-591adf-9217575339/view#/pdf> [hereinafter Mittal Steel Liberia Concession]. The scan of this act/concession is damaged. The ellipses in further citations to the same document indicate sub-headings that cannot be read. Page numbers are given to assist readers.

<sup>54</sup> Republic of Liberia, “Mineral Development Agreement between the Government of the Republic of Liberia, China-Union (Hong Kong) Mining Co., Ltd. and China-Union Investment (Liberia) Bong Mines Co., Ltd,” Section 19.7(c), (2009), <https://resourcecontracts.org/contract/ocds-591adf-6387856838/view#/pdf> [hereinafter China-Union Liberia Concession].

<sup>55</sup> Republic of Liberia, “An Act to Ratify the Concession Agreement among the Government of the Republic of Liberia, Western Cluster Limited, Sesa Goa Limited, Bloom Fountain Limited, and Elenilto Minerals and Mining LLC,” Section 19.8(c), (2011), <https://resourcecontracts.org/contract/ocds-591adf-6207349867/view#/pdf> [hereinafter Western Cluster Liberia Concession].

<sup>56</sup> China-Union Liberia Concession, Sections 6.7(i)-(ii).

<sup>57</sup> Republic of Liberia, “Mineral Development Agreement between the Government of the Republic of Liberia, Putu Iron Ore Mining, Inc., and Mano River Iron Ore Ltd.” Sections 5.7(a)-(f), (2010), <https://resourcecontracts.org/contract/ocds-591adf-4624088322/view#/pdf> [hereinafter Putu Iron Ore Liberia Concession].

unreasonably interfere, versus not materially adversely affect, result in varied shared-use outcomes. Ideally, concessions should outline objective indicators that allow interested parties—including potential arbitrators or adjudicators—to identify what use constitutes a prohibited level of interference. Concessions should also include information regarding which party bears the burden of proof for identified claims. Objective indicators or criteria reduce the level of discretion ceded to supervisory authorities tasked with resolving disputes related to shared use. They also reduce the room for interpretation, which in turn reduces uncertainty in dispute settlement.

In Liberia, the Mittal Steel Holding concession details that the government can authorize third parties to access excess capacity on the railroad and at the Buchanan Iron Ore port, provided that the mining company confirms that excess capacity exists and that third-party use does not “unreasonably interfere with the efficient and economic conduct of the operations.”<sup>58</sup> Technical and commercial terms for access must accord with international industrial standards and be agreed to in good faith.<sup>59</sup> The government and Mittal Steel also agreed that they will enter into good-faith negotiations to establish a formula to proportionally share the revenue from third-party use of the railroad or port.<sup>60</sup> These provisions outline how third-party access will function if there is extant capacity on the railway and at the port. If Mittal Steel was operating both pieces of infrastructure at full capacity, third-party access would not be permitted. That said, the concession also provides terms for how capacity might be expanded.

If the government requests expansion of the railway or port, the mining company has the priority right to construct excess capacity, with the terms of the expansion, again, being jointly agreed to by the parties via good faith negotiations.<sup>61</sup> If negotiations fail, the government, or authorized third parties, retain the right to construct additional infrastructure to expand capacity, provided that the construction, in the judgement of the mining company, does not unreasonably interfere with efficient and economic conduct of their operations.<sup>62</sup> If the parties are unable to come to an agreement regarding if the construction of excess capacity will “unreasonably interfere” with the operations of Mittal Steel, there is a dispute resolution process outlined in the concession.<sup>63</sup> In short, shared use is permitted if it does not “unreasonably interfere” with the operations of the mining company.<sup>64</sup> Notably, Mittal Steel is not tasked with building a new railroad and port for the concession, but rather rehabilitating a brownfield infrastructure that had become inoperable.<sup>65</sup> When greenfield infrastructure is necessary, the legal provisions related to excess capacity contemplate additional issues, such as design.

In Liberia, the Putu Iron Ore Mining Company concession provides for the construction of a railroad from the mine to the port that will be able to transport “the maximum sustained output of Products contemplated by the Feasibility Report,” and that the railroad will be “designed so that it can be expanded on a commercially feasible basis to carry on a continuing basis twice as much traffic as is

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<sup>58</sup> Mittal Steel Liberia Concession, 9, Article 7, . . . (d)(1).

<sup>59</sup> Mittal Steel Liberia Concession, Article 7, . . . (2).

<sup>60</sup> Mittal Steel Liberia Concession, Article 7, . . . (2).

<sup>61</sup> Mittal Steel Liberia Concession, 10, Article 7, . . . (f).

<sup>62</sup> Mittal Steel Liberia Concession, 10, Article 7, . . . (f).

<sup>63</sup> Mittal Steel Liberia Concession, 10, Article 7, . . . (f).

<sup>64</sup> Mittal Steel Liberia Concession, 9, Article 7, . . . (d)(1)-(5).

<sup>65</sup> Sophie Thomashaussen and Alpa Shah, *A Framework to Approach Shared-Use of Mining Related Infrastructure – Case Study: Liberia* (New York: Columbia Center on Sustainable Investment, 2014), 14  
<https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/Liberia-March-2014.pdf>.

contemplated by the preceding sentence.”<sup>66</sup> Notably, the government or a third party may elect to build the excess capacity at their own expense.<sup>67</sup> Prior to the construction of excess capacity, if a third party or the government wishes to pay to use the railroad to transport bulk cargo, such usage shall be permitted,<sup>68</sup> as long as such use does not “materially adversely affect the ability of the Company to move Iron Ore to the Port or handle Iron Ore trains at the Port.”<sup>69</sup> This condition is a little stronger than in the Rio Tinto concession in Pilbara, Australia, where third-party access was only permitted if it would not unduly prejudice or interfere with the mining company’s operations. Overall, the challenge of enforcing the shared use of integrated mining railways based on non-negative interference with mining operations has not been overcome whether in Australia or Liberia.<sup>70</sup> As detailed below, Brazil and Cameroon present more promising examples.

To ensure excess capacity exists, governments may, for example, require that mining company construct a railroad with double track. For instance, the Cam Iron concession in Cameroon states that “the State may, in its sole discretion, elect by the Date of Entry into Force to fund the costs required to build out the foundation for a dual track design” and that the “[s]tate shall be required to provide the requisite funding.”<sup>71</sup> Cam Iron retains the option to enter into negotiations with the government to fund a portion of the dual track in exchange for additional capacity resulting from the expansion.<sup>72</sup> Dual track designs are more operationally efficient and results in cost savings compared to two separate single tracks.<sup>73</sup> Notably, though, current technologies such as advanced control systems and communications-based signaling may offer a more affordable way to deliver the required capacity by allowing trains to run faster and closer in time than by doubling the tracks.<sup>74</sup> Before governments allocate resources to expand capacity, they should, in concert with mining companies, assess all available cost-effective solutions.

In Brazil, Vale recently opted for double-tracking the Carajás Railroad to transport the large amount of additional ore being extracted from the S11D deposit.<sup>75</sup> Brazil’s renewal concession with Vale requires that the Railroad Saturation Index of the Carajás Railroad remain below 90%.<sup>76</sup> If use rises to that level, Vale must expand capacity to stay below the threshold.<sup>77</sup>

Once excess capacity is available, and a railroad becomes shared use, the mining company may want to allow an independent party to take over operational responsibilities—a preference of subsequent

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<sup>66</sup> Putu Iron Ore Liberia Concession, Section 5.7(a).

<sup>67</sup> Putu Iron Ore Liberia Concession, Section 5.7(a).

<sup>68</sup> If the user pays for the necessary additional rolling stock and motive power. Putu Iron Ore Liberia Concession, Section 5.7(c).

<sup>69</sup> Putu Iron Ore Liberia Concession, Section 5.7(c). If such use did materially adversely affect the mining company, the government or third party requesting access would “bear the cost of the additional investment needed to enhance the Railroad to avoid such material adverse effect.” Putu Iron Ore Liberia Concession, Section 5.7(c).

<sup>70</sup> Toledano, *Rail & Port Policy Paper*, 32.

<sup>71</sup> Cam Iron Cameroon Concession, Section 11.3.

<sup>72</sup> Cam Iron Cameroon Concession, Section 11.3.

<sup>73</sup> Toledano et al., *Framework*, 28.

<sup>74</sup> Tony Vidago, “How to Double Railway Capacity Without Building New Track,” *Infrastructure Intelligence*, June 11, 2014, <http://www.infrastructure-intelligence.com/article/jun-2014/how-double-railway-capacity-without-building-new-track>.

<sup>75</sup> Brauch et al., *Carajás Report*, 13.

<sup>76</sup> Federative Republic of Brazil, “3<sup>rd</sup> Amendment to the Concession Contract of the Carajás Railroad,” “3<sup>o</sup> Termo Aditivo ao Contrato de Concessão da Estrada de Ferro Carajás” (2020), Annex 1, Appendix A, Section 4.2, <https://portal.antt.gov.br/documents/359178/3077d1e7-6e42-700f-0fc1-db674724fb97> [hereinafter Carajás Railroad Concession Renewal] (free translation from Portuguese). See Brauch et al., *Carajás Report*, 83.

<sup>77</sup> Carajás Railroad Concession Renewal, Annex 1, Appendix A, Section 4.2; Brauch et al., *Carajás Report*, 83.

mining companies accessing the rail because it reduces the potential for discriminatory access fees.<sup>78</sup> The Western Cluster concession contemplates such a scenario:

If the Government or one or more third parties wish to use the Railroad to carry bulk cargo, the Company may continue to operate the Railroad itself and carry out the operation of all trains on the Railroad, or the Company may transfer operational responsibility for the Railroad to an operating company owned by the Company and each other entity that has contributed to the capital investment (exclusive of motive power and rolling stock) in the railway, and such operating company may either operate the Railroad and all trains, or may be responsible solely for the operation and maintenance of the fixed rail facilities and allow all persons that meet non-discriminatory operating standards to operate their own bulk cargo trains on the fixed rail facilities.<sup>79</sup>

For ports, excess capacity legal provisions focus more on the infrastructure itself, such as requiring the design of separate terminals for general cargo and ore handling,<sup>80</sup> rather than the potential effects of third parties on throughput. A small increase in a port's traffic from shared use will not interfere with a mining company's operations.<sup>81</sup> Traffic in a port is more flexible than traffic on a railway. That said, shared use may require additional dredging, berths, storage facilities, or handling equipment<sup>82</sup> and an explicit provision outlining how a port will be operated<sup>83</sup> to support shared use is best.

The Putu Iron Ore Mining concession has several detailed provisions related to excess capacity at the port. First, the concession requires that the port be designed and constructed to allow for twice as much traffic as contemplated by the Development Plan, including "limited general petroleum handling, and general cargo and container berthing spacing, as well as specialized bulk facilities required by the Company's business."<sup>84</sup> The company requires that it have "input over access to the commercial piers to ensure non-interference with access to the Iron Ore jetty."<sup>85</sup> Notably, third-party access to the general cargo jetty is limited to one million tons per annum.<sup>86</sup> The lead mining company will provide "general Port operation services" for third parties up to that million ton mark.<sup>87</sup> To facilitate third-party access at the port, the concession also outlines that the lead mining company will construct the platforms for adequate warehousing related to general cargo transport.<sup>88</sup> For both the rail and port, Putu Mining Company will approve the design and work plans, and operation of the infrastructure post-expansion, unless shared use would "unreasonably interfere with the Company's operations."<sup>89</sup>

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<sup>78</sup> See Toledano et al., *Framework*, 15.

<sup>79</sup> Western Cluster Liberia Concession, Section 6.7(g).

<sup>80</sup> Separate terminals may be needed to prevent contamination of goods or because the loading superstructure is different. Toledano et al., *Framework*, 18.

<sup>81</sup> Toledano et al., *Framework*, 19.

<sup>82</sup> Toledano et al., *Framework*, 19.

<sup>83</sup> Cam Iron Cameroon Concession, Section 13.1(e) (outlining that "[The mining company or port operator], as applicable, will operate the Mineral Terminal in a manner that allows the Mineral Terminal to: (i) handle Initial Capacity and Expansion Capacity up to the Design Capacity; and (ii) incorporate technical aspects of the Mineral Terminal services being provided to any party up to the Design Capacity.").

<sup>84</sup> Putu Iron Ore Liberia Concession, Section 5.7(e).

<sup>85</sup> Putu Iron Ore Liberia Concession, 5.7(g).

<sup>86</sup> Putu Iron Ore Liberia Concession, 5.7(g).

<sup>87</sup> Putu Iron Ore Liberia Concession, 5.7(f).

<sup>88</sup> Putu Iron Ore Liberia Concession, 5.7(g).

<sup>89</sup> Putu Iron Ore Liberia Concession, 5.7(j).

### 3.2.3 Third-Party (Mineral and Bulk) Cargo and Dispute Resolution

Once excess capacity is available, the legal aspects of shared use are far from over. Many legal provisions concern what type of goods can be transported on the infrastructure, at what cost, and how to resolve disputes regarding shared use. By its nature, a railway–port system involves high fixed costs and exhibits natural monopoly features.<sup>90</sup> Lead mining companies—whether they share the railway under a haulage system (rather rare) or under more common access regimes (where each third party provides its own rolling stock)—want to fully recoup their substantial investment in the infrastructure.<sup>91</sup> Those dynamics, coupled with the fact that the mining company may have contractual relationships with clients to access the infrastructure, leads to a scenario where third-party users potentially face discriminatory access and pricing. Governments therefore have a role to play in ensuring non-discriminatory shared-use access through legal provisions in laws, regulations, and concessions.

Statutes are one legal method to guarantee non-discriminatory access. For instance, the Zambian Public–Private Partnership Act of 2009 explicitly outlines that applicable concessions must detail how the mining company will ensure “the provision of the service under essentially the same conditions for all users” and “[non-discriminatory] access, as appropriate, of other service providers to any public infrastructure network operated by the mining company.”<sup>92</sup> Outside national laws, provisions in concessions themselves frequently require non-discriminatory access.

The Western Cluster concession featured above details that the railroad operator—whether it be the mining company or a third party—administer use of the railroad in such a way as to not “discriminate against the shipments of any [p]erson.”<sup>93</sup> Notably, this provision contemplates that the mining company may transfer operational responsibility to a third party.<sup>94</sup> Here, third-party operation of the infrastructure is optional, but the most effective mechanism for governments to ensure non-discriminatory access is to require that ownership and operation of the rail and port infrastructure be ceded to a third party.<sup>95</sup> However, separating ownership and operation of the infrastructure can be difficult because of the associated risk and higher interest rates demanded by infrastructure financiers, which can make the project not bankable.<sup>96</sup>

In Brazil, the legal provision obligating Vale to provide non-discriminatory access requires the company to provide “adequate service to users’ satisfaction, without any kind of discrimination and without incurring in abuse of economic power, meeting the conditions of regularity, continuity, efficiency, safety, timeliness, generality, and courtesy in its provision and affordability of freight rates and fares.”<sup>97</sup> Vale (or its subsidiary) is “generally free” to negotiate the terms of access agreements for the Carajás Railroad,<sup>98</sup> but the Agência Nacional de Transportes Terrestres (ANTT) has significant, independent

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<sup>90</sup> Toledano, *Rail & Port Policy Paper*, 7.

<sup>91</sup> Infrastructure costs of third-party access will “largely depend on the commodity that the third party wants to transport.” Toledano et al., *Framework*, 18. If third parties are transporting something other than minerals, such as timber or agricultural products, different train wagons or loading and offloading facilities are required. Toledano et al., *Framework*, 18.

<sup>92</sup> Republic of Zambia, “The Public-Private Partnership Act,” Section 52, 2009, [https://ppp.worldbank.org/public-private-partnership/sites/ppp.worldbank.org/files/ppp\\_testdumb/documents/zambia\\_ppp\\_act\\_2009.pdf](https://ppp.worldbank.org/public-private-partnership/sites/ppp.worldbank.org/files/ppp_testdumb/documents/zambia_ppp_act_2009.pdf).

<sup>93</sup> Western Cluster Liberia Concession, Section 6.7(g).

<sup>94</sup> Western Cluster Liberia Concession, Section 6.7(g).

<sup>95</sup> Toledano et al., *Framework*, 24.

<sup>96</sup> Toledano et al., *Framework*, 25.

<sup>97</sup> Brauch et al., *Carajás Report*, 81.

<sup>98</sup> Brauch et al., *Carajás Report*, 82.

oversight over all land transportation in the state,<sup>99</sup> including regulation of fees for third-party use of railroads.<sup>100</sup> The government, knowing that disputes may arise related to third-party access, even when the mining company is required to not abuse its economic power,<sup>101</sup> included in the concession a provision that states that “[t]he requirements that the Conceding Authority may make concerning the clauses of such contracts related to the control of the abuse of economic power and the safety of rail traffic shall be final.”<sup>102</sup> Thus, there is an effective administrative mechanism to resolve disputes without the need to seek arbitration or domestic courts.

In Liberia, the Putu Iron Ore concession outlines an alternate route to resolving disputes regarding third-party access. First, the concession requires the operating company to charge “commercially reasonable rates”<sup>103</sup> for access to the railway and that the railroad be operated in such a way that it does not discriminate against any user.<sup>104</sup> The concession then details a dispute resolution process related to the transport of third-party and governmental bulk cargo.<sup>105</sup> The dispute resolution process covers issues such as user fees, interference with the mining company’s transport of goods, the design and construction of expanded capacity for the railroad and port, and operation of the infrastructure.<sup>106</sup> Disputes that are not resolved within 60 days become a “senior management dispute,” with each party then designating “a senior member of the management of its ultimate controlling entity to participate in discussions to determine whether such dispute can be resolved.”<sup>107</sup> If a resolution cannot be reached within 105 days after the designation, a party to the dispute may demand that the dispute be submitted to a “technical dispute resolution committee.”<sup>108</sup> The mining company and the government, or a party to the dispute, must each then designate two individuals to the committee, where one member of each appointed team must have “experience in either railroad or port operations” and not have an interest in the outcome of the dispute.<sup>109</sup> The committee then selects an independent expert in the sector to serve as chair.<sup>110</sup> Recommendations of the committee regarding the dispute are binding, except if the recommendations rests upon a determination of the legal meaning of any provision of the concession.<sup>111</sup> If it does, the mining company or government may seek arbitration under the terms of the concession.<sup>112</sup>

### 3.2.4 Passenger Service and Non-Bulk Agricultural Cargo Services

Legal provisions related to passenger and agricultural cargo services on shared-use infrastructure are often separate from those contemplating the transport of minerals or other bulk freight. For instance, compared to bulk freight, passenger service on mining infrastructure generally demands 1) additional safety standards and protocols, 2) more frequent stops along the line, and 3) higher rates of travel—all

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<sup>99</sup> Brauch et al., *Carajás Report*, 4.

<sup>100</sup> Brauch et al., *Carajás Report*, 83–84.

<sup>101</sup> Brauch et al., *Carajás Report*, 82.

<sup>102</sup> Brauch et al., *Carajás Report*, 82.

<sup>103</sup> Putu Iron Ore Liberia Concession, Section 5.7(c).

<sup>104</sup> Putu Iron Ore Liberia Concession, Section 5.7(d).

<sup>105</sup> Putu Iron Ore Liberia Concession, Section 5.7(l).

<sup>106</sup> Putu Iron Ore Liberia Concession, Sections 5.7(c), (d), (k), and (l).

<sup>107</sup> Putu Iron Ore Liberia Concession, Section 5.7(l).

<sup>108</sup> Putu Iron Ore Liberia Concession, Section 5.7(m).

<sup>109</sup> Putu Iron Ore Liberia Concession, Section 5.7(m).

<sup>110</sup> Putu Iron Ore Liberia Concession, Section 5.7(m).

<sup>111</sup> Putu Iron Ore Liberia Concession, Section 5.7(m).

<sup>112</sup> Putu Iron Ore Liberia Concession, Section 5.7(m).

of which make management of the railroad more complicated.<sup>113</sup> In developing countries, government intervention is key to ensuring passenger service on railways when user fees are generally not sufficient to cover the additional infrastructure costs.<sup>114</sup> The majority of legal provisions related to passenger service are concerned with access to the railroad, rather than the port, because passenger service at a port is unlikely to interfere with the lead mining company's operations.<sup>115</sup> For small agricultural cargo services, negotiating parties should consider similar factors as they would for passengers. Doing so can enable smallholder farmers to access the railroad.

While negotiating the Carajás Railroad concession in 1997, Brazil explicitly required that Vale “[ensure] the provision of current passenger services, which may only be altered with the prior authorization of the Conceding Authority.”<sup>116</sup> In the Carajás Railroad renewal contract, legal provisions ensure that passenger service not only continues, but expands: “[i]n the first 06 (six) years from the entry into force of the 3<sup>rd</sup> Amendment, the Concessionaire [mining company] shall offer the same current frequency of 0.5 (half) pair of passenger trains per day on the network granted. In other years, it shall offer at least 01 (one) pair of passenger train per day.”<sup>117</sup>

Brazil's ANTT has the ability to regulate fares for those passenger trains,<sup>118</sup> and legal provisions in the concession reflect that supervisory authority.<sup>119</sup>

In Guinea, the Simfer concession details that passenger service must be offered as an auxiliary service to transporting ore for the founding customer.<sup>120</sup> Annex 10 includes many specific terms regarding passenger service, including the number of stations (five) and the approximate number of users per year the railroad will service (40,000).<sup>121</sup> Any proposed changes to passenger service requires the consent of the government, the owner of the infrastructure, the operator of the infrastructure, and the founding customer.<sup>122</sup> Interestingly, the concession also provides that any extension of the railroad infrastructure by the founding customer or third parties requires a corresponding increase in passenger service.<sup>123</sup>

In Liberia, the Putu Iron Ore concession has a weaker provision regarding passenger service: “In accordance with applicable Law and only with the Government's prior approval, the Company may, but is under no obligation to, make provision for additional passenger service . . . or to permit a third party to operate passenger and non-bulk services on the Railroad.”<sup>124</sup> Sierra Leone's Model Mining Development Agreement strikes a middle-ground where it does not explicitly require that mining companies offer passenger service, but the company “shall, if and when reasonably requested by [the Government of Sierra Leone], transport passengers . . . over the railway where it can do so without

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<sup>113</sup> Toledano et al., *Framework*, 18.

<sup>114</sup> Toledano et al., *Framework*, 16.

<sup>115</sup> Toledano et al., *Framework*, 19.

<sup>116</sup> Brauch et al., *Carajás Report*, 81.

<sup>117</sup> Carajás Railroad Concession Renewal, Annex 1, Appendix D, Section 7.4 (free translation from Portuguese). See also Brauch et al., *Carajás Report*, 83 and 98, endnote 249.

<sup>118</sup> See Brauch et al., *Carajás Report*, 79–80.

<sup>119</sup> Brauch et al., *Carajás Report*, 80.

<sup>120</sup> Simandou Guinea Concession, Art. 16(a).

<sup>121</sup> Simandou Guinea Concession, Annex 10, Art. 2.

<sup>122</sup> Simandou Guinea Concession, Art. 16(a).

<sup>123</sup> Simandou Guinea Concession, Art. 16(f).

<sup>124</sup> Putu Iron Ore Liberia Concession, Section 5.7(b).

unduly prejudicing or interfering with its activities under this Agreement and subject to the payment to it of commercially reasonable rates . . . .”<sup>125</sup>

Under certain conditions of volumes and viability, an open-access road along the railway corridor may better serve passenger and small-cargo transportation needs. For example, while not providing for passenger services on the railway, the Putu contract requires the mining company to “build a two-lane paved all-weather road between Greenville and Zwedru for general public use with capacity for handling heavy traffic,” and mandates the Ministry of Public works to “set forth the standards for the design, construction and paving of the Road, which standards shall be consistent with International Highway Standards.”<sup>126</sup>

## 4 Shared Use of Power Infrastructure

### 4.1 Context and Preconditions

Access to electricity is pivotal to mining operations. Mines depend on electricity to power mineral processing equipment, housing for employees, communication technologies, safety equipment, and even elevators and air pumps, if the mine is subsurface. Electricity costs can account for 10–25% of the operating costs of a mine.<sup>127</sup> States can capitalize on the opportunity afforded by a mining operation’s demand for electricity to develop its own grid—expanding generation (preferably from renewable sources),<sup>128</sup> transmission and distribution systems, and access, while lowering cost.<sup>129</sup>

There are many methods to creating shared-use benefits in the generation and consumption of power. Mines can produce and consume their own power, providing electricity to local communities through a mini-grid system.<sup>130</sup> Mines can produce their own power and sell excess to the national grid.<sup>131</sup> Mines can initially connect to the grid, but move to self-production when it becomes more economical, or coordinate with other mines or large consumers to construct an off-site plant that powers multiple operations.<sup>132</sup> Mines can also work with governments to upgrade extant state-owned power assets, buy power from independent power producers (IPPs), or source 100% of their power from the grid.<sup>133</sup> All of these modalities of power generation and consumption create opportunities for shared use because of economies of scale and scope. Importantly, states need to create a regulatory system where shared-

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<sup>125</sup> Sophie Thomashausen and Alpa Shah, *A Framework to Approach Shared-Use of Mining Related Infrastructure – Case Study: Sierra Leone* (New York: Columbia Center on Sustainable Investment, 2014), 19, [https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/Sierra-Leone\\_March-2014.pdf](https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/Sierra-Leone_March-2014.pdf).

<sup>126</sup> Putu Iron Ore Liberia Concession, Section 6.6.

<sup>127</sup> Toledano et al., *Framework*, 37.

<sup>128</sup> For more information regarding renewable energy and the mining sector, see: Nicolas Maennling and Perrine Toledano, *The Renewable Power of the Mine: Accelerating Renewable Energy Integration* (New York: Columbia Center on Sustainable Investment, 2018), [https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/extractive%20industries/CCSI\\_2018\\_-\\_The\\_Renewable\\_Power\\_of\\_The\\_Mine\\_mr.pdf](https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/extractive%20industries/CCSI_2018_-_The_Renewable_Power_of_The_Mine_mr.pdf).

<sup>129</sup> See Toledano et al., *Framework*, 35.

<sup>130</sup> Toledano et al., *Framework*, 37.

<sup>131</sup> Toledano et al., *Framework*, 37.

<sup>132</sup> Toledano et al., *Framework*, 37.

<sup>133</sup> Toledano et al., *Framework*, 37.

use benefits can materialize. “Coordination within the mining industry and between mining companies and the government can result in significant economic gains.”<sup>134</sup>

But before governments facilitate the construction and operation of shared-use power infrastructure, “an important first step is to assess how mining companies are currently powering their operations, and why they choose [a] particular arrangement.”<sup>135</sup>

Three general electricity-related considerations of a mining operation inform the development and operation of shared-use infrastructure: power supply, reliability, and price.<sup>136</sup> These aspects influence where a mining operation sits on a spectrum of power generation and consumption—mines may be completely self-sufficient, draw power exclusively from the national grid, or operate somewhere in the middle.<sup>137</sup> Where a mine sits on this spectrum then influences the strategies that governments can deploy to facilitate shared use. For example:

- If there is insufficient supply of electricity from the national grid or the cost of sourcing from the grid is uncompetitive, the mine will self-generate its electricity. This scenario creates shared-use benefits leveraging economies of scale, with the mine either selling excess power to the grid or serving as anchor demand for an IPP.<sup>138</sup>
- If the grid power is cost effective, but the transmission network is unreliable or does not extend to the mine, the mine might have to work with the government to improve transmission or distribution lines. Shared-use benefits will arise when the government might request that the new lines also service a previously unconnected town and credit the mining company for the connection via a reduced electricity rate or another commercial arrangement.<sup>139</sup>

## 4.2 The Role of Government

How a government regulates the power sector—and occasionally participates in it via state-owned companies—is a major factor influencing the supply, reliability, and price of electricity for a mining operation and the potential for shared use. Until recently, vertically integrated state-owned utilities monopolized the power sectors of many countries, especially in Africa.<sup>140</sup> To incentivize investment, many developing and emerging countries reformed the power sector by “[unbundling] the natural monopoly activities (transmission, distribution) from the competitive ones (generation, trading, supply)” and created “competitive wholesale and/or retail market[s].”<sup>141</sup> In Africa, bundled utilities are still far more prevalent and many state-owned companies still participate in the power sector.<sup>142</sup> In turn, an independent regulator is key to private entities—such as mining companies or IPPs—investing

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<sup>134</sup> Toledano, *Power Policy Paper*, 4.

<sup>135</sup> Toledano et al., *Framework*, 36.

<sup>136</sup> See Toledano et al., *Framework*, 36.

<sup>137</sup> Toledano et al., *Framework*, 36.

<sup>138</sup> Toledano et al., *Framework*, 36.

<sup>139</sup> Toledano et al., *Framework*, 41.

<sup>140</sup> Toledano et al., *Framework*, 44.

<sup>141</sup> Toledano, *Power Policy Paper*, 15.

<sup>142</sup> See, for example, “Company Information Overview,” Eskom, Republic of South Africa, August 2020, [https://www.eskom.co.za/OurCompany/CompanyInformation/Pages/Company\\_Information.aspx](https://www.eskom.co.za/OurCompany/CompanyInformation/Pages/Company_Information.aspx);

“Background,” Electricidade de Moçambique, E.P., Republic of Mozambique, August 2020, <https://www.edm.co.mz/en/website/page/background>.

in infrastructure that facilitates shared use.<sup>143</sup> An independent regulator can control tariffs and access charges to ensure power sales by private parties are on equal footing with those of state-owned companies.<sup>144</sup>

To further facilitate shared use, governments can also institute a regulatory framework that allows for long-term power purchase agreements (PPAs). PPAs are key to mines or other IPPs securing reasonable financing for the construction of shared-use power infrastructure.<sup>145</sup> If a mine is constructing a power plant for its own operations, but is required to generate excess capacity for sale to the government or other third parties, the mining company and its financiers will be looking to have off-takers commit to “buying a minimum amount of capacity from the owner over a longer period.”<sup>146</sup> Also, when the state utility is acting as the off-taker, the IPP and its financiers will want to be sufficiently certain that the utility will be able to distribute the power and collect payment, often requiring sovereign guarantees.<sup>147</sup> Notably, the utility can lessen its exposure and support shared-use by being a member of a power pool, creating an outlet for excess capacity if local issues arise.<sup>148</sup>

### 4.3 Legal Approaches and Language for Statutes, Regulations, and Concessions

Because shared-use infrastructure for power is highly dependent on the legal and regulatory framework of the electricity sector in a particular jurisdiction, the legal provisions detailed below are organized by jurisdiction, rather than by topic.

#### Cameroon

In Cameroon, the Cam Iron concession contemplates a variety of methods that the mining company might access the electricity necessary to power its operations. The methods described are representative of the basic means through which power can be generated and consumed in a sufficiently liberalized power sector, illustrating that opportunities for shared-use outcomes are more prevalent when IPPs and PPAs are allowed. The concession also creates a framework where the state can leverage the captured demand of Cam Iron to potentially develop a shared-use power plant.

First, the concession explicitly outlines that, “[t]he Parties acknowledge that the conduct of the Project shall require a reliable supply of power to the Project Facilities for the industrial and human purposes of the Project,”<sup>149</sup> and that the available power generation options are “[a]ccording to the needs specified by the relevant Project Company and to the power resources available in the relevant Project Area.”<sup>150</sup> The concession then outlines three options for accessing electricity: purchase from a domestic utility, self-production, or purchase from an IPP.<sup>151</sup> Notably, if Cam Iron self-generates, the concession outlines that the company is permitted to enter into a long-term power supply agreement with “such entity in charge of supplying power in the territory of the State,” i.e., the utility, ensuring Cam Iron’s

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<sup>143</sup> Toledano, *Power Policy Paper*, 21.

<sup>144</sup> See Toledano, *Power Policy Paper*, 15.

<sup>145</sup> Toledano, *Power Policy Paper*, 18.

<sup>146</sup> Toledano, *Power Policy Paper*, 18.

<sup>147</sup> Toledano, *Power Policy Paper*, 21.

<sup>148</sup> Toledano et al., *Framework*, 46.

<sup>149</sup> Cam Iron Cameroon Concession, Section 24.1(a).

<sup>150</sup> Cam Iron Cameroon Concession, Section 24.1(b).

<sup>151</sup> Cam Iron Cameroon Concession, Sections 24.1(b)(i)–(iii).

charges permit it to “[achieve] an appropriate return on the additional capital it is required to spend in order to produce the surplus power. . . .”<sup>152</sup>

Notwithstanding the three options, if the state decides to construct a power plant for supply of power to the mining operation, Cam Iron and other project companies undertake to enter into take-or-pay PPAs based on “mutually agreeable terms consistent with practices applicable to international power production and generation plants managed by the private sector.”<sup>153</sup> This clause requires Cam Iron to purchase power from a plant built by the government, but the plant’s financing is likely dependent on there being an extant, mutually-agreed-upon PPA with Cam Iron, the anchor client. Because the provision does not call for the power plant to be exclusively constructed for the mining company, Cameroon may be able to leverage the demand of the mining operation to build a state-owned plant that can supply power to both the mining company and third parties.

### *Liberia*

If the circumstances are such that a mining operation is generating its own electricity,<sup>154</sup> states may require that the company produce excess power for shared use. The excess power may be sold or distributed for free to a local community, sold to a public utility, or sold to other mining operations.

For instance, the Western Cluster concession in Liberia requires that:

[I]n the event the Company constructs a Power Plant at any of its mining sites, such Power Plant shall be designed to generate a quantity of electric energy in excess of the electric energy required by the Company for Operations to supply third party users located within a 10 km radius thereof on a 7 days per week, 24 hours per days basis in accordance with third party user demand from time to time . . . <sup>155</sup>

Power generation for third parties is capped: “the Company shall not be required to build a Power Plant in a manner that it generates an excess of more than 10% over the electric energy required by it for Operations.”<sup>156</sup> After the mining company generates excess power, interconnection and distribution to third parties is done on governmental infrastructure, i.e., power distribution by the mining company stops “at the gates” of the power plant.<sup>157</sup> Also, the power plant must be designed and constructed in such a way that it can be “expanded on a commercially feasible basis to have twice the electricity generating capacity necessary to service Operations.”<sup>158</sup> Interestingly, the concession also requires that the company account in a feasibility report for a potential scenario where the mining company does not construct its own power plant, but connects to the national grid,<sup>159</sup> anchoring demand for power generated by a hydroelectric dam. This provision allows the government to leverage Western Cluster’s

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<sup>152</sup> Cam Iron Cameroon Concession, Section 24.3.

<sup>153</sup> Cam Iron Cameroon Concession, Section 24.1(c).

<sup>154</sup> Power might be unreliable, too expensive, not an appropriate wattage, or unreachable because of a lack of distribution lines to the concession site. See Toledano et al., *Framework*, 36.

<sup>155</sup> Western Cluster Liberia Concession, Section 19.3(b).

<sup>156</sup> Western Cluster Liberia Concession, Section 19.3(b).

<sup>157</sup> Western Cluster Liberia Concession, Section 19.3(b).

<sup>158</sup> Western Cluster Liberia Concession, Section 19.3(d).

<sup>159</sup> Western Cluster Liberia Concession, Section 19.3(e).

current demand for power to determine the viability of grid connection for both this and future mining operations.

The legal provisions related to power in the China-Union concession are quite different. The concession first outlines three methods through which the mining company may “provide for the installation of electric generating capacity to meet its reasonable needs for conducting Operations in Liberia.”<sup>160</sup> Then, if the mining company produces excess electricity, it must first try and sell the excess to the government, and if the government declines, to third parties.<sup>161</sup> In each case, the mining company’s prices are limited to the cost of production plus a “reasonable profit margin,” agreed to by the mining company and the government.<sup>162</sup> This kind of provision does not produce shared-use effects if the company is not required to generate excess electricity in the first place, which is the case for China-Union.

### *Papua New Guinea*

In Papua New Guinea, the Standard Mining Development Contract contemplates two instances where excess power can be generated and sold to the government. If:

(a) the Approved Proposals for Development provides for the Project electric power supply facilities to generate electric power in excess of the Project’s needs in order to meet local rural requirement; or (b) subsequent to the Approved Proposals for Development, the Company (Joint Venturers) decides (decide) that the Project electric power supply capacity exceeds the needs of the Project at any time . . . the Company (Joint Venturers) shall sell to the appropriate governmental agency such excess electricity produced by the facilities for resale and distribution to rural electrical loads.<sup>163</sup>

In both instances, the Electricity Commission needs to make an order permitting the sale of electricity to “other users,” but the concession provides that government is the only eligible purchaser.<sup>164</sup> Notably, “[the mining company] shall under no circumstances be required to increase the capacity of its electric power supply facilities or transmission facilities beyond that required by the Approved Proposals for Development to meet the needs of any other users or to construct or maintain any off-site grid or distribution system.”<sup>165</sup> This freezing clause explicitly outlines that future laws or regulations that might require the power plant to be expanded are not applicable to this operation.

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<sup>160</sup> China-Union Liberia Concession, Section 19.3(a).

<sup>161</sup> China-Union Liberia Concession, Section 19.3(b).

<sup>162</sup> China-Union Liberia Concession, Section 19.3(b).

<sup>163</sup> Papua New Guinea Standard Mining Concession, Section 5.7.

<sup>164</sup> Papua New Guinea Standard Mining Concession, Section 5.7.

<sup>165</sup> Papua New Guinea Standard Mining Concession, Section 5.7.

## 5 Conclusion and Further Research

As outlined in the introduction, this paper sheds light on legal provisions that underpin shared-use mining infrastructure and provides non-exhaustive guidance on how governments and the private sector might strengthen legal language that advances shared use of railroads, ports, and power. The provisions detailed were selected because of (1) the availability of primary-source legal language, (2) the value of the provisions in illustrating various forms of shared use, and (3) the specific language deployed by the drafters to encourage or require and regulate shared use.

Further research could examine the long-term effectiveness of the provisions in practice, including how provisions have fared when challenged by an opposing party in the crucible of courts, arbitration, or administrative proceedings. Such work was beyond the scope of this project but would result in recommendations on how language can be drafted to ensure shared-use outcomes are not just a goal of a legal provision, but a tenable outcome.

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