

Parceling out prosperity?

An impact evaluation of natural resource sector investments in Liberia



In brief

- Governments in West Africa increasingly require foreign investors to build and maintain public infrastructure in exchange for rights to extract natural resources on their land.
- Liberia has adopted this strategy to fill an infrastructure gap after the civil war and build ‘spatial development corridors’ alongside concessionaire-sponsored infrastructure.
- This brief evaluates the implementation of this strategy in Liberia from 2006 to 2012, and found that mining – particularly iron ore – and Chinese-backed concessions increased economic growth within 25 km of concession areas, whereas agriculture, forestry, and US-backed concessions did not.
- These findings have significant implications for how government institutions with policymaking and M&E responsibilities, such as the Natural Bureau of Concessions (NBC) and Liberia Land Authority (LLA), should track the performance of concessionaires.
- Going forward, the Government of Liberia (GoL) should continue to require that investors meet public good requirements but also make greater use of innovative monitoring and evaluation (M&E) tools to monitor the activities and impacts of concessionaires.

*This project was funded
by IGC Liberia*

Introduction

Over the last decade, foreign direct investment (FDI) in West Africa has increased by 62% (UNCTADStat, 2018). Large oil and mineral deposits and broad swaths of arable land make the region an attractive destination for extractive sector investment. However, it remains an open question if governments in resource-rich countries can effectively manage and coordinate these incoming investments in ways that will lead, spur, and sustain economic growth.

The conventional wisdom is that extractive sector investments lead to territorial enclaves with foreign workers who import goods, repatriate profits, and build few linkages to the local economy.

The conventional wisdom is that extractive sector investments lead to territorial enclaves with foreign workers who import goods, repatriate profits, and build few linkages to the local economy. Cross-country empirical studies demonstrate that extractive sector investment is associated with low growth, no growth, or even negative growth outcomes (Aykut and Sayek, 2007).

Several governments in West Africa are trying to overcome this by experimenting with a new approach: requiring that investors build and maintain public infrastructure in exchange for concessions or land rights. The administration of Ellen Johnson-Sirleaf, the 24th President of Liberia, adopted this strategy of “develop[ing] development corridors off the back of concession-sponsored infrastructure” (AfDB, 2013, p. 34). More specifically, it negotiated contractual provisions that required foreign investors to build roads, bridges, ports, and railways near the communities where their commercial activities would be sited. The government envisioned that networks of interconnected firms and value chains would develop along these spatial development corridors, resulting in local economic agglomeration that would benefit surrounding communities. But did this strategy spur local economic growth? And if so, under what conditions was the approach effective?

To address this question, we designed and implemented an impact evaluation. We found that extractive sector FDI in Liberia did in fact increase local economic growth between 2006 to 2012 (Bunte et al., 2018). However, certain types of concessions improved growth more than others. Areas within 25 km of mining concessions experienced economic growth, whereas areas within 25 km of agriculture and forestry concessions did not register any detectable impacts. Another key finding from the evaluation was that Chinese-backed investment projects significantly increased economic growth, whereas concessions operated by US-based investors did not.

We used a novel measure to proxy for local economic growth: the degree of luminosity at night, as measured by satellites, in every 1 km by 1 km area. This measure, recorded annually, makes it possible to detect even small changes in economic activity in towns and villages within 5 km, 10 km, 15 km, 20 km, or 25 km of concession areas. With spatially-referenced

FDI data from official sources and the nighttime light data, we adopted a propensity score matching method to identify a causal relationship between concessions and growth in surrounding areas. We complemented this ‘geospatial impact evaluation’ (BenYishay et al., 2018) with a qualitative analysis of the Mittal Steel concession using survey data and case study evidence.

This policy brief unpacks the findings from our study and makes several recommendations for the land and concessions policy of President George Weah’s new administration.

Findings: Catalysing economic growth through natural resource concessions

Mining concessions increase economic growth in surrounding areas, but agriculture and forestry concessions do not

The Johnson-Sirleaf administration designed its development corridor strategy based on the mining sector’s perceived potential to create infrastructure and sustain jobs. Mining contracts required investors to build large-scale, public infrastructure near their commercial investments. Contracts in other sectors, however, did not have these requirements¹. The GoL, in turn, expected mining concessions to generate higher growth dividends than agriculture or forestry concessions. Our findings support this expectation: mining concessions resulted in higher measures of nighttime luminosity in surrounding regions (within 25 km of the concession site), as opposed to agriculture and forestry concessions.

Iron ore concessions have positive effects on growth in surrounding areas relative to other types of mining concessions

Iron ore projects are more capital-intensive and offer the potential for higher profits over longer periods of time². As a result, foreign investors have limited exit options and lower bargaining power vis-à-vis the government. These circumstances allowed the government to impose especially heavy public good requirements on iron ore investors. The Johnson-Sirleaf administration did so because it believed that concessionaire-financed and -supplied infrastructure would “catalyze economic activity in other sectors within viable logistics proximity” (AfDB, 2013, p. 33). We find support that this new type of industrial policy works: iron ore concessions catalysed

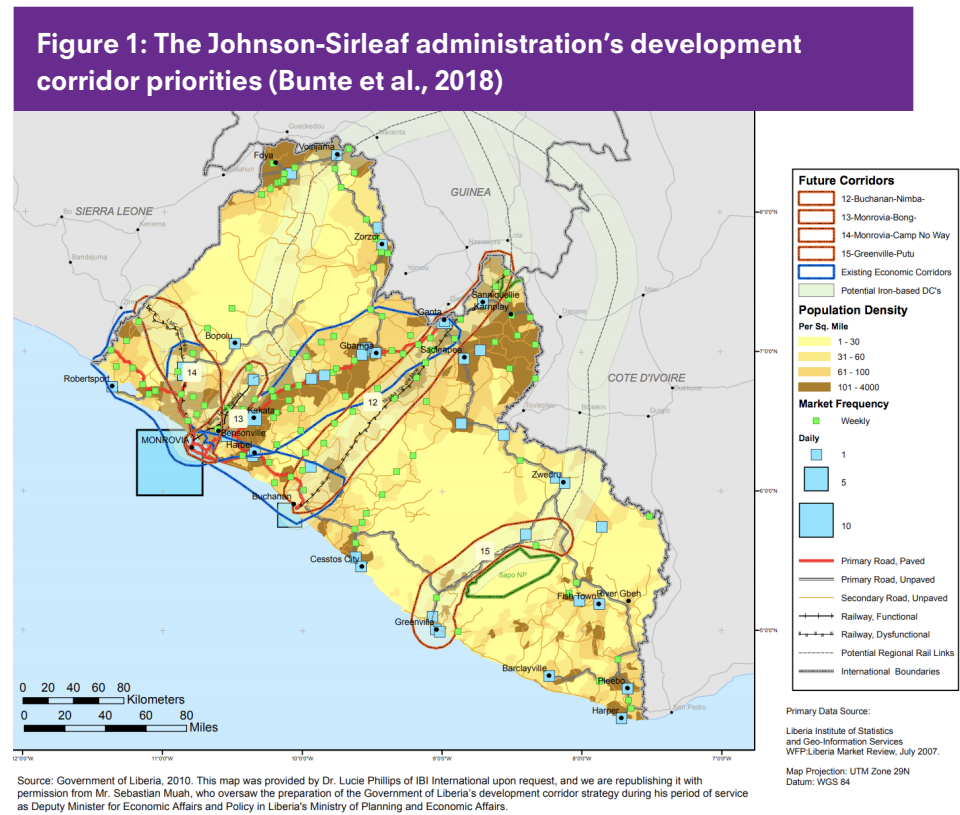
Iron ore concessions catalysed economic growth in surrounding areas, whereas non-iron ore mining concessions did not register any effects.

1. Part of the reason for this difference was the government’s assumption that “mining is generally the only activity that can self-fund transport infrastructure themselves and thus anchor new development corridors” (Government of Liberia, 2011). The government also believed “the infrastructure [mining] finances...can generate/sustain tens of thousands of jobs, both in mining-linked investments and in complementary value chains that are more labor intensive” (Government of Liberia, 2010).

2. On average, iron ore contracts in Liberia last 21 years and expend \$1.6 billion of capital, whereas other mining contracts last nine years for a \$43.2 million cost (Government of Liberia, 2010).

economic growth in surrounding areas, whereas non-iron ore mining concessions did not register any effects.

Figure 1 shows the three development corridors prioritised by the Johnson-Sirleaf administration, all of which ran from iron ore concessions to major population centres and markets: one near the Western Cluster iron ore deposit, a second near the Putu iron ore deposit, and a third near the Mount Gangra, Mount Tokadeh and Mount Yuelliton deposits³.



Concessions from Chinese investors led to large, detectable economic growth in surrounding areas, whereas concessions from US investors did not

In recent years, China has become a major source of FDI in Liberia, provoking speculation and controversy about its intentions and effects. Our study reveals that Chinese-financed infrastructure projects produce large and immediate growth impacts, whereas US-financed infrastructure projects do not.

This finding is consistent with a broader body of empirical evidence (Dreher

Our study reveals that Chinese-financed infrastructure projects produce large and immediate growth impacts, whereas US-financed infrastructure projects do not.

3. The Government of Liberia also identified a fourth potential development corridor that would run north from Monrovia to the Bong range iron ore deposit in Bong County and the Wologizi iron ore deposit in Lofa County. However, given that the Wologizi iron ore deposit had “not yet been proven economically viable” at the time the authorities drafted their strategy, this fourth potential development corridor was not assigned a high level of priority (Government of Liberia, 2010, p. 55).

et al., 2016, 2017; Bluhm et al., 2018). An investor's country of origin could lead to different levels of economic growth in areas around concessions for at least three reasons:

1. Employment practices that prioritise foreign over local labour;
2. Levels of enforcement of standards and regulations; and
3. Readiness to implement projects in a timely manner.

The first two explanations are probably the least plausible ones since the GoL includes strict local labour requirements in its contracts with concessionaires, and both US and Chinese investors generally comply with local rules and regulations, notwithstanding popular perceptions (Rounds and Huang, 2017). Chinese and US investors do differ, however, in terms of the speed with which they implement infrastructure projects⁴. Therefore, the speed of implementation is a more plausible explanation for why Chinese projects have large, detectable effects on economic growth. However, it is not the only potential explanation, so more research will need to be undertaken to pinpoint the underlying causal mechanism that explains this difference between Chinese and US investments.

Case study of the Mittal Steel iron ore concession

Our impact evaluation provides empirical evidence that the Government of Liberia's spatial development corridor strategy worked in the way that it was intended. However, it does not provide direct evidence of whether FDI generates economic growth in the way that general economic theory suggests it would—through the development of backward linkages and consumption linkages.

To address this question, we conducted a case study of the concession granted to Mittal Steel. It was the first, large-scale iron ore concession that the Johnson-Sirleaf administration granted to a foreign investor. As such, it represented an early test of the viability of the spatial development corridor strategy. Our analysis of the concession revealed descriptive evidence that geographically proximate areas witnessed the development of consumption and backward linkages, thereby strengthening our confidence that the Government's Liberia's spatial development corridor strategy worked as expected.

For example, before Mittal Steel arrived, few households had access to roads or electricity, and wage employment in the formal economy was limited (URS, 2010). The company rebuilt a 267 km railway from Yekepa to Buchanan, invested in the development of a power plant and power distribution network, and renovated the port in Buchanan. It also hired and trained around 5,000 Liberian workers. From 2008 to 2011, unemployment in Yekepa declined by 33%; incomes in nearby towns and villages doubled; and the number of households engaging in small business activity increased by 172% (URS, 2013). These investments transformed the surrounding areas.

4. US Embassy reporting indicates that, when vetting investors for the iron ore contracts in 2009, Liberian authorities favoured Chinese investors due to their ability to implement projects quickly (Thomas-Greenfield, 2009).

Recommendations: Designing land and concessions policy for a prosperous Liberia

Our analysis suggests a government policy requiring foreign investors to provide public goods in return for commercial investment opportunities has in fact accelerated economic growth in Liberia. Based on this finding, we present three recommendations for the Weah administration, and development practitioners in Liberia and across Africa.

1. **The National Investment Commission, along with other regulatory bodies, should continue to include stringent public good requirements in concession contracts with iron ore and mining investors.** The government should also review concession agreements regularly to ensure that companies are complying with their obligations to build physical infrastructure.

Concessions with more demanding public goods requirements (i.e., iron ore mining) produced higher levels of economic growth than their counterparts. Rather than pursuing less feasible options such as taxing foreign investors or providing public goods itself, the GoL can achieve significant economic gains by requiring companies in its extractive industries to provide public goods, especially physical infrastructure. Although ensuring compliance is an ongoing challenge, we find evidence that investors in the mining sector have generally met the infrastructure provision requirements in their contracts. The Mittal Steel concession is a case in point. Our results therefore suggest this strategy is feasible, even for states with limited bureaucratic capacity. The current review of concession agreements by the Weah administration presents an opportunity to monitor and enforce compliance by all concessionaires.

2. **The Land Authority and other government bodies with M&E responsibilities should consider institutionalising the use of geospatial data and tools.** Existing tools to monitor concessions generally rely on national-level data, but the impacts of investments made by concessionaires vary locally. Governments can monitor concessions quickly and cheaply by using geospatial data and tools to understand these sub-national differences. External actors can play a helpful role to build capacity within agencies with M&E responsibilities, such as the Land Authority and National Bureau of Concessions. However, the long-term effectiveness of this approach depends on the extent to which these government agencies take ownership of these data and tools.
3. **To more effectively assess trade-offs, the Liberian government should build unified data systems that allow it to more holistically evaluate the impacts of incoming FDI.** The GoL — and its development partners — should invest in a more complete understanding of the local impacts of FDI on outcomes such as deforestation, conflict, and corruption.

Many of these impacts could be negative (Maystadt et al., 2014; Knutsen

et al., 2017). For example, a concession that increases economic growth in surrounding communities could also increase deforestation. Geospatial data and tools make it possible to evaluate these effects as well as the effects of specific concession and concessionaire characteristics (e.g. investor countries of origin, the adoption of corporate social responsibility commitments) on a variety of social, environmental, and governance outcomes. A more holistic understanding of how these impacts vary across different types of concessions and concessionaires would help policymakers navigate tradeoffs as they design and roll-out new policies and strategies. However, a precondition for navigating these tradeoffs is the presence of comprehensive, unified data systems that allow the government to monitor investment characteristics vis-à-vis a range of outcomes.

References

AfDB. (2013). *Liberia – Infrastructure and Inclusive Growth*. Abidjan: African Development Bank Group.

Aykut, D., & Sayek, S. (2007). *The Role of the Sectoral Composition of FDI on Growth*. In L. Piscitello & G. D. Santangelo (Eds.), *Do Multinationals Feed Local Development and Growth?* Amsterdam: Elsevier.

BenYishay, A., Runfola, D., Trichler, R., Dolan, C., Goodman, S., Parks, B., Tanner, J., Heuser, S., Batra, G., & Anand, A. (2017). *A Primer on Geospatial Impact Evaluation Methods, Tools, and Applications*. (AidData Working Paper No. 44). Williamsburg, VA: AidData at William & Mary.

Bluhm, R. Dreher, A., Fuchs, A., Parks, B., Strange, A., & Tierney, M. (2018). *Connective Financing: Chinese Infrastructure Projects and the Diffusion of Economic Activity in Developing Countries*. (AidData Working Paper No. 64). Williamsburg, VA: AidData at William & Mary.

Bunte, J. B., Desai, H., Gbala, K., Parks, B., & Runfola, D. M. (2017). *Natural Resource Sector FDI and Growth in Post-Conflict Settings: Subnational Evidence from Liberia*. (AidData Working Paper No. 34). Williamsburg, VA: AidData at William & Mary.

Bunte, J. B., Desai, H., Gbala, K., Parks, B., & Runfola, D. M. (2018). *Natural resource sector FDI, government policy, and economic growth: Quasi-experimental evidence from Liberia*. *World Development*, 107, 151-162.

Dreher, A., Fuchs, A., Hodler, R., Parks, B., Raschky, P., and Tierney, M. (2016). *Aid on Demand: African Leaders and the Geography of China's Foreign Assistance*. (AidData Working Paper No. 3 Revised.) Williamsburg, VA: AidData at William & Mary.

Dreher, A., Fuchs, A., Parks, B., Strange, A. M., & Tierney, M. J. (2017). *Aid, China, and Growth: Evidence from a New Global Development Finance Dataset (AidData Working Paper No. 46)*. Williamsburg, VA: AidData at William & Mary.

Government of Liberia. (2010). *Liberia's vision for accelerating economic growth: A development corridor desk study*. Monrovia: Ministry of Planning and Economic Affairs.

Government of Liberia. (2011). *Developing Liberia's Economic Corridors, Volume One: Overview Report*. Monrovia: Ministry of Planning and Economic Affairs.

Henderson, J. V., Storeygard, A., & Weil, D. N. (2012). Measuring economic growth from outer space. *American Economic Review*, 102(2), 994-1028.

Hodler, R., & Raschky, P. A. (2014). Regional favoritism. *The Quarterly Journal of Economics*, 129(2), 995-1033.

Khomba, D. C., & Trew, A. (2017). *Aid and Growth in Malawi*. (AidData Working Paper No. 42). Williamsburg, VA: AidData at William & Mary.

Knutsen, C. H., Kotsadam, A., Olsen, E. H., Wig, T. (2017). Mining and Local Corruption in Africa *American Journal of Political Science*, 61(2), 320-334.

Maystadt, J.-F., de Luca, G., Sekeris, P., & Ulimwengu, J. (2014). Mineral resources and conflicts in the Democratic Republic of Congo: A case of ecological fallacy. *Oxford Economic Papers*, 66(3), 721-749.

Thomas-Greenfield, Linda. (2009). "Liberia: Chinese Firm Wins Bid to Develop Bong Iron Ore Mine." US Embassy Cable, January 21, 2009.

Rounds, Z., & Huang, H. (2017). *We are not so different: A comparative study of employment relations at Chinese and American firms in Kenya*. (China-Africa Research Initiative Working Paper Series No. 10). Boston: Johns Hopkins University.

Schutte, S., & Weidmann, N. B. (2011). Diffusion patterns of violence in civil wars. *Political Geography*, 30(3), 143-152.

UNCTADstat. (2018). *Bilateral FDI Statistics*. Division on Investment and Enterprise: United Nations Conference on Trade and Development.

URS. (2010). *Western Range DSO Iron Ore Project, Volume 5, Part 1.1: Socio-economic Baseline Study*. Basingstoke, UK: URS/Scott Wilson.

URS. (2013). Nimba Western Area Iron Ore Concentrator Mining Project, Liberia Environmental and Social Impact Assessment, Volume 5, Part 1: Socio-Economic Baseline for Buchanan, Greenhill Quarry & Phase 2 Areas in Nimba. Basingstoke, UK: URS/Scott Wilson.