

The Grand Inga Illusion

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Abstract

After decades of false starts, an elaborate hydropower project proposed for the Congo River is beginning to take form. The plan envisions the rehabilitation of two dams and construction of two dams to tap the immense hydropower potential of the river. Proponents tout “Grand Inga” as a transformative project that will be the beacon of development on the African continent by delivering cheap electricity to up to 500 million Africans, stimulating economic growth, and improving regional cooperation. Opponents are wary of feasibility of the project, citing concerns over the immense financial cost and likelihood of corruption. Furthermore, they argue that the dam will not in fact benefit the Congolese people and inflict excessive environmental and social costs. These concerns suggest that the question of following through with the proposed project is indeed a moral dilemma. This paper provides a background to the proposed project and analyzes its costs and benefits as well as examining the obstacles that threaten to prevent the project from coming to fruition.

(Key words: Democratic Republic of the Congo, Inga Dam, World Bank, Grand Inga, hydropower, international development, Congo River)

Introduction

For more than a century, the Democratic Republic of the Congo (DRC) has captured the imagination of foreign investors with its enormous reserves of natural resources. The story differs little from its early colonial history under King Leopold II of Belgium when the colony nearly single-handedly satisfied global demand for rubber to manufacture the tires for the growing popularity of automobiles¹ to the present day when the Congo accounted for 55% of the global production of coltan,² a vital component of mobile phones. In addition, deposits of diamonds, gold, and uranium have made access to the Congo's mineral wealth a key strategy for both foreign governments and multi-national corporations. Sadly, corruption, mismanagement, foreign intervention, and civil war have caused the exploitation of these resources, directing the majority of the immense profits into the pockets of political leaders, militias, and foreign companies, and leaving little for the development of the Congolese. Yet, the hope for these resources to bring prosperity to the Congolese and the rest of Africa endures in the minds of the development agencies, the DRC government, and the Congolese people.

The DRC's principal geographic feature, the Congo River, is a symbol of the country's untapped resource-based potential. The Congo River is the world's second largest in terms of flow after the Amazon, and the second longest river in Africa beginning in the highlands and mountains of the Great Rift Valley, winding its way above and below the equator before finally emptying into the Atlantic Ocean. Unlike other rivers, the Congo has large rapids and waterfalls very close to the mouth. These waterfalls are the source of the river's immense hydropower potential. The World Bank estimates that the DRC's total hydropower potential is 100 megawatts (MW), third largest in the world. Yet, only 2.5% of that potential has been turned into actual energy.³ The main site proposed for a dam, the Inga Falls, is the largest waterfall in the world by volume. Inga Falls is a series of falls and rapids

that drop in elevation via small rapids. The main falls are 4 km wide. At the Grand Inga site the Congo River drops 96 meters in a run of 14.5 km.⁴ Thus, the construction of a dam, or a series of dams at the Grand Inga represents an incredible potential source of renewable energy. The World Bank argues that the Inga dam site provides a unique opportunity to fulfill that potential: “With a 40 MW potential, Inga is the world’s largest hydropower site and its proper development can make it the African continent’s most cost-effective, renewable source of energy with an estimated generation cost of US\$ 0.03 per kilowatt hour.”⁵

History of the Grand Inga Project

The idea to build a dam at the Inga Falls for energy production is not new. Investors have wanted to develop the site since 1928.⁶ In the past 60 years French, Belgian, Chinese, Brazilian and African engineers have all hoped to dam the river. The DRC in fact already constructed two dams at the Inga Falls. In 1972, the Congo’s dictator, Sese Seko Mobutu ordered the construction of Inga I, which had a capacity to produce 530MW. A decade later in 1982, a second dam, Inga II was built to generate an additional 1,424MW. To transport the energy, the Inga-Kolwezi line, a 1,770 km long transmission line, was also built that connected to the state-owned copper mines in the Katanga province, bypassing nearly every town along the way.⁷ The dams were a significant investment on the part of the state. One assessment claimed that the two dams accounted for 32% of the country’s debt in 1981.⁸ However, the investment has not paid off. The dams generate less than 40% of their potential output due to deterioration caused by lack of maintenance, financial mismanagement, years of war and siltation, which has caused the Inga dams’ turbines and the associated electrical infrastructure to significantly deteriorate.⁹ Now, the World Bank, the DRC, and new investors are pouring money into rehabilitating Inga I and II as part of a plan to construct two even larger dams to realize the full potential of the Inga Falls site.

Current Plan to Build the Grand Inga

A detailed plan for the current Grand Inga project has not yet been completed. However, it is clear that the project will include four primary phases: the rehabilitation of Inga I and II, the construction of a dam known as Inga III that would generate 4,500MW, and lastly, the construction of a dam known as the Grand Inga.¹⁰ This current plan for the Congo River would make the entire Grand Inga development the largest hydro project in the world, generating more than 40,000 MW per year, an amount that could provide 40% of Africa's electricity needs.¹¹

The first part of the project, the rehabilitation of Inga I and II and the Inga-Kolwezi transmission line, has been going on for more than a decade. The World Bank started the rehabilitation project in 2003 claiming that the rehabilitation of the two power stations and transmission line would enable the DRC to earn \$40 million yearly through exports of electricity. The cost of this part of the project is projected at \$883 million dollars when completed in 2016, which is over four times the World Bank's original 2003 estimate of \$200 million dollars.¹² And as Anders Lustgarten notes, it is doubtful that this money will result in the complete restoration of the dams to full capacity.¹³

The next phase of the Grand Inga dam project involves the construction of the Inga III dam. Estimated costs for Inga III range from \$12 billion to \$37 billion. Three international companies have been chosen to build and manage Inga III as a condition on its loan: China Three Gorges Corporation, Daewoo-Posco-Snc-Lavalin, and ACSEurofinsa.¹⁴ It estimates that construction work should begin in 2015, but construction could take anywhere from 5-10 years. As Ryk van Niekerk argues "Inga III is critical for the overall Grand Inga project. It will show that the project is perceived as viable. It will be the first phase of one of the world's biggest construction projects and will be closely watched by stakeholders around the world."¹⁵ Thus, the success or failure of the Inga III dam will decide whether the construction of the Grand Inga dam will happen.

The Grand Inga dam is the final phase the project. For many, it represents the solution to Africa's energy woes. Most estimations of the dam's potential assert that the dam could produce 40,000 MW per year, double the Three Gorges dam in China and currently the world's largest.¹⁶ In theory, more than 500 million Africans could get their energy from this single dam. The extraordinary output would be matched by an equally extraordinary price tag: \$80 billion, or 2.5 times the GDP of the country. There is no date as to when construction would start or a schedule for its completion. Such an amount of money needed for Inga III and Grand Inga necessitates investment from neighboring states, development institutions, and the private sector.

In the early part of the 2000s, the DRC appeared to secure an agreement from neighboring states to build Inga III and share the energy produced. The Western Power Corridor (Westcor) was established in 2003 as a partnership between utilities from the DRC, South Africa, Namibia, Botswana and Angola.¹⁷ Plans were drawn up for a \$7billion, 4,500MW hydroelectric dam that would supply each of the countries. However, the plan broke down in February 2010 when Congo decided to sign a contract with the company BHP Billiton to become another customer.¹⁸ But in 2012, BHP Billiton pulled out of the agreement after re-considering the construction costs.¹⁹ After great hope to actually begin the ambitious project, it appeared to be stalled yet again.

Recent actions taken by the DRC government, international institutions, and regional governments over the past two years appear to have changed rhetoric surrounding the project into tangible commitments. In particular, agreements from the World Bank and from South Africa seem to have been crucial in setting the project in motion. The World Bank has been the largest single source of funds for the construction of large dams throughout the world. On March 14, 2014, the World Bank announced its contribution of a \$73.1 million grant for the Inga III dam. The grant takes the form of a technical assistance project that will fund a

number of environmental, institutional, social, and technical studies that will hopefully shape sustainable development of the project.²⁰

Most recently, South Africa ratified the Grand Inga treaty, first signed in 2013, which sets the terms for the delivery of energy from the DRC to South Africa. Under the agreement, South Africa commits to buy the first 2,500 MW of electricity generated by Inga III, the third development in the Inga Grand project. It also gives South Africa the right of first refusal on electricity produced by the other Inga phases.²¹ “The project has the potential to supply clean and affordable imported hydroelectric power to meet the needs of the DRC, South Africa and surrounding countries,” asserted Jeff Radebe, South Africa’s Minister in the Presidency for Planning, Monitoring, and Evaluation.²² It is believed the remaining electricity will be sold to mining companies in Katanga, a province in southeastern DRC.²³ The African Development Bank is also a key supporter of the project, committing \$68 million to “facilitate the development of the local institutions and skills necessary (technical, legal and financial advisors will be provided) to attract private capital for the completion of Inga [III].²⁴

The World Bank and the DRC are vocal about the tantalizing benefits of completing the project: “With a 40 GW potential, Inga is the world’s largest hydropower site and its proper development can make it the African continent’s most cost-effective, renewable source of energy with an estimated generation cost of US\$ 0.03 per kilowatt hour,” states the World Bank²⁵ It believes the project will provide the means for 9 million Congolese to finally have electricity. The 40,000 MW will easily meet national electricity demand, enabling the country to sell the extra energy to regional partners like Gabon, Cameroon, Nigeria, Sudan and Ethiopia.²⁶ “It [the Grand Inga project] is one of the strategic pillars of development for the DRC, that needs energy to expand growth and reduce poverty in a sustainable way,” says H.E. Matata Ponyo Mapon, Prime Minister of the Democratic Republic of Congo.²⁷

Despite the enormous cost, the World Bank is confident that the DRC’s investment

will pay off. The World Bank conducted an internal assessment of the impacts of fifty large dams whose construction the institution had significantly supported. According to its findings, the value of the economic development provided by the dams far outweighs the social and environmental harm. The report found, “74% of the dams (37 of the 50) are acceptable or potentially acceptable under the Bank's current guidelines [suggesting] that large dams can be designed, built, and operated so as to make a positive contribution to development while protecting the environment and restoring the livelihood of people who must be resettled.”²⁸ Thus, according to the World Bank and the DRC, the question of whether the dams should be built is beyond debate. However, opponents of the project have raised important concerns that must be examined further.

Financial Costs and Impacts

The financial cost of the project is one of the chief concerns about the feasibility and practicality of the project. The projected \$80 billion cost of the Grand Inga's construction is more than six times the country's current GDP, saddling the country with debt that would take decades to repay. Furthermore, the results of a recent study conducted by four Oxford researchers suggest that this \$80 billion figure is likely a considerable understatement.²⁹ They found that the actual costs of an average large dam project were 96% higher than estimated costs, and this excludes inflation, substantial debt servicing, environmental, and social costs. Furthermore, actual implementation schedule of a dam was 44% longer than the initial estimate. Applied to the case of the Grand Inga dam, the onerous \$80 billion price tag swells to an unquestionably disastrous \$160 billion. With such a cost, the World Bank's claim that the benefits of the dam will outweigh the costs is extremely dubious.

Also, the initial contribution of the World Bank is not as valuable upon closer inspection. First, the grant is a drop in the bucket compared to the projected costs of the dam. \$73.1 million represents less than 0.01% of the \$80 billion total. Second, this money will not

even go towards actually building the dam. The World Bank's announcement specifically states, "No construction or operational activities will be funded by the technical assistance project."³⁰

The DRC government is already feeling the financial weight of the first part of the project. As noted earlier, the rehabilitation of the Inga I and II dams and the Inga-Kolwezi line has cost nearly \$1 billion, which has the unfortunate distinction of being the single largest contributor to DRC's debt.³¹ Faced with this debt and the promise of more debt to come, the DRC government will be forced to export the energy produced by the Inga dams to richer markets to recoup its financial investment.³² The agreement with South Africa already commits half of the Inga III dam's output. Some of the remaining energy produced is likely to go to the foreign mining companies in Katanga. Other destinations for the Grand Inga's energy include regional markets in Angola, Namibia, Zambia, Zimbabwe, and East Africa. A study by the World Bank even looks into the possibility of transmitting energy 5,000 miles to European markets. While the sale of surplus energy would certainly go a long way to repaying the cost of the dam, this point raises the troublesome question of who will in fact benefit most from the Grand Inga project.

Upon first glance, it would appear obvious that the Congolese would benefit from the Inga dams massive energy output. The people certainly need it. The latest figure from the World Bank estimate that only 15% of the population has access to electricity.³³ But one must not make the mistake of assuming that increased energy generation will necessarily increase the number of people who will gain access to electricity. First, the people of the Congo are not Inga's intended clients. The \$80 billion amount only includes the cost of the dam and long-distance transmission lines to Africa's mining and industrial hubs, and cities in South Africa and other countries.³⁴ Local distribution lines have not been incorporated into the plan, meaning the electricity generated by the dams would not reach a fraction of the

people not connected to the grid. Thus far, the Congolese government has made no plans to connect the energy from the dam to the existing national grid. Even if the government changes course and delivers energy from the dam to some of its impoverished people, the centralized nature of the grid combined with the heavy cost involved in expanding it to the rural area makes it unlikely that the rural population will substantively benefit from the Inga dams.³⁵ Therefore, if most of the electricity from the dams that is not going to the mining companies is flowing out of the country, leaving Congolese still in the dark, why should this project be pursued? One could argue that the profits made from the sale of electricity will be used by the state for development. However, the corrupt nature of the DRC government makes this claim doubtful.

Corruption

It is fair to question the wisdom of placing the world's largest and most expensive hydropower dam in the hands of one of Africa's most corrupt governments. The corruption of the DCR government could easily undermine the Grand Inga project. Transparency International's 2013 corruption perception index ranked the DRC 154th out of 177 countries and gave the country a score of 22 on a scale where 100 denotes the least corrupt countries and 0 denotes the most corrupt. "The various foreign investors plying the project with funding could reduce it to a minefield of corruption in a state infamous for state and political manipulation of contracts and tenders," said Charlotte Johnson, then a researcher with Idasa, an African democracy watchdog.³⁶

In a report on corruption in the DRC and its implications on the Grand Inga Project, Augustin Nguh concludes that there is no doubt that corruption will adversely affect the implementation of the project.³⁷ When one factors in the incredible amount of money earmarked for the project, the fact that construction projects are recognized to be the most susceptible of all projects to corruption, and the pervasiveness of corruption in the DRC, the

consequences for the Inga dams could be disastrous.

Environmental Cost

The potential environmental impacts of the Inga dams would be negatively felt at the local, regional, and global levels. Further damming the Congo River at the Inga Falls site would divert and reduce the river's flow, which would have several detrimental environmental effects on the river, the regional ecosystem, and even the global climate. First, reduced flow might decrease the river's biodiversity and change the dominant species.³⁸ The change in flow could also alter migratory movements of certain species of fish and change the flow of silt, which could in turn adversely affect the output of the dams.³⁹ Secondly, diverting the flow of the river would create a reservoir flooding the Bundi Valley, affecting local agricultural lands and natural environments, and might cause huge methane emissions that would contribute to global warming.⁴⁰ The flooded land could also serve as a breeding ground for mosquitos that transmit malaria. Building two new dams would also require a large area of forest to be logged and cut to build roads and transmission lines. Thirdly, the Congo River deposits a plume of nutrients and sediments into the Atlantic Ocean that are eaten by sea creatures that take carbon out of the atmosphere. The reduced flow caused by further dams would also disrupt the plume, depriving the carbon-removing organisms of their food source, and killing them off, which would increase the amount of carbon in the atmosphere, contributing to global warming.

Social Cost

Mentioned as one of the environmental impacts, the flooding of the Bundi Valley as a result of the Inga dams will displace local communities. However, the financial institutions supporting the project are quick to downplay any concerns. The African Development Bank claims the impact on local inhabitants will be limited and anyone displaced or disadvantaged by the project will be duly compensated. "Inga III will follow a feasibility study and broad-

based consultation. The impact indicated will be quite limited on the small local population; there will be compensation for anyone displaced or otherwise adversely affected,” says Hélas Cheikhrouhou, director of the Energy department.⁴¹ The World Bank adds that the land area to be flooded per megawatt (MW) of electricity generated will be among the smallest in the world.⁴² However, to counter the World Bank’s claim, the electricity generated from the Grand Inga would be by far the largest in the world, so the land area flooded could still be relatively large, and the area flooded per megawatt produced could still be small. The claims of the African Development Bank are more misleading.

Rudo Sanyanga traveled to the Burundi valley and reported the situation there:

Despite being in the path of this huge dam project, the people here had very little information about the dam and the impacts it will bring to their lives. The governments and developers thrive by providing little or no information to the affected. The villagers knew that they would be relocated when Inga III construction starts but had no details of how the exercise would be conducted. They reported that the World Bank had carried out a survey in 2007 to establish the size of the affected communities and at the time informed them that they would receive US\$900 compensation per household to relocate.⁴³

Roughly 9,000 people will have to be moved to begin the project but there has been no recent action on the part of the DRC government to accommodate them.⁴⁴ This should come as no surprise considering that the communities displaced by Inga I and II are still waiting for any compensation.

These events surrounding the Grand Inga project fit in with the history of mega development projects in the DRC. A study of the mega development projects in the DRC conducted by a researcher in Belgium found “the IHP [Inga Hydropower Project- Inga I and II] had permanently displaced thousands of local people without consultation or compensation. As a result of this forced displacement, the dam-affected communities are poorer now than they were before the IHP. Also, the trickle-down effects of the mega projects, the IHP included, remain questionable to ordinary citizens.”⁴⁵ Even the World Bank admits that the lives of the people displaced by dams do not improve by any measure. In

1994, a review conducted by the World Bank found that only one dam (out of the hundreds it had funded) had incomes for affected families actually rising after resettlement.⁴⁶

The fact that many people will be negatively impacted by the Grand Inga project with little consultation, compensation, or knowledge on their part creates a moral dilemma for justifying the construction of the dams.

Conclusion

Based on the evidence provided by both sides, the argument that “this time it’s different” does not make a compelling case. In fact, the evidence strongly suggests that it will be the same story as before. The amount of debt required to take on this project would burden the DRC government for years to come. The amount of money involved creates dangerous temptations for an already exceedingly corrupt regime. It will be years, if not decades, before energy is actually produced, leaving the population in the dark for the foreseeable future.

Once the electricity is generated, most of it will flow out of the country. The analysis of the World Commission on Dams in their 2000 report is instructive for the case of the Inga dams. The WCD concluded that while “dams have made an important and significant contribution to human development,” in “too many cases an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers and by the natural environment.”⁴⁷

Will this project actually be completed? There are positive factors that could help this project come to fruition. On the one hand, the involvement of South Africa in the Grand Inga project gives the DRC a credible partner that has a committed interest seeing through the development of the Congo’s hydropower. Bruno Kalala, the DRC’s Minister of Water Resources and Electricity confirmed, “The DRC needed a reliable purchaser to make the project bankable.”⁴⁸ The project could advance regional cooperation and integration. On the other hand, the fact that half of the electricity generated by Inga III would go to a foreign

country before the basic needs of the Congo's own citizens are met cannot be ignored. It is difficult to reason why the international development community expects the DRC to be able to handle the enormous responsibility and complexity of the Grand Inga project when it failed miserably in the rehabilitation of the Inga I and II dams.

In conclusion, the Grand Inga project is morally dubious. Its inapplicability to the local needs of the Congolese, the responsibility and burden placed on the state, the exclusive benefits amassed by foreign companies and countries, and the social and environmental damage of the project indicates that the project will do more harm than good if undertaken. Rather than depending on the Grand Inga as the magic bullet to solve Africa's energy needs, the DRC would be better off looking into G. Pascal Zachary's ideas championing the sustainable advantages of small dams.⁴⁹ But that's the topic of another paper.

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