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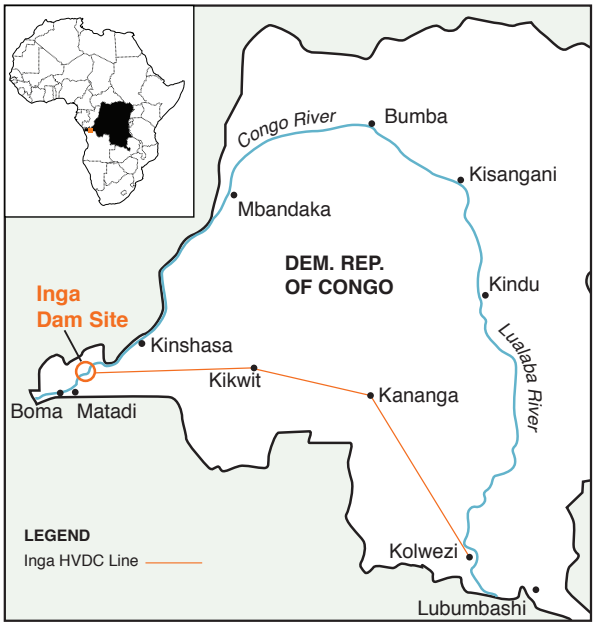
Congo's Energy Divide

HYDROPOWER FOR MINES AND EXPORT, NOT THE POOR

The Democratic Republic of Congo (DRC) has been rebuilding its power grid as part of the war-torn country's reconstruction since 2003. Despite the millions of dollars of donor funding put into this, today only 9% of Congo's 70 million people have access to electricity – about 30% in urban areas and an alarming 1% in rural areas. Lack of access to modern electricity services impairs the health, education and income-generating potential of millions of Congolese people. The Congolese government set a highly aggressive target to provide 60% of the population with access to electricity by 2025 but has failed to put in place plans to meet this target. Instead, the government plans to rehabilitate the existing power grid and develop new dam projects, primarily to power the mining industry and export electricity to neighboring countries. Investments in decentralized power supply projects, including small- and medium-scale hydro across the country, could more evenly reach the population and finally begin to close DRC's energy divide, but so far are not being developed.

AFRICA'S MOST POWERFUL RIVER

The Congo River is the deepest river in the world and the fifth longest, with a flow rate second only to the Amazon's. The Congo River is home to at least 700 fish species, with 300 documented fish species in its lower section alone. The river empties water and sediment into the Atlantic Ocean, creating "the Congo Plume" – a natural process which is thought to be one of the largest carbon sinks in the world.



The river is unique in that it has large rapids and waterfalls very close to the mouth while most rivers have these features upstream. The rapids and waterfalls give the Congo River huge hydropower potential, and hydropower developers have targeted it since the Belgian colonial period. In the years following independence, the Inga I Dam (351 MW, commissioned in 1972) and the Inga II Dam (1,424 MW, commissioned in 1982) were built despite feasibility studies that found both projects uneconomical and far in excess of the country's electricity needs at the time.

Yet neglect, financial mismanagement, years of war and siltation led to very poor performance and premature deterioration of the equipment. By 2002, the dams were producing only 40% of their capacity. The related transmission line, which runs for 1,725 kilometers, was the single largest contributor to the DR Congo's debt burden.

The Inga site's hydro-potential

The Inga rapids have an untapped hydropower potential of more than 40,000 megawatts. This potential could be exploited by the Inga III Project (with an estimated capacity of 4,500 megawatts) and the Grand Inga scheme (with an estimated capacity of 40,000 megawatts). The Grand Inga would be the world's largest hydropower project. The current designs for Inga III and later phases of Grand Inga will result in diversion of the mighty Congo River, creating a reservoir that would flood the Bundi Valley.

Budgeted at US$250 million, actual construction costs quadrupled to $1 billion. The Inga-Kolwezi high voltage direct current (HVDC) line was meant to deliver large amounts of electricity to copper mines in faraway Katanga Province, not cities or villages along its route. Within 10 years, poor maintenance, theft, and the ravages of the tropical climate caused the line to deliver less than half the electricity it was designed to carry.

REHABILITATION: MILLIONS DOWN THE DRAIN

In 2003, after years of war, peace treaties were signed in the DRC, signaling the reentry of donors to support reconstruction projects across the country. Funds were earmarked by the World Bank to target three main components – the Inga I Dam, the Inga II Dam and the Inga-Kolwezi transmission line. Despite the early planning for rehabilitation, the effort has been met with unexpected challenges, delays and cost overruns.

In 2003, the World Bank calculated that the DRC power grid, including the dams and transmission line, could be rehabilitated for less than $200 million and be completed by 2007. The Bank argued that the rehabilitation would allow the DRC to earn an additional $40 million in revenues each year by increasing its power sales to southern Africa. However, implementation quickly fell far behind schedule because the Bank overlooked the extent of degradation of the dams, transmission line and other critical infrastructure in their original assessment. The degraded state of the dams, grossly overlooked in the Bank's assessment, unexpectedly raised the risks of the transmission line rehabilitation. Without sufficient power supply from the dams, the transmission line would fail to earn expected export revenues on dam.

As a result, in 2007 the Bank approved a $297 million project to fully rehabilitate the dams. Additional financing was secured from the African Development Bank and European Investment Bank to meet the $499 million total projected cost. But by 2011, very little progress had been made, and additional cost overruns were identified. As a result, in 2011 the Bank approved an additional $283 million for the rehabilitation, and brought in another $146 million from the African Development Bank, German government agency KfW and electricity utility SNEL. This brings the total revised costs for the Inga dams rehabilitation to $883 million; the rehabilitation is not expected to be completed until 2016. Even after all of this investment, if the rehabilitation is successful, only 8 of the 14 genera-

ting units will be functioning by the end of the project. A November 2012 mid-term review of the project rated the overall implementation progress of the project "Moderately Unsatisfactory."

Meanwhile, the costs for rehabilitating the 1,725-kilometer Inga-Kolwezi transmission line have continued to rise as well. At this writing it is operating at 40% of its capacity. This has presented major problems for financing rehabilitation, because the DRC cannot hope to gain revenue from electricity export if this crucial piece of infrastructure is functioning below capacity. An original World Bank loan to finance the rehabilitation of the transmission line for $178.6 million was signed in 2003. Due to ongoing problems, delays and ballooning costs, two additional loans have since been granted, resulting in a total of $560 million in investment from the World Bank and $77.5 million from the European Investment Bank.

In total, project costs for rehabilitating the dams and transmission line have skyrocketed to over $1.2 billion over the past ten years, and neither project is close to being finished. The difficulties in rehabilitating the dams and transmission line do not augur well for the successful completion of the massive Inga III or Grand Inga projects.

GRAND INGA: TO LIGHT OR TO LOOT?

In addition to the rehabilitation, the DRC's future energy development is centered on Grand Inga, the largest hydropower plant in the world. Inga III hydropower scheme is the first of Grand Inga's six phases. If completed, Grand Inga could generate an astounding 40,000 MW. The Grand Inga project is hyped by donors and the dam industry as the magic bullet to electrify the entire African continent and export energy as far away as southern Europe and the Middle East. Besides Grand Inga's $80 billion price tag, two insurmountable factors make Inga's contribution to African development more of a pipe dream than a reality.

The first huge obstacle to success of Grand Inga is the grand transmission system that it would require to export its electricity around the continent. Despite the large power supplies that Inga III and Grand Inga could generate, widespread distribution of electricity in the DRC is cost-prohibitive. Building a national power grid that relies on Inga electricity would require expensive investments into local transmission and distribution lines. Rural Sub-Saharan Africa including the DRC is marked by low population density and stark poverty. The continent has a population of only 36 people per square kilometer, and only 15 percent of the rural population lives within 10 kilometers of a transmission substation. Grid extension is considered cost-effective in areas with a population density of at least 50 people per square kilometer

The current design for Grand Inga includes more HVDC lines like Inga-Kolwezi. The budget of the Grand Inga Project does not include local power grids. "African communities living in darkness are not the intended beneficiaries of the project, and the 500 million people who have been promised electricity will remain in the dark," states Charlotte Johnson, a researcher with South Africa's Institute for Democracy in Africa. This whole system is ill suited to meet energy needs within DRC, and for the vast majority of Africans who remain without electricity access.

For importing nations, the system poses different risks. The transmission lines would traverse a number of countries and thousands of kilometers. Each of its many thousands of transmission towers would be vulnerable to sabotage, in an area prone to conflict. The costs for building and maintaining this system would be substantial, and the environmental impacts significant.

Another obstacle is the absence of a functioning state in the DRC, which has led to institutionalized corruption and disregard for the public good. Large infrastructure projects like big dams are a magnet for corruption. Transparency International notes that "public works and construction are singled out by one survey after another as the sector most prone to corruption." Like other extractive industry sectors, large hydropower projects that are built and operated for the export of electricity can lead to a "resource curse," particularly in countries with weak governance structures, such as the DRC. Large export revenues that accrue centrally under the control of the state encourage patronage systems and entrench corruption.

Transforming the underlying political framework will take time and require vigilant pressure from donors, governments and civil society. Short of this transformation, Inga hydropower cannot successfully "light up Africa" because there is no political will to use it for the benefit of the Congolese people. The project's electricity would power more mines and foreign cities, while contracts for building Inga would trigger a fresh feeding frenzy for bribes and kickbacks.

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A DOOMED UTILITY

The DRC state power utility, SNEL, has been fraught with problems for decades. During the Mobutu years, it failed to collect funds from government entities, residential users and mining companies. In 2010, SNEL was on the verge of bankruptcy despite the fact that it had received support from the World Bank since 2007 to restructure and improve its efficiency. Unfortunately, the transformation has not been quick and SNEL continues to disappoint.

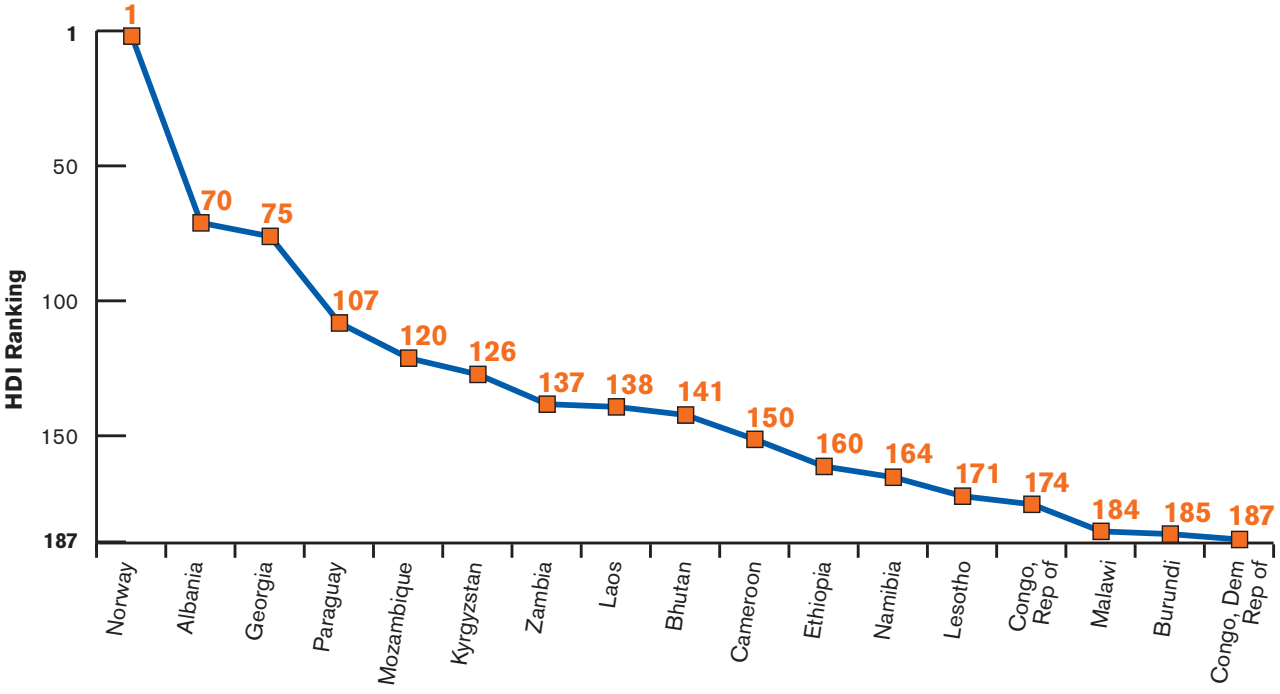
SNEL is currently unable to provide electricity to all of Kinshasa because of low production levels at Inga I and II and the aged, poorly maintained state of the transmission lines. As a result, SNEL only provides power during specific time slots to different neighborhoods, leaving portions of the capital powerless for days and months in the worst cases. Sadly, this rotation does not follow a dependable schedule so residents can neither anticipate when they will have the electricity they are billed for monthly nor anticipate the amount they will be billed for. Even when they do have power, it is unreliable and known to fluctuate unpredictably in its levels. Power cuts due to damaged transmission lines are common. Insiders report that SNEL technicians, who then receive bribes to repair the lines, sometimes provoke this damage.

Apart from poor performance, SNEL has been linked with corruption scandals. For example in 2008, two of SNEL's top directors were interrogated after the disappearance of $6.5 million earmarked for Inga II rehabilitation. The money was never recovered or accounted for. In September 2011, President Kabila fired all of SNEL's management staff because of the utility's poor performance. While this may have earned him some points

Hydro-Dependency – a Recipe for Poverty?

The DRC, like a number of other African countries, is more than 90% hydro-dependent. Studies show that hydro-dependency has failed to be a stimulus for growth in many countries. Only Norway is prosperous among the world's most hydro-dependent countries. Norway's power sector is built on medium-sized rather than large centralized dam projects. Secondly, trickle-down strategies generally only work in countries with strong states such as Brazil, China and South Korea. They have failed to make a significant dent in Africa's poverty (especially its "energy poverty" problem).

The countries which depend on hydropower for more than 90 percent of their electricity supply occupy the following positions on the Human Development Index (187 countries listed):



South Africa Makes a Deal for Inga Power

South African President Jacob Zuma and DRC President Joseph Kabila signed a Memorandum of Understanding in November 2011 to develop Grand Inga. A treaty intended to create an enabling framework for the implementation of Inga III was signed in May 2013, making South Africa the key purchaser of the electricity. Of the project's capacity of 4,800 MW, South Africa's Eskom would get 2,500MW and the rest would go to the mining companies in Katanga Province. An energy agreement between the two countries was concluded in November 2013 and that paves way for negotiations towards a Power Purchase Agreement.

Meanwhile, the World Bank has declared Inga III to be a "transformational project" that could reduce power costs both within DRC and across the sub-region, and that is worthy of significant investments from its concessional lending arm, the International Development Association. However, given the ballooning costs and failures of the rehabilitation of the Inga Dams and associated transmission lines, it is hard to see how Inga III could be implemented cost-effectively and on time. Moreover, because of the huge investment required, Inga III's electricity is likely to go to big mining interests and cities, not the majority of Congolese.

with voters prior to the 2011 election, it did not improve SNEL's quality of service. While big scandals related to SNEL have been less frequent (or better kept secret) since it's restructuring, SNEL continues to have difficulty in collecting fees owed.

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A 50-YEAR STRUGGLE FOR JUSTICE

In the 1960s and 1970s six communities were forcibly displaced in order to develop the Inga rapids hydropower site. Despite decades of demanding compensation owed to them, they have never received payment. In 2006, the World Bank wrongly stated that "the population who had the land-use rights at the time of the construction of Inga I and Inga II has been adequately compensated," and "there is no social legacy" from the original construction.

During the original dam construction, a temporary workers' camp called Camp Kinshasa was erected in the Inga concession area. After construction, many of the workers remained. Today, an estimated 9,000 people – a mix of former project workers and their families, and some families from the Inga displaced communities – call Camp Kinshasa home. The Camp is like a militarized zone. Residents cannot meet freely. They cannot build new housing, nor can they modify or improve existing housing, which has led to multiple families living in each house. Water is available intermittently from a single pump, and new toilets cannot be built. The dead cannot be buried at the camp, so families pay hefty fees to transport bodies for burial outside of Camp Kinshasa. The national power utility, which made no effort to close the camp after the original construction, has attempted to evict the Camp Kinshasa residents twice since rehabilitation of the dams began.

REINFORCING UNACCOUNTABILITY

Since 2002, more than $1.6 billion of donor aid has been approved to rebuild the DRC's power sector. Delays, largely stemming from corrupt governance and a lack of political will, slowed the rehabilitation to a snail's pace. The government's failure to effectively rehabilitate its national power grid in a timely manner raises questions regarding its political will and capacity to transform the investment into development benefits for its citizens. Public and private investors should be wary of supporting additional power projects for the DRC grid until the operational and financial performance of the rehabilitation effort is a proven success.

As the largest supporter of the DRC's energy sector, the World Bank could play a critical role in increasing access to electricity and fighting corruption within the sector. But the World Bank has demonstrated complicity in several instances. An emergency multi-sector loan approved by the Bank in 2002, which included $116 million for power-sector rehabilitation, became mired in corruption. A 2006 assessment of the transmission-line rehabilitation found that loan approval had relied on questionable project preparation and cost analysis. Despite more than a decade of World Bank rhetoric deploring fraud and corruption, a 2008 evaluation by the Bank itself found virtually no headway had been made to systematically protect its funds.

The Congo Plume

The Grand Inga scheme would interrupt biological activity in the Congo River and far out to sea (including the river's workings as a "carbon sink"). Kate B. Showers, a researcher at the University of Sussex, warns that for this reason, "plans to divert, store or otherwise intervene in Lower Congo River dynamics are truly alarming."

CLEANING UP THE MESS

Development banks and African governments have shown renewed interest in developing Inga III and Grand Inga. Yet, before new projects begin, the following measures should be taken:

- **ACHIEVING ENERGY ACCESS:** A clear and detailed strategy must be developed for achieving the DRC's own target of 60% access to electricity by 2025 for all of its citizens. Donors should prioritize decentralized energy investments that help the country achieve this target, such as through financing small- and medium-scale power projects all over the country instead of another massive project. Infrastructure strategies need to address the basic needs of poor population groups directly rather than through a trickle-down approach. Even if there is no-one size fits all approach, funders need to massively scale up financial and policy support for decentralized water and energy projects, which offer benefits in terms of poverty reduction, environmental protection, and climate resilience.

- **DEMANDING ACCOUNTABILITY:** In a country where corruption is rife, fiscal accountability measures are a fundamental necessity. Donors should implement mechanisms to monitor fiscal accountability of large-scale infrastructure projects such as the Inga dams. They should also more actively ensure that their lending does not enable or support corrupt activities.

- **SHARE BASELINE INFORMATION:** Until the recent completion of international donor-funded feasibility studies for the Inga dams, little was known about the lower Congo River environment. The baseline information from these studies must be shared with the Congolese population, and public fora held to discuss anticipated environmental and social impacts of future Inga projects. Sponsors of future Inga projects should also initiate an assessment of the exact role of the Congo Plume in mitigating global climate change. Given the enormity of the Grand Inga project, and the potential for huge impact, the sponsors must be proactive in determining what is at stake and making all baseline information easily accessible.

- **RESOLVING PAST INJUSTICES:** Binding legal agreements between the government and communities displaced by Inga should be reached in order to resolve outstanding social issues. A binding legal agreement for resettlement of Camp Kinshasa residents also needs to be reached. The relatively small but vital tasks of resolving outstanding social claims would demonstrate good faith and political will.

- **SUCCESSFUL REHABILITATION FIRST:** A moratorium on promoting the Inga III and Grand Inga developments should be adopted until there is evidence of development gains from the current rehabilitation. The moratorium should be upheld until post-rehabilitation operation of the power grid has been evaluated and considered successful.

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