Congo River: Death by a Thousand Cuts?

Flaws in the Proposed Environmental Impact Assessment for the Congo's Inga Dams

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1. Introduction

With a capacity of 4,800 megawatts and an estimated cost of $12 billion, the proposed Inga 3 Dam in the Democratic Republic of Congo is one of the largest hydropower projects in Africa. The project is considered the first phase of the Grand Inga scheme, an $80 billion complex of eleven dams and six hydropower projects on the Congo River's Inga Falls.

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The World Bank is currently considering a $73.1 million technical assistance grant to support the DRC government in carrying out technical, social, and environmental studies for Inga 3, preparing the institutional groundwork and carrying out a communication strategy for the project. The Board of Directors is expected to discuss the grant on February 11, 2014.[1] The African Development Bank (AfDB) has already approved $68 million in support of the project, and USAID has also expressed an interest in providing support for Inga 3.

The Environmental and Social Impact Assessment (ESIA) that will be carried out under the grant will have a limited scope. The World Bank argues that a Cumulative Impact Assessment (CIA) for Grand Inga will not be necessary because the stages following the Inga 3 Dam are "not yet reasonably defined", and because Inga 3 will be economic even if the full scheme is not realized.[2] The World Bank also proposes to exclude important areas from the ESIA for the Inga 3 Project.

This Briefing Paper assesses Inga 3 and Grand Inga in the light of international best practice regarding Cumulative Impact Assessments and environmental assessment, including the World Bank Group's own guidelines. It shows that the arguments for not carrying out a cumulative assessment for Grand Inga are spurious and misleading, and makes the case for a robust Environmental and Social Impact Assessment for the hydropower scheme. Such an ESIA would require a full CIA and an expanded geographic scope.

[1] On February 3, after publication of this paper, the World Bank postponed the Board discussion of the project without announcing a new date.
[2] The World Bank, Integrated Safeguards Data Sheet, December 9, 2013, p. 10 (available at http://bit.ly/1hA5L1X), and the World Bank, Integrated Safeguards Data Sheet, August 22, 2012, p. 3 (available at http://bit.ly/1diHufa)

The World Bank has presented the Inga 3 Dam as a model for the regional infrastructure projects it plans to fund under IDA 17. Its management has repeatedly stressed that it has learned the lessons of past mistakes as it once again embraces very large hydropower projects. Ignoring cumulative impacts and excluding important aspects from the risk assessment of the proposed project would demonstrate that the Bank has failed to learn from the experience of destructive projects on the Indus, Mun and other rivers in the first major test case of its new hydropower strategy.

2. International best practice for Cumulative Impact Assessment

In January 2013, the World Bank Group's IFC published a Good Practice Note on the assessment and management of cumulative impacts for its private sector clients. This document makes a convincing case for why CIAs are needed. It states:

> "The major environmental and social management challenges that we face today - loss of biodiversity, the decline of ocean fisheries, limitations on food security, scarcity of usable freshwater resources, increases in urban poverty, and climate change - are all the result of cumulative impacts from a large number of activities that are for the most part individually insignificant, but which together have had regional or even global repercussions. (…) Consequently, though an environmental and social impact assessment (ESIA) is an essential tool to assess and manage the environmental and social impacts of individual projects, it may be insufficient to identify and manage the incremental impacts on areas or resources used or directly impacted by a project from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted."[3]

Narrowly defined environmental impact assessments, in other words, may be insufficient to capture the full impacts of diverse projects and interventions, and ecosystems may experience a death by a thousand cuts if cumulative impacts are not appropriately assessed and managed.

The IFC document mentions hydropower cascades as a typical case for the need of CIAs. It states: "In circumstances where a series of developments of the same type is occurring, or being planned, the need for CIA can be fairly obvious, for example (…) when a series of hydroelectric developments occur within the same river (…)."[4] The World Bank and IFC have encouraged their client governments and companies to carry out such assessments for several hydropower projects.

The IFC Good Practice Note borrows the following definition of cumulative impacts from the US Council on Environmental Quality: "the impact on the environment which results from the incremental impact of the action when added to their past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action".[5] Similarly, the EU guidelines on CIAs define cumulative impacts as "impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project".[6]

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[3] International Finance Corporation, Good Practice Note, Cumulative Impact Assessment and Management, January 2013, p. 4 (available at http://bit.ly/1diJcwU)
[4] Ibid., p. 10
[5] US QEC 1997, quoted in ibid., p. 4. The full CEQ guidelines are available at http://1.usa.gov/JLkM2I.
[6] EC DG XI, Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Interactions, May 1999, p. 7 (available at http://bit.ly/1lGfpQP)

The IFC Good Practice Note, the US CEQ and the EU guidelines stipulate specific steps to be undertaken in the course of a CIA. Since the debate regarding the Inga dams is about whether or not to carry out a CIA in the first place, these steps are not discussed here.

3. The Inga 3 Dam and Grand Inga

The Congo River has the world's second-largest streamflow after the Amazon. At the Inga Falls, which lie 225 kilometers downstream of Kinshasa and about 50 kilometers from the river's mouth, the Congo drops 96 meters within 15 kilometers in a series of rapids. These rapids have a hydropower potential of more than 40,000 megawatts (MW). In the 1970s and 1980s, the Mobutu government built the Inga 1 and 2 dams on a canal along the rapids. The dams have a combined theoretical capacity of 1,775 MW and are currently being rehabilitated with support from the World Bank.

Since the 1960s, engineers have studied various options for building a third hydropower plant at the Inga Falls, the Inga 3 Project. For decades, they studied different options for diverting water from the Congo through tunnels to a power house downstream of the rapids. Separately, they considered plans for damming the main stem of the Congo and diverting its water through the Bundi Valley to feed the much larger Grand Inga Project.

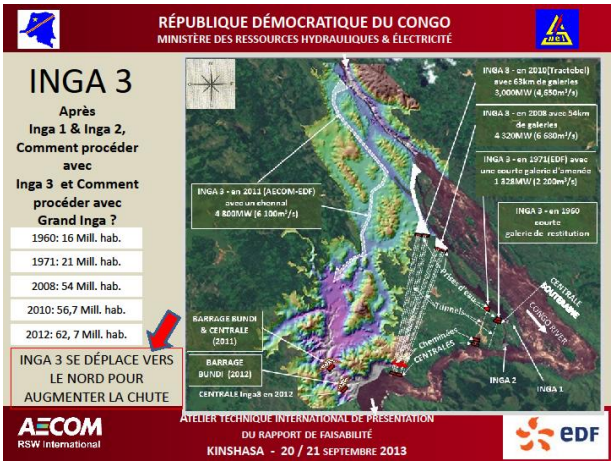
In 2011, an engineering study financed by the African Development Bank found that the proposed Inga 3 Project, which was to rely on a 63-kilometer-long diversion tunnel, was geologically very risky, and instead proposed a new scheme through which the Grand Inga Project could be developed in several stages. Phase A of the project was proposed to transfer water from the Congo through the Bundi Valley without a dam across the river's main stem, and dam the diverted flow as it re-enters the river downstream of the rapids. With a dam across the main stem upstream of the falls, much more water could be diverted through the Bundi Valley, and captured through a series of additional hydropower plants to be built in sequence at the mouth of the Bundi Valley.[7] The full sequence of projects amounts to the Grand Inga scheme.

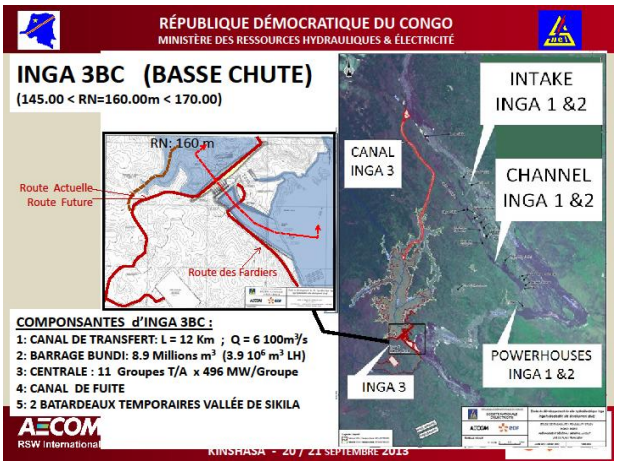
Phase A of the Grand Inga Project has meanwhile been renamed Inga 3. Yet this project is fundamentally different from the Inga 3 Dam that was considered until 2011, and is an integrative part of the Grand Inga scheme. Project sponsors propose to initially build a dam with a height of 100 meters at the mouth of the Bundi Valley (Inga 3 BC or Basse Chute). Once the main stem has been dammed, the dam height will be increased by 40 meters (Inga 3 HC or Haute Chute).

Below: Two images illustrating the history of the Inga 3 Project, with the various tunnel versions and the diversion through the Bundi Valley[8]

[7] See Recent Inga studies offer new hope for Africa's energy security, in: International Journal on Hydropower & Dams, 6/2011, pp. 61-66, for a discussion of the different projects.

[8] Source: Tonino-J. Nzakimuena, Thème 1: Étude de Faisabilité du Projet, Kinshasa, 20/21 Septembre 2013





The social and environmental impacts of the Inga 3 Dam and the Grand Inga scheme are briefly summarized in section 5 of this paper. More fundamental concerns exist regarding the underlying development model of the project. In a country where more than 90 percent of the population (and 99 percent of the rural population) have no access to electricity, the Inga 3 Project will generate electricity for the mining industry and the South African market, and will bypass DRC consumers. The project will overwhelm the weak institutional capacity of the DRC government, and will increase the risks of the resource curse. These concerns have been elaborated elsewhere, and will not be discussed here.[9]

4. The case for a full Cumulative Impact Assessment

The World Bank Board is expected to decide on a large technical assistance grant to help prepare the Inga 3 Project on February 11, 2014. The Bank proposes to carry out a cumulative impact assessment for the low-head and high-head stages of the Inga 3 Dam. It argues that a CIA for the full Grand Inga scheme is not needed for two reasons. First, the Bank maintains, "the size, scope, and nature of future hydropower developments" beyond Inga 3 "are not yet reasonably defined and available information is insufficient to consider them meaningfully" in a CIA.[10] Secondly, it argues, "the economic rationale for selecting Inga 3 does not rely on the potential development of subsequent phases of Grand Inga".[11]

The World Bank's first assertion is incorrect and misleading. The DRC government and other project sponsors clearly consider the Inga 3 Dam an integrated part of the Grand Inga scheme. The government's terms of reference for the Inga 3 ESIA introduce the Inga 3 Project as follows:

> "[Inga 3 BC] represents the first stage of an evolutionary project which allows to progressively move through several successive stages of increased generation capacity to the implementation of the full management of the Inga site with its 40,000 MW. (…) Even though they are not included in the project that will be prepared through the current operation, it is important to

[9] See for example International Rivers, Congo's Energy Divide, December 2013 (available at http://bit.ly/1gZzX3U)
[10] The World Bank, Integrated Safeguards Data Sheet [for Inga 3], December 9, 2013, p. 10 (available at http://bit.ly/1hA5L1X)
[11] The World Bank, Integrated Safeguards Data Sheet [for Inga 3], August 22, 2012, p. 3 (available at http://bit.ly/1diHufa)

keep in mind the implications of the subsequent stages of mobilizing the power generation capacity of the Congo River at the Inga site."[12]

The African Development Bank approved $68 million for the preparation of Inga 3 in November 2013. The Bank's appraisal report states that the loan "will help finalize preparation of the Inga 3 Project which is the first phase of the Grand Inga Project". According to the AfDB document, the project stands for "an innovative approach which ensures the full realization of Inga's hydro-electricity potential".[13]

Even the World Bank's integrated safeguards data sheet for the proposed project of August 2012 states that the Inga 3 Project is "also called Grand Inga Phase A".[14] The Bank's updated safeguards data sheet and the Project Information Document of December 2013 no longer include any such references. This is a tactical effort to disassociate the World Bank from the Grand Inga scheme, and is not grounded in the reality of Inga 3.

In contrast to what the World Bank claims, the successive stages of the hydropower projects at the Inga site have been exceptionally well defined. With financial support from the AfDB, the DRC government in 2011 commissioned AECOM and EDF, two international engineering companies, to carry out a feasibility study for the exploitation of the hydropower potential of the Inga Falls and the associated transmission lines. The findings of this six-volume study were presented to the DRC government, the AfDB, the World Bank, other international organizations, embassies and power sector experts at a workshop in Kinshasa in September 2013.[15]

The feasibility study has not been shared with interested civil society groups. Yet several presentations on the study by AECOM and EDF have been made available. They present all the different stages of the Grand Inga scheme, including the exact locations, generating capacities and sequencing of Inga 3 through Inga 8, in much detail.[16] (Two slides from these presentations on the full sequence of the Grand Inga scheme are included below.)

What is still unclear about the subsequent stages of the Grand Inga scheme is their timing. This is often the case for hydropower cascades, and not an excuse for not carrying out a CIA. The US Council on Environmental Quality, whose definition the IFC Good Practice Note borrows, recommends that the relevant timeframe for future inventions to be covered by a CIA is the duration of impacts of the proposed project.[17] The DRC government undoubtedly plans to move forward with the next stages of Grand Inga while the impacts of Inga 3 for example on the streamflow and sediment flow of the Congo River are still being felt.

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[12] République Démocratique du Congo, Cellule de Gestion du Projet Inga 3, Termes de Reference, Etude d'Impact Environnemental et Social (EIES) de la central hydro-électrique et des ouvrages communs d'Inga 3, June 2013, pp. 3f. (Translation International Rivers]

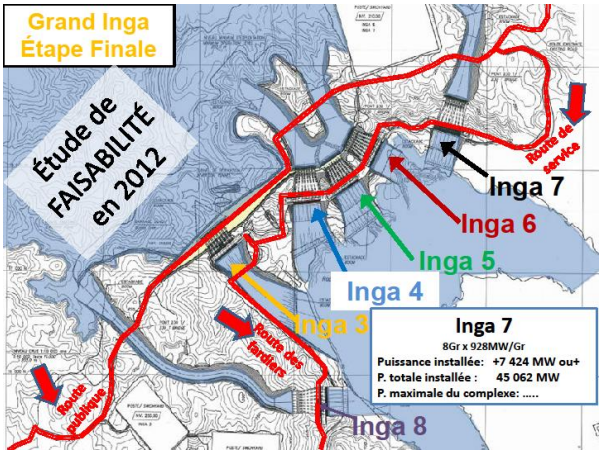
[13] African Development Bank Group, Inga Site Development and Electricity Access Support Project (PASEL), Project Appraisal Report, October 2013, pp. 3, iii (available at http://bit.ly/1csXW67)

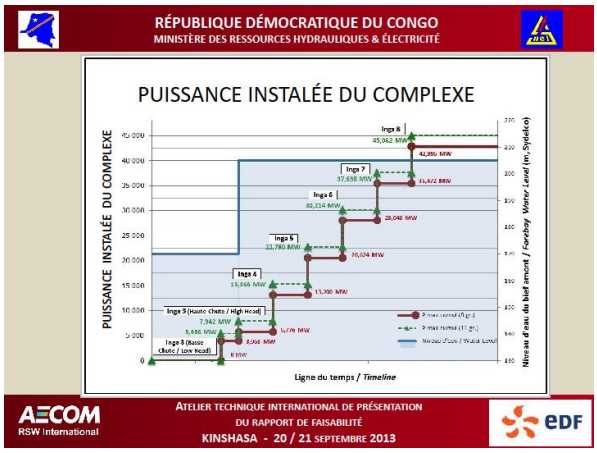
[14] The World Bank, Integrated Safeguards Data Sheet, August 22, 2012, p. 3 (available at http://bit.ly/1diHufa)

[15] See Atelier International de Presentation du Rapport Final – EDIRA (available at http://bit.ly/1cT8cVp)

[16] See for example Tonino-J. Nzakimuena, Thème 1: Étude de Faisabilité du Projet, Kinshasa, 20/21 Septembre 2013. The two illustrative slides have been taken from this presentation.

[17] Council on Environmental Quality, Considering Cumulative Effects Under the National Environmental Policy Act, January 1997, p. 16 (available at http://1.usa.gov/JLkM2I)





The World Bank also argues that a CIA for Grand Inga is not necessary because "the economic rationale for selecting Inga 3 does not rely on the potential development of subsequent phases of Grand Inga" (see section 1). While it is correct that Inga 3 appears to be economically viable on its own, this is completely irrelevant for the assessment of environmental impacts, including whether or not to assess cumulative impacts. Economic viability is not a criterion in the good practice guidelines for CIAs which the Bank Group recommends. All stages of the Grand Inga scheme are economically viable on their own, as is the case for many hydropower cascades around the world.

The spurious arguments regarding Inga 3 raise the question whether the Bank believes a Cumulative Impact Assessment is appropriate at any stage of the Grand Inga scheme.

5. <u>The proposed Environmental Impact Assessment and its gaps</u>

The Congo is the world's second-largest river by discharge (after the Amazon). No existing water diversion or hydropower projects come close to the amount of water that will be diverted for the Grand Inga scheme. Even the diversion for the Inga 3 Project will create a major global river in its own right, with a streamflow that is higher than the discharge of the Niger, Nile, Rhine, Salween or Yellow rivers into the sea.

The Inga 3 Project will divert 6,100 cubic meters of water per second through the Bundi Valley; its 100 meter high dam will create a reservoir of 15 square kilometers. The full Grand Inga scheme would divert 34,000 cubic meters per second or 83 percent of the Congo's average flow, would raise water levels as far as 180 kilometers upstream, and would create a reservoir of about 40 square kilometers.[18]

A few small villages in the Bundi Valley, including Mvudzi 3, would need to be displaced for the Inga 3 Project. In spite of repeated requests, no figures on the scale of displacement have been disclosed. According to the World Bank, the Grand Inga scheme would displace approximately 6,300 people if built today. In addition, communities will need to be displaced by the transmission lines for Inga 3 (even if they follow the lines of the Inga 1 and 2 projects within the DRC) and the other stages of Grand Inga. No figures for the scale of these displacements are available.

[18] Water diversion figures from Tonino-J. Nzakimuena, Thème 1: Étude de Faisabilité du Projet, Kinshasa, 20/21 Septembre 2013; reservoir figures from The World Bank, Integrated Safeguards Data Sheet, December 9, 2013

The Grand Inga scheme would divert up to 90 percent of the river's water from the Inga Falls, and would potentially have serious impacts on its ecosystem. Water falls in tropical rivers tend to be rich in biodiversity. According to the World Bank' safeguards data sheet, 146 fish species have been identified in the Inga area, four of which are endemic and one of which is on IUCN's Red List. Other fish species in the up to 100 meters deep river are certainly yet to be discovered. According to the Bank, the dams will also affect the habitats of endangered Chimpanzee, vulnerable Hippopotamus and other mammal populations.[19]

The Congo River sustains mangrove forests at its mouth which are rich in biodiversity and protected by a national park. The mangrove islands are home to manatee populations and other endangered species, and to several villages. Mangroves help protect coastal areas from the ravages of large storms, and are highly vulnerable to impacts from damming.

The river's large sediment load has also created the Congo Plume, a fan on the floor of the Atlantic Ocean with a size of 300,000 square kilometers. The fertile plume produces a large amount of phytoplankton, which sequester carbon when they die. The Congo Plume is a carbon sink of global importance, and would be at risk if the sediment flow which sustains it is interrupted by dams.

The proposed Environmental and Social Impact Assessment will review the social and environmental impacts of Inga 3. The geographic scope of the ESIA is however severely limited: it does not cover the transmission lines from the DRC border to South Africa (which the World Bank says will be assessed outside its technical assistance grant). Maybe more importantly, the Bank limits the project's areas of impact and influence to where the river reaches the sea.[20] Like the terms of reference for the ESIA, it remains silent on the project's impacts on marine ecosystems and their role as a carbon sink.

By impeding sediment flows, dams have had devastating impacts on estuary ecosystems, including their fisheries and mangroves, at the mouths of the Indus, Mississippi, Nile, Volga and many other rivers.[21] Kate Showers, a geographer and researcher at the University of Sussex, warns that because of the potential impacts on the Congo Plume, "plans to divert, store or otherwise intervene in Lower Congo River dynamics are truly alarming".[22]

The World Bank's Operational Policy on Environmental Assessment defines a project's area of influence as follows: "The area likely to be affected by the project, including all its ancillary aspects, such as power transmission corridors (…). The area of influence may include, for example, (a) the watershed within which the project is located; (b) any affected estuary and coastal zone (…)." The Congo Plume, the estuarine ecosystems and the transmission corridors clearly need to be included in the scope of the ESIA to be undertaken under the World Bank's technical assistance grant.

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[19] The World Bank, Integrated Safeguards Data Sheet, December 9, 2013, p. 5 (available at http://bit.ly/1hA5L1X)
[20] Ibid., p. 3
[21] See for example Patrick McCully, Silenced Rivers, 2001, pp. 45f., and Dams and Development, The Report of the World Commission on Dams, 2000, p. 81
[22] Kate B. Showers, Congo River's Grand Inga hydroelectricity scheme, in: Water History, 1:1, 2009, pp. 31-58 (available at http://bit.ly/1aOB4yu)

Conclusion

The World Bank emphasizes again and again that it has learned the lessons of past mistakes as it ventures back into supporting very large hydropower dams. The Bank's energy directions paper of July 2013 for example states the following about the "responsible development of hydropower projects":

> "The WBG has learned many lessons from past experience that are incorporated in the 2003 World Bank Water Resources Sector Strategy (…) The WBG is committed to scaling up efforts to utilize the maximum strategic value of hydropower resources in an environmentally and socially sustainable manner (…)."[23]

The Bank has touted the Inga 3 Dam as a model project for regional infrastructure projects under IDA 17. A background document for the IDA 17 round states: "IDA's approach and strategy takes into account lessons learned from experience to ensure maximum stakeholder ownership and benefit when financing large scale infrastructure operations. This means paying close attention to environmental and social safeguards (…)."[24]

This paper documents how the Bank management once again tries to take short-cuts to assessing and addressing the environmental impacts of large hydropower projects. Using incorrect and misleading arguments, management proposes to exclude key aspects from the environmental assessment of the Inga 3 Dam, and to avoid assessing the cumulative impacts of the largest hydropower scheme ever undertaken on the planet. Doing so would not only violate the World Bank Group's own safeguard policies and good practice guidelines; it would also demonstrate that the Bank is not prepared to learn the lessons of past mistakes in the first major test case of its new hydropower strategy.

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[23] The World Bank, Towards a Sustainable Energy Future for All, July 2013, pp. 18 f (available at http://bit.ly/1c1iQJD)

[24] IDA 17, IDA Support to Transformational Projects with Regional Impact, March 2013, p. 7 (available at http://bit.ly/1c1iQJD)