The Inga III Project in the DRC

FUNDAMENTALS ON ENVIRONMENT AND SUSTAINABILITY

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Agenda

Inga III: Project Facts & Strategic Relevance

How Inga III Aligns with the DRC's Energy Challenges, Development Goals, and Regional Ambitions

Project Overview

- Large-scale hydro project at **Inga Falls**, Kongo Central (Congo River)
- Planned capacity: **11,000 MW** (upgraded from initial 4,800 MW)
- Involves **flooding of Bundi Valley**, environmental and social disruption
- **Infrastructure includes:**
  → 2 dams
  → 12 km canal into Bundi Valley
  → 100 m high concrete wall
  → 5,000+ km transmission lines (incl. 3,000 km export lines)
- **Status 2025:** Design & Pre-construction phase

DRC Energy Context

- The DRC holds ~**13%** of the **world's hydropower potential** via the Congo River
- In average only **9%** of the DRC population have **access to electricity**
- **Inga I & II:** outdated & underperforming because of underinvestment and technical failures
- Energy sector marked by **high system losses**, **rural energy exclusion**, and **weak governance**
- **High transmission losses** and **grid instability** limit national energy delivery

Financials

- **Estimated cost:** $14–18 billion (~29% of DRC GDP)
  → major fiscal burden
- **Public-private partnership (PPP)** under a build, operate and transfer model
- **Project's viability** hinges on **export** revenues
- **Limited fiscal space** makes DRC **reliant on foreign investors** and lenders
- **Delays** and planning uncertainty have **increased investment** risk and **project costs**

Objectives

- **Regional energy export:** Supply approx. 2,500 MW to South Africa via transmission lines
- **Support national mining sector:** Deliver 1,300 MW to large-scale copper and cobalt mining operations in DRC
- **Infrastructure-led development:** Promote job creation, large-scale infrastructure growth and economic transformation
- **Position the DRC:** as a key energy exporter on the African continent
- **Economic growth:** Stimulate long-term economic growth through energy-led industrialization

Sources: ARE (2022), Congo Research Group & Resource Matters (2019), NEPAD (2023), ODG (2021), World Bank (2018)

Stakeholders and Planning Gaps

Top-Down Decisions and Missing Safeguards Threaten Inga 3's Viability

Main Stakeholders

Private Developers
China Three Gorges, AEE Power

DRC Government
Oversees project under presidential authority

Regional Energy Buyers
South African utilities via SAPP

Local Communities
Congolese population, especially in Bundi Valley

International Financiers
World Bank, African Development Bank, International Finance Corporation

Civil Society & NGOs
WoMin African Alliance, International Rivers Network

Planning & Governance Gaps

- **Decision-making behind closed doors**, no public ESIA released
- **Affected communities excluded** from consultations, violating Free, Prior and Informed Consent (FPIC)
- **ADPI prioritizes investor engagement** over public accountability
- **Mistrust, anger, and resistance** among local populations

Problem Statement

The Inga 3 project exposes a deep governance gap: planned without transparent processes, local consultation, or proper environmental and social assessments, it prioritizes investor interests over affected communities. This has fueled mistrust and raises critical concerns about the project's long-term environmental and socio-economic sustainability.

Sources: Congo Research Group & Resource Matters (2019), WoMin African Alliance (2021), Scherer (2021), World Bank (2018)

Air-Related Impacts

Lack of Emissions Data Undermines Climate Risk Management at Inga III

Construction Emissions

- During operation, land-use changes and decomposing biomass in reservoirs can emit **methane & CO_2**
- **Disruption of** nearby **ecosystems** (e.g., wetlands) may lead to further emissions due to **carbon release**
- These processes are **rarely included** in "**low-emission**" narratives of hydropower
- Local **air quality impacts** (dust, particulate matter) also remain **unassessed**

Global-Scale Risk

- The **Atlantic Congo Plume** is a key carbon sink that absorbs CO_2 and helps regulate regional climate
- Damming and diverting the Congo River could disrupt sediment and nutrients, **destabilizing the plume**
- A weakened plume may **reduce CO_2 absorption**, raising atmospheric carbon levels
- These effects may not be immediate but could have **long-term global climate impacts** as emissions rise

Despite strong global and evidence, Inga III lacks project-specific emissions data to understand its true air-related impacts.

Inga III's air-related risks require immediate attention: A transparent GHG audit, ongoing air quality monitoring, and safeguards to protect regional carbon sinks should be mandatory in pre-construction planning

Sources: Song et al., (2018), Tang et al. (2024); Liu et al. (2022) , International Rivers (2023)

Water-Related Impacts

Protecting the Congo River System Requires Coordinated Action Across Ecosystems Livelihoods Climate and Governance

River & Ecosystem Disruptions

- **Congo River Basin** holds 30% of Africa's freshwater and major biodiversity
- Flow reduction could cause **stagnation, low oxygen, and sediment disruption**
- Threatens species adapted to **fast-flowing water** and seasonal migrations
- Converts dynamic rivers into **static reservoirs**, enabling **invasive species**

Livelihoods Endangerment

- **Fishing-based communities** may lose food security and income
- **Declining fish stocks** affect local diets and economies
- Altered flow harms **floodplain fertility** and **subsistence farming**
- Water scarcity may cause **upstream–downstream disputes**

Global Climate Systems

- Sediment reduction from the dam may **weaken carbon capture**
- Marine life at risk due to **nutrient flow disruption**
- **Multiple dams** on Congo River may push ecosystems past **tipping points**
- Highlights need for **integrated regional planning**

Governance Challenges

- Tropical reservoirs emit **methane (CH_4)** to which construction adds CO_2 via **concrete, transport, machinery**
- **Hydropower's green image is misleading** in tropical contexts
- **Weak governance** and missing accountability fuel unsustainable practices

Inga III poses major ecological risks: Unless basin-wide planning, environmental flow protections, and transboundary cooperation are implemented, the project could push the Congo River system past ecological tipping points and undermine long-term climate resilience.

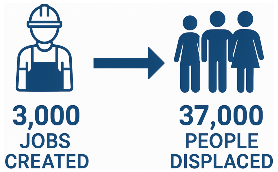
Sources: Harrison et al., (2016), International Rivers (2023), Oyewo et al. (2018), BankTrack (2020), Winemiller et al. (2016), Scherer (2021), EDF (2019)

Socio-Economic Impacts

Mitigating Socio-Economic Risks Requires Inclusive Resettlement, Equitable Access & Participatory Governance

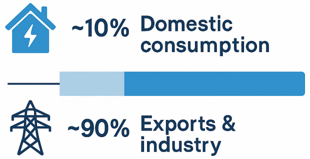
Displacement & Livelihood Destruction

- **37,000 people** at risk of being displaced due to the planned flooding of the Bundi Valley
- **Local communities** rely on subsistence farming, fishing, forest gathering for survival
- **Camp Kinshasa** (displaced from Inga 1 & 2) still suffers from broken promises
- **Civil society** calls for FPIC, legal resettlement, and livelihood restoration
- Inga 3 could repeat historic injustice without legal safeguards



Energy Access & Inequalities

- **Only ~9% of DRC** has electricity access; <1% in rural areas
- **Majority of energy** for **export** to South Africa and mining sector, not local households
- **Less than 10%** of generated power will serve Congolese people
- **No binding commitments** to expand domestic or rural electrification
- **Women disproportionately affected:**
  → No land titles, excluded from compensation
  → Loss of food sources & informal income
  → Longer walks for water & firewood



Stakeholder Exclusion & Conflict

- Planning took place **behind closed doors**, with no comprehensive community dialogue
- Violates **FPIC standards** for major infrastructure near indigenous/rural communities
- Widespread **mistrust** between government and local populations
- **Affected communities** not informed about relocation plans
- Civil society and affected people express **anger, fear, and exclusion**

Inga III presents major socio-economic risks: unless inclusive governance, compensation, and equitable energy access are ensured, the project could deepen poverty and replicate past injustices.

Sources: Scherer (2021); BankTrack (2020); Congo Research Group & Resource Matters (2019); WoMin African Alliance (2021)

Earth-Related Impacts

To prevent ecosystem degradation and infrastructure failure, land displacement, habitat disruption & geotechnical risks need mitigation

Land Displacement

- **~22,000 ha of Land** will be flooded in the Bundi Valley for the creation of the reservoir
- The Area serves as an **important agricultural and resource area** for local communities
- The reservoir **eliminates ecosystem services** and disrupts existing land use practices

Habitat Disruption

- **Water**: The Inga Rapids alone hosts 146 fish species, of which 30% are considered endemic
- **Land**: potential disruption of important breeding grounds and migratory pathways, e.g. endangered chimpanzees, manatees, and hippopotamuses
- **Mangroves**: potentially salinize freshwater inputs, impairing mangrove health and neighboring marine ecosystems

Soil Erosion

- The Congo River Basin is **already** under **distress** due to **soil erosion**. The reservoir creation would put **additional stress to erosion**
- The Kasaï Basin's erosional transfer of **soil organic carbon** threatens to convert natural carbon sinks, releasing carbon into the atmosphere
- The **Congo Plume** (globally significant carbon sink), relies on **sediment transport** from the Congo River, which could be disrupted

Geotechnical Risks

- **Questionable foundation**: The foundation for the construction of the damn is prone to seismic activity and weathering
- **Instable slopes**: Slopes near the dam and the basin are at risk for collapsing and risking the dam, further increased by the reservoir
- **Sediment accumulation**: Could reduce the capacity of the dam and reduce nutrients in the water

Inga III presents several significant impacts on earth-related fields: The hydropower project could potentially displace thousands of inhabitants, endanger various animals, disturb the ecosystem and be risked due to questionable foundation and instable slopes, if not mitigated sustainably.

Sources: Mwenda (2020), Gibson & Palmeirim et al.(2021), World Bank (2014), Ceriani et al., (2023), De Groot (2023)

LCA, EIA and SSA in Practice

Integrating Sustainability Tools Transforms Inga III into a Transparent and Responsible Project

LCA

Why its relevant:

- No LCA found for Inga III
- High material use and long lifespan require full-cycle view

What it measures:

- Emissions from concrete, steel, reservoir methane, transmission
- Land, water, and energy use per MWh
- Includes social impacts

Why we focus on it:

- Reveals environmental hotspots
- Enables energy source comparison and design improvements

EIA

Why its relevant:

- Anticipate risks that influence ecosystems negatively
- Congo Basin biodiversity and river systems are at risk

What it measures:

- Disruption of habitats and fish migration
- Community impacts, sediment flow, floodplain fertility

Why we focus on it:

- Enables mitigation, monitoring, and adaptive design
- Essential for project approval and long-term resilience

SSA

Why its relevant:

- Inga III prioritizes exports over local needs
- Broader sustainability and equity concerns remain unaddressed

What it measures:

- Who benefits, who bears the risks
- Alignment with national energy and equity goals

Why we focus on it:

- Highlights structural planning flaws
- Ensures inclusive, long-term sustainability thinking

GOALS

- Expose the project's full **environmental footprint**, **uncover social** and **ecological risks** currently unaccounted for
- Ensure long-term **trade-offs** are **critically assessed**
- Tools implementation could shift Inga III from a high-risk, opaque project toward one that is **data-informed, socially just, and ecologically accountable**.

Sources: International Rivers (2023, 2021), Pope et al. (2004), Congo Research Group & Resource Matters (2019), WoMin African Alliance (2021), Whitebell (2020), ODG (2021)

Recommendations for Inga III

Securing Inga III's Success Requires Coordinated Action Across Basin Governance, Sediment Control & Community Safeguards

Basin-Wide Management

Implement basin-wide **stakeholder coordination** to **balance** hydropower development with river flows and biodiversity, protecting aquatic ecosystems and ensuring **sustainable energy production**.

Sediment Mitigation System

Establish **structural outlets** and **upstream controls** to flush and reduce sediment, maintaining **dam efficiency** and **protecting** downstream **ecosystems**.

Resettlement & Benefit-Sharing

Formalize a **legally binding resettlement framework** to guarantee fair compensation, livelihoods support, and a transparent community fund, ensuring **social equity** and **community well-being**.

Implications

If Inga 3 proceeds, it must be anchored in **strong safeguards** and **inclusive governance**. Past projects show that displacement, biodiversity, and benefit-sharing leads to long-term harm.

Future Outlook

Tools like **LCA, EIA** and **SSA** should be applied early. LCA helps to determine the sustainable impact. The EIA rates environmental and social risks, while the SSA identifies gaps in governance and aligns with sustainability goals.

Sources: World Commission on Dams (2000), International Rivers (2023), Anderson & Elkaim (2018), Thabane (2000)

Thank You!

Any Questions?

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