

**REPORT ON THE HIGH LEVEL WEC WORKSHOP
ON FINANCING THE INGA HYDROPOWER PROJECTS,
HELD IN LONDON ON 21 – 22 APRIL 2008**

The World Energy Council hosted a high-level international Workshop on “*Financing the Inga Hydropower Projects in Democratic Republic of Congo*” in London, on 21 – 22 April 2008. The meeting, the second organised by WEC on the Inga Projects, followed up the International Forum held in March 2007 in Gaborone, Botswana, where WEC developed an Action Plan for Inga and created an International Team Inga to move these Projects ahead.

The main objective of the WEC London Workshop was to identify the key financial requirements and potential partners for the financing of the overall Inga hydropower Projects, namely: 1/ the rehabilitation of existing installations including Inga 1 & 2, and 2/ the development of Inga 3 (4320 MW) and Grand Inga (40 000 MW). Meanwhile, it was also used as an opportunity to pave the way for a sound collaboration with the DRC authorities and other stakeholders on the creation of the Promotion Company (PROCOM) for the Grand Inga Project with the aim of facilitating and accelerating its start up; and to define plans for the establishment of an “*Inga Infrastructure & Services Integrated Zone*”, which will aim to support engineering, equipment maintenance and other services and manufacturing, and develop technology transfer and local capacities and facilitate job creation for the Africans.

The Workshop attracted about 80 high-level participants, including Ministers and senior representatives from governments, utilities, major energy companies, suppliers, project developers, financial institutions, major consumer groups, civil society & universities, international law & consultant firms and WEC Member Committees. Mr. Gerald Doucet WEC Secretary General moderated the sessions in Day 1 and Mr. John Taylor, Commonwealth Disaster Management Agency and Senior Director, Chase Bank (USA) moderated the sessions in Day 2.

Workshop presentations focused on the political, economical, financial, technical, social and environmental issues related to Inga.

At the beginning of the Workshop, Mr. Gerald Doucet presented the “*WEC Principles on Inga*” which were supported by all the participants.

African Energy Ministers and senior representatives from main consumer countries of Botswana, Namibia, and Nigeria expressed strong support for Inga and emphasized the interest and commitment of their respective countries to benefit from the electricity produced by the Inga Projects. At the meantime, all of them commended WEC initiative to market and promote the Inga Projects for the benefit of the entire African continent.

A message from the DRC Minister of Energy, conveyed by the Minister-Counsellor in DRC Embassy in the UK, stated the following key points:

- the DRC Government has set up the development plan of the Inga hydropower Projects in three phases: Phase 1: Rehabilitation of Inga 1 & 2; Phase 2: Development & Construction of Inga 3; and Phase 3: Development & Construction of Grand Inga;
- the DRC Government has already raised the needed funding for Inga 1 & 2 rehabilitation and also initiated the pre-feasibility study of Inga 3 which was carried out by SNC-LAVALIN and presented to the DRC authorities on February 28th in Kinshasa;
- the African Development Bank (AfDB) is ready to finance the feasibility studies of Inga 3 and Grand Inga, for an amount of US\$ 15 million;
- the DRC Government and BHP Billiton signed a Protocol Agreement to supply BHP Billiton aluminium smelter (1600 to 2000 MW) from Inga 3, in exchange of off-take rights; and BHP is willing to finance Inga 3 feasibility study ;
- the DRC authorities are planning to organise an international conference in Kinshasa to raise finance for the construction of Inga 3 and Grand Inga Projects.

From the Workshop presentations and related debates, the following key points emerged:

Rehabilitation / Refurbishment and Extension of existing power facilities

Projects entitled “Regional & Domestic Power Markets Project” and “South African Power Market Project” have been put in place, financed by the World Bank, the European Investment Bank, the African Development Bank and SNEL, for an amount of US\$900 million. They consist of the following works:

- Rehabilitation of Inga 1 & 2 power stations;
- Refurbishment and expansion of the distribution system in Kinshasa and its suburbs;
- Construction of a new 220 kV HVAC transmission line Inga – Kinshasa;
- Rehabilitation and renovation of the 500 kV HVDC line Inga – Kolwezi (1774 km); in particular, doubling the transit capacity up to 1120 MW, in order to meet the electricity demand of the Katanga province and to export towards Southern Africa.

For most of these projects, the process for Consultants and Suppliers selection is undergoing and the work is expected to commence in 2008 and will be managed by SNEL.

Inga 3 Project

SNC-LAVALIN has carried out the pre-feasibility study of Inga 3 Project which was presented at the Workshop. Key aspects of that study are the following:

- the power station will be built on the run-of-the-river, and this will consequently contribute to reduce the environmental impact;
- no dam will be built, but there will be huge work of excavation of the roc for the building of the galleries and the power station;
- the water intake will be installed on the top of the river in the canal of Fwamalo and eight (8) underground galleries (tunnels), of 6.7 km length and 13.3 m diameter each, will be built from this canal to supply the power station located in the Rapids of Kanza;

- the nominal generating capacity of the power station is 4320 MW (16 plants of 270 MW power capacity each, equipped with Francis turbine with vertical axis);
- the power station of Inga 3 will be built in two phases: a/ phase 1: 2009 – 2018 (using 4 tunnels) for a corresponding investment cost of US\$ 1974 million, and b/ phase 2: 2014 – 2021 (using the 4 remaining tunnels) for an investment cost of US\$ 1569 millions. Thus the total direct investment cost is estimated at US\$ 3.5 billions. The earliest commissioning date of the power station is projected around 2018;
- the indexed construction cost is estimated at US\$ 5596 millions and the corresponding indexed capital cost (including construction and financing) at US\$ 7629 millions;
- the cost of electricity generated from the power station is US cents 2.1/kWh;
- the internal rate of return is 18.4%;
- in terms of manpower, 4000 local employees and 700 foreign employees will work in the site in peak time.

Complementary studies are needed to complete the Feasibility Study of Inga 3 Project including geological and hydraulic studies for the generation and a feasibility study for the associated transmission system. Search for the financing of these studies is critical, in order to commence the development phase of the Inga 3 Project within the next 18 months. It is thus estimated that the construction phase could not be undertaken before 2012.

Westcor stated that it was its intention to develop the Inga 3 Project, based on the Inter-Governmental MoU signed by the five cooperating Governments. Consequently, Westcor would act as the Promotion Company and the Holding Company for Inga 3 Project. Nevertheless, the energy generated from Inga 3 would be devoted in priority to supply the internal electricity needs of DRC: Kinshasa and its suburbs, the Katanga Province and its mining projects, and BHP aluminium smelter in Moanda; and also, to bring electricity and/or to increase electricity access in the rural areas located in the Inga hinterland and the villages crossed by the transmission lines. The remaining power from Inga 3 could be exported to neighbouring Westcor countries, such as Angola, Namibia and Botswana, through HV transmission systems. Westcor new strategy, consisting of earning enough money for the Utilities and participating countries (based on the power purchase agreements between Westcor and the five Utilities) is in line with that perspective. The annual revenue of Westcor from the expected electricity sales from Inga 3, at US cents 5/kWh, is estimated at about US\$2 billion. This would make the Inga 3 Project viable and attractive for the investors.

Nota: Export to South Africa is not envisaged at this stage, because the electricity price would be very expensive (around double of the production cost in Inga 3 power station), due to the huge investment cost it would require for the construction of the long transmission line to supply this country (around US\$3.2 billion). For that reason, Grand Inga should be developed in an accelerated way to supply South Africa with a substantial electricity bulk supply and an affordable electricity price.

The DRC Government and Westcor shareholders must act now for the realisation of Inga 3 in order to have the first kWh by 2015. In this regard, right and urgent decisions should be taken immediately. Priority actions would consist of demonstrating the full commitment and ability of the DRC Government and SNEL to carry out successfully the rehabilitation process of Inga 1 & 2 and to develop Inga 3 with Westcor in a reasonable timeframe. This would undoubtedly constitute a test for a good promotion of Grand Inga Project.

Grand Inga Project

Grand Inga will be located in a natural valley of the Inga River and will be built with a reservoir dam and a power station of around 40 000 MW and an annual production estimated at 288 GWh. There is no yet institution for Grand Inga, nor funding of its feasibility study.

Grand Inga feasibility study should be undertaken in the quickest time possible, as time has become of the essence; this implies urgent mobilisation of the related funding, either by AfDB or BHP Billiton, or other potential donors.

All actions need to be put in place to start the development phase by at least 2015, in order to get the first kWh around 2025 – 2030.

Electricity Demand

The electricity demand is growing rapidly in DRC and other African countries and the electricity capacities are not adequate for most of them due to lack of investment and an old fleet of installed power plants. The current shortage in most African countries is hampering industrialisation and economic growth, against a background of ever increasing energy and food prices with the attendant social problems.

Generally, there is a substantial need for new generating capacities and bulk supply for SAPP and other African Power Pools (Central, East, West and COMELEC); and particularly, Grand Inga would play a critical role, because offering great advantages, with its low production cost (lower than the one of coal, other fossil fuels and nuclear) and its low GHG emissions (lower than fossil fuels).

Substantial electricity demand has been projected by the main potential customers from the major transmission line routes, namely, Westcor, Egypt and Nigeria; and the BHP aluminium smelter in Congo; and also, from neighbouring countries such as Cameroon, Kenya, and Tanzania which are willing to be supplied with bulk power.

Social & Environmental aspects of the Inga Projects

The existing dams and electricity facilities in place have not yet contributed to improve the quality of live of the population living in the Inga hinterland, nor the surrounding environment; in fact, they resulted in outstanding social and environmental impacts that must be addressed in a timely and sustainable way. In this regard, the establishment and implementation of an “*Environmental & Social Management Plan*”, and the related Unit in charge of that, would contribute to optimise these impacts. As a good example of setting up a proper framework for decision-making for the implementation of this Plan, the WCD Sustainability Guidelines / and IHA Sustainability Assessment Protocol could constitute a “model” for good practices to promote greater consideration of social, environmental and economic sustainability. In particular, they could provide insurance to have sustainable project, good management, transparency in the revenue management and equitable revenue sharing. The involvement of the local communities in the Inga Hinterland in such initiatives is highly desirable.

Positive dialogue emerged in the Workshop on the ways of tackling the social, civil and environmental aspects surrounding the Inga Projects. And WEC is willing to work closely with local and regional activists

groups, environmental defence and civil right organizations to take into account the social interests and needs of the local population and affected communities, as well as to preserve the environment.

Technical and funding experience for other large hydropower Projects

Representatives from similar large hydropower schemes including Three Gorges (China), ITAIPU Bi-national (Brazil / Paraguay), James Bay (Canada) and Nam Theun 2 (Lao PDR / Thailand) gave presentations on their technical and funding experiences and the means and ways in which they addressed the social and environmental impacts of their respective projects. In particular, the developers of these Projects considerably put a lot into the optimisation of the social and environmental aspects, the development of the public benefit, the promotion of technology transfer and job creation.

These experiences have been deemed encouraging and contributed to reinforce the resolve of the Inga stakeholders present in the Workshop to forge ahead with the implementation of the Inga Projects.

Financing issues

Presentations from international financial community laid out the funding already put in place, co-financed by the World Bank, the European Investment Bank and the African Development Bank, for the rehabilitation of Inga 1 & 2 power stations, and the rehabilitation and expansion of transmission & distribution systems throughout DRC.

Emphasis was also placed on private – public funding conditions, the timing to move the Inga 3 and Grand Inga Projects ahead, and the need for these Projects to be developed on a commercial base with a risk management plan that allows acceptable risks for the markets.

Private funding will likely constitute the major sources of financing. However, the financing of these Projects should involve Financing Institutions such as the World Bank, and public and development Banks and Governments funding as well.

The substantial electricity demand and huge needs of energy supplies from Inga for most African countries will contribute to reassuring the potential financiers of the Inga Projects.

Task Forces for the creation of PROCOM and Inga Infrastructure and Services Integrated Zone

Task Forces have been set up during the Workshop to work on the creation and implementation of the PROCOM for Grand Inga and the Inga Infrastructure & Services Integrated, respectively. High interest has been manifested by several participants to join these Task Forces, but the prior approval of the DRC authorities and SNEL is fundamental to move on these directions.

Conclusions - right actions must be undertaken NOW and WEC should stay on board

All participants recognised the sense of urgency to move the Inga Projects forward and to coordinate the planning process in an orderly and timing manner. In particular, the WEC idea of PROCOM focusing primarily on Grand Inga would facilitate the promotion and development of this Project and also enable easy coordination with the other Inga Projects.

The leading role played by WEC in pushing the Inga Projects forward and its proposal to create PROCOM and Inga Infrastructure and Services Integrated Zone, and the envisaged future Holding Company are deemed commendable; and WEC was encouraged to continue its efforts and to stay on board to facilitate the timely and sustainable realisation of the Inga Projects.

In terms of follow-up, it was agreed that WEC and Team Inga will work together with the African Union, SADC, the DRC Authorities, SNEL and the Civil Society toward the creation of PROCOM and *Inga Infrastructure and Services Integrated Zone*, as well as with DRC, SNEL and the Banks and others to identify and develop a detailed plan for attracting such funding for Inga 3 and Grand Inga Projects, PROCOM and Inga Zone. *It is worth mentioning that prior approval and commitment of the DRC Authorities and SNEL are fundamental for the creation of PROCOM and Inga Zone as well as for any further action.*

All presentations delivered at the Workshop are posted in the GEIS at the following link:
www.worldenergy.org/IngaFinanceWorkshop/

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