



Safe Gas Extraction from Lake Kivu
Conference Report

Copenhagen, Denmark

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Photo on cover page, from left to right: Robert Gambart, Vince Mathis, Martin Schmid, Ed Hlopak, Philip Morkel, Gwen van Boven, Alexis Kabuto Karera, Mogens Winkler, Hon Min Albert Butare, Aad van der Velden, Klaus Tietze, Alfred Wüest, Ivan Twagirashema, Finn Hirslund, Jörgen Steenfelt.

1. INTRODUCTION

1.1 Safe gas extraction in Lake Kivu

The governments of Rwanda and the DRC are exploring beneficial ways of exploiting the methane resource in Lake Kivu in a safe, environmentally sound yet economically profitable way. Reduction of the methane and carbon dioxide content of the waters of lake Kivu is necessary to reduce the risk of sudden eruption of these gases.

It has been two years since the two governments convened in Gisenyi in March 2007 in a workshop on lake Kivu monitoring. During that workshop, a MoU was signed by the two countries on next steps to be taken in establishing the bilateral institutional framework for the monitoring of Lake Kivu, for the safety of the population and for the environment. Also, an ad-hoc Expert Working Group¹ of scientists and technicians was formed to work on rules and regulations for safe gas extraction from Lake Kivu.

1.2 Rationale for the conference

Since the signing of the bilateral MoU, the Expert Working Group has elaborated a Management Prescriptions document which delineates basic principles for determining the size, number, location and design of extraction operations, as well as mandatory requirements and guidelines for any gas extraction plant's design and operation. Also, the NCEA has provided further advice through its "Advice on Harvesting the Methane Resource and Monitoring the Stratification of Lake Kivu" of 27 August 2007 and its secretariat memo of February 2008 on a strategy and action plan for monitoring in Lake Kivu Monitoring, which include institutional steps to be taken. Meanwhile, the Rwandan government started the extraction of methane through its KP pilot plant.

Given the high risk involved in gas extraction operations if not done according to agreed-upon safety standards and without a bilateral legal and institutional context in which to operate, the Government of Rwanda decided to call for a second conference on safe gas extraction from Lake Kivu in order to come to such arrangements.

1.3 Conference Objectives

Besides an exchange of most recent knowledge and insights, the conference's objectives were two-fold: (i) agree on the need to establish a bilateral authority with regulatory mandate over Lake Kivu, and agreement on a road map towards its establishment and operationalisation; (ii) validate and adopt the

¹ The ad-hoc Expert Working Group consisted of Mr. John Boyle (coordinator), Mr Finn Hirslund, Mr Philip Morkel and Mr. Klaus Tietze, and was later joined by Mr. Martin Schmid and Mr Alfred Wüest.

Management Prescriptions document that has been prepared by the Expert Working Group over the past two years.

1.4 Participation

The conference was attended by Hon. Minister of State in Charge of Energy and Water, Dr. Albert BUTARE, RE.

Unfortunately, due to force majeure, the meeting was notified of the absence of Honourable Vice Minister of Hydrocarbons in the DRC, Mr. Gustave Beya Siku, as per the attached [notification letter](#).

The names of the other participants to the workshop are provided in the attached [participants list](#).

The conference would like to remember the late Prof Dr Ir. Dick de Zeeuw, chairman and facilitator of the previous workshop in Gisenyi in March 2007.

1.5 Organisation, facilitation and secretariat

Workshop preparation was in the hands of Ms Augusta Umutoni of UPEGAZ and Mr. Mogens Winkler and Mr. Finn Hirslund of COWI, who were hosting the conference in their offices in Copenhagen, Denmark. The two countries of Rwanda and DRC held a preparatory technical meeting in Goma, from 7-9 May 2009.

Upon request of the Hon. State Minister of Energy and Water, Dr. Albert Butare, Mr. Aad van der Velden, vice Chair of the Netherlands Commission for Environmental Assessment (NCEA) facilitated the workshop. Ms Gwen van Boven, technical secretary at the NCEA, acted as secretary to the workshop.

Mr. van der Velden and Ms. van Boven spent one day in Copenhagen two weeks prior to the conference to prepare for the meeting with Mr. Winkler and Mr. Hirslund, including the agenda and the conference approach.

1.6 Conference Approach

Each day started with a series of plenary presentations on latest insights and developments on both institutional (day 1) and technical issues (day 2). Thereafter in the afternoon sessions, the conference split up into two ad hoc working groups focusing on (i) technical issues in relation to the management prescriptions for methane extraction in Lake Kivu; and (ii) institutional aspects in relation to the establishment of a bilateral authority responsible for regulation of safe gas extraction in Lake Kivu.

The technical working group consisted of experts Mr Finn Hirslund, Mr Philip Morkel, Mr Martin Schmid, Mr Klaus Tietze, Mr Alfred Wüest and was partly moderated by Mr. Aad van der Velden.

The institutional working group consisted of Hon. Min. Butare, Mr. Alexis Kabuto Karera, Mr. Mogens Winkler, Mr Jørgen S. Steenfelt, Ms. Gwen van Boven and partly by Mr. Aad van der Velden.

The outcomes of the two working groups were summarized and presented to the plenary by Ms. Gwen van Boven on the 3rd and final day in the form of a Key Outcome of the Meeting document, which was subsequently adopted by the conference (see chapter 3.2 of this report).

1.7 Background information

Prior to the conference, the organizers made the following document(s) available to the participants:

- Draft Management Prescriptions for the Development of Lake Kivu Gas Resources, Draft Version 12c, 25 June 2008 (for its final version see chapter 3.2)

During the meeting, the following documents were made available to the participants. Click on the blue links to access the documents:

- [Report of the technical expert meeting](#) between RDC and Rwanda held in Goma, 7-9 May 2009 (in French)
- [Addendum](#) to the Memorandum of Understanding signed in Rubavu, originally Gisenyi, in March 2007 (in English, prepared in the Goma meeting)
- The [NCEA secretariat memo](#) on a Strategy and Action Plan for Lake Kivu Monitoring, Feb 2008
- [Annex 3](#) to NCEA's Secretariat memo, zooming in on roles & responsibilities, Feb 2008
- 'Methane from Lake Kivu – How to extract the gas and avert the dangers' by Finn Hirslund/COWI, available in draft only

1.8 This conference report

This conference report is accessible through a dedicated web page hosted by the NCEA. At this web page, the report of the 2007 workshop in Gisenyi can also be found.

Through the meeting's agenda, which can be found in Chapter 2 of this report, one can find direct links to:

- o the presentations;
- o the texts of the speeches;
- o sound registrations of most presentations and speeches;
- o photographic impressions of the workshop.

Text documents and presentations are available in pdf-format and sound registrations in wma format. Clicking on the blue links will open the documents.

2. AGENDA

The conference agenda can be accessed by the hyperlink provided below and gives access to speeches, presentations, texts, sound recordings and photo-impressions. [Link to conference agenda](#)

3. RESULTS

3.1 Knowledge exchange

The workshop brought together high level expertise on all aspects related to the Lake Kivu methane resource, including the latest insights based on modelling as well as on the first monitoring results of the pilot operation at KP. This collective expertise was brought to the forefront during the conference and is laid down and made accessible through the presentations and sound recordings (for links see agenda).

3.2 Key Outcomes of the Meeting

The Mandatory Prescriptions document was validated by the Expert Group. An organogram for the bilateral authority for Lake Kivu was prepared by the institutional working group. Both documents can be accessed directly by clicking on the following links: [Kivu Management Prescriptions](#) and [Structure Bilateral Authority](#). Both results were subsequently adopted by the Conference. This means that, despite the absence of some key players in the context of Lake Kivu methane extraction, the meeting objectives were largely met due to the amicable and constructive contributions of all participants.

The workshop yielded a '[Key Outcomes of the Meeting](#)' document which was adopted by the plenary meeting with the approval of Hon. Min. Albert Butare. The full contents of the document can be downloaded as a separate file through the active link above and can also be found on the next pages. The document includes elements on technical as well as institutional aspects. These are considered as benchmark for further steps to be taken. The Outcomes document contains a key recommendation made by the expert group to consider methane extraction in Lake Kivu from the point of view of (1) (public) safety, (2) the environmental, and (3) (economic) feasibility of extraction, in that specific order.

3.3 Next steps

Hon. Min. Butare committed to the following concrete steps of firstly presenting the outcomes of the conference to the Cabinet of Ministers in Rwanda and subsequently to Congolese Hon. Vice Min. of Hydrocarbons in a bilateral meeting in situ in July 2009 to encourage him to join Rwanda in these steps. He intends to ask NCEA to moderate this meeting.

Key Outcomes of the Conference on Safe Gas Extraction from Lake Kivu

Copenhagen, Denmark, 13-15 May 2009

1. Convening the Honourable Minister of State in Charge of Energy and Water in Rwanda, Dr. Albert Butare, experts, concessionaires and donors, noting with regret the absence of the Honourable Vice Minister of Hydrocarbons in the DRC, Mr. Gustave Beya Siku, due to force majeure. Hosted by resident-engineer COWI and moderated by the NCEA, represented by Mr. Aad van der Velden as Chair and Ms. Gwen van Boven as Technical Secretary.
2. The conference's objectives were two-fold: (i) agree on the need to establish a bilateral authority with regulatory mandate over Lake Kivu, and agreement on a road map towards its establishment and operationalisation; (ii) validate and adopt the Management Principles document that has been prepared by the Expert Group over the past two years and which delineates *basic principles* for determining the size, number, location and design of extraction operations, as well as *mandatory requirements* and *guidelines* for any gas extraction plant's design and operation.

On conference objective (i): setting up a bilateral authority

3. Technicians of the two governments of Rwanda and DRC convened in Goma prior to the conference to discuss the items above, and came up with a protocol and a *proces verbal* in which the bilateral authority has been outlined. With that as a basis and enriched with presentations given by NCEA, COWI and Philip Morkel during Day 1 of the conference, the structure of the Lake Kivu Bilateral Authority has been prepared (figure 1).
4. This structure shall serve as the basis for any next steps that will be undertaken to ensure safe extraction of methane in Lake Kivu. It is intended as a bilateral authority while structured in such a way that the Government of Rwanda may proceed unilaterally if need be.
5. The structure is considered a benchmark and will need to be further elaborated, detailing the exact composition, as well as roles & responsibilities in the form of a Terms of Reference for each element. The conference refers to the NCEA advice of Feb. 2008 for further details on composition, roles & responsibilities, as well as conference presentations of Day 1 and outcomes of the Goma meeting. It is also recommended that legal advice be engaged to ensure alignment with national legislation and with mandates of existing government agencies in both countries, such as RURA and REMA in Rwanda and their counterparts in DRC.
6. Despite required elaboration as indicated above, the current agreed structure should already be established in an intermediate form.
7. The structure foresees an Expert Advisory Group servicing the Executive Management and the Board of Directors. The conference

recommends this EAG to be formed as soon as possible to formally take over from the Expert Group that has been providing technical advice to the Government of Rwanda to date.

8. The structure as presented below has been adopted by the conference, and has been approved by Hon. Min. Butare, who intends to present it to the Cabinet of Ministers in Rwanda and subsequently to Congolese Hon. Vice Min. of Hydrocarbons in a bilateral meeting in situ in July 2009. He will ask NCEA to moderate this meeting.

On Conference objective (ii): validating and adopting the Management Principles for Lake Kivu gas extraction

9. The experts validated the Management Principles document with several revisions agreed upon by the entire group. The document in its final revised form was subsequently adopted by the Conference. The final document will be made part of the conference documents. Philip Morkel will coordinate final editorial revision within a week after the Conference.
10. The adopted MPs will function as benchmark for methane extraction from Lake Kivu as of closing of the meeting today.
11. Understanding of Lake Kivu functioning is an on-going, dynamic learning process. The adopted MPs are considered a dynamic document that stands to be enriched, refined and adjusted by the Lake Kivu Bilateral Authority upon EAG advice based on new understanding and insights gained through monitoring.
12. The Conference adopts a key recommendation made by the expert group to consider methane extraction in Lake Kivu from the point of view of (1) (public) safety, (2) the environmental, and (3) (economic) feasibility of extraction.
13. The Conference recommends the Government of Rwanda to ensure that recent and new concessions adhere to the adopted MPs, and to find ways to make existing installations adhere as soon as possible.
14. Hon. Min. Butare stated the intention to follow the conclusions of the conference, to consider them as final, and to exercise them as the roadmap for the Government of Rwanda for next steps towards safe methane extraction from Lake Kivu. The Minister shall encourage his Congolese colleagues to join Rwanda in these steps.

Lake Kivu Bilateral Authority

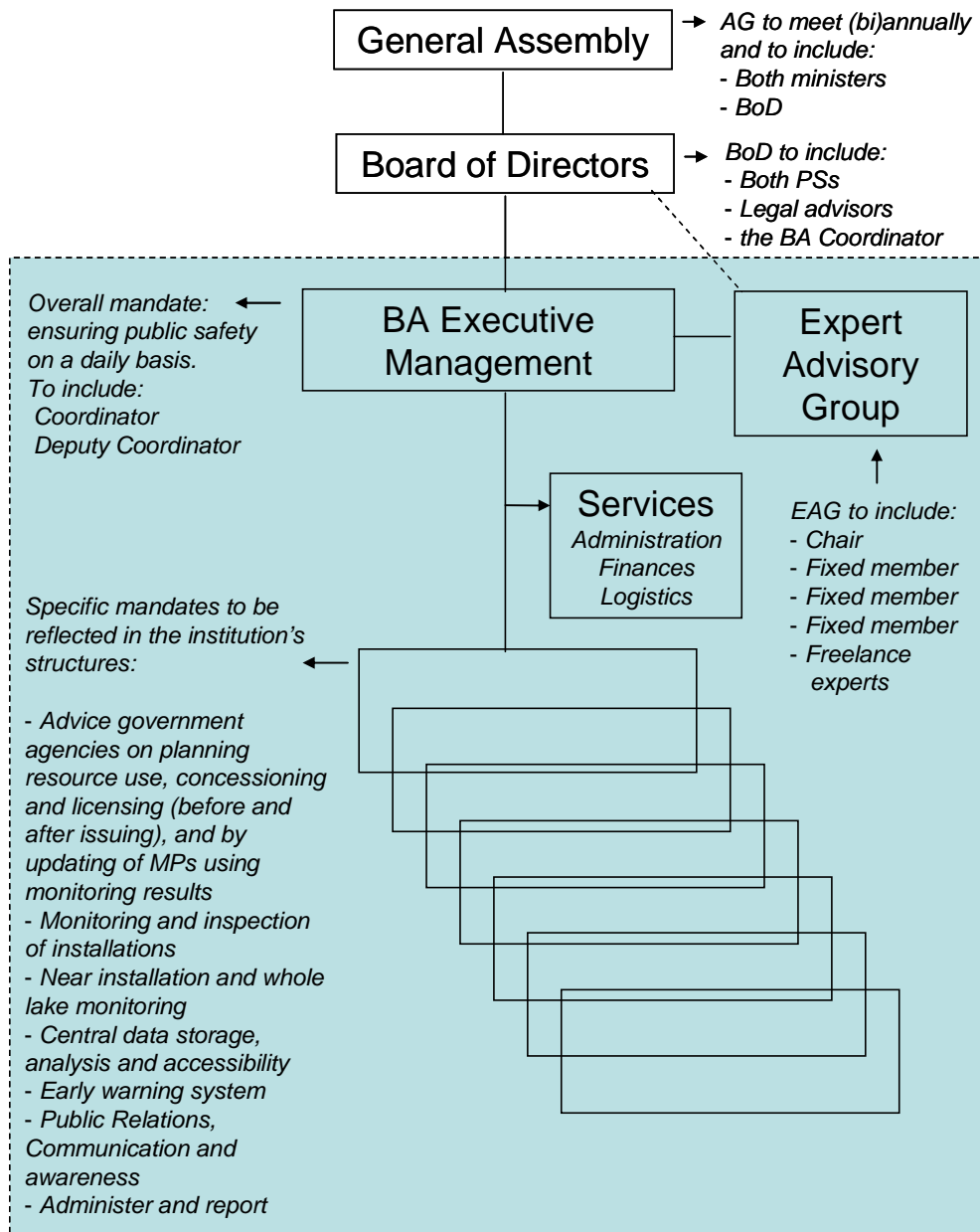


Figure 1: The Lake Kivu Bilateral Authority