POLE INSTITUTE

Intercultural Institute in the Great Lakes Region

Fuelling conflict or development ?

Cross-border oil & gas resources in the African Great Lakes

Promoting regional cooperation and stability

Dossier

January 2014

'OLE INSTITUTE

'ole Institute is an Intercultural Institute in the African Great Lakes Region.

'he head office is based in Goma, Eastern DRC. The Institute was born of the necessity felt by a group of eople from North and South Kivu, DRC, to compare views in a context of crisis studded by unfortunate vents, and characterised by cycles of violence, poverty, poor governance, and insecurity.

onsequently, **Pole Institute** is intended as a space for:

- analysis and research around the major local challenges and their national, regional and international implications (exacerbated poverty, social violence, ethnic divisions, absence of reference points, culture of impunity, etc.)
- analysis and reinforcement of individual survival strategies in a context of war and prolonged crisis
- analysis of the economies of war to find avenues for reinforcing the local population and their economic activities
- action research and lobbying in partnership with local, regional and international organisations.

'urpose and goals:

oster the development of dignified, non-exclusive societies in which free individuals and peoples take ction to contribute to:

- building a SOCIETY in which individuals find their place and rediscover others through the fostering of a culture of continuous negotiation and the identification of shared positive values;
- developing a new type of independently-minded PERSON deeply rooted in their identity, while simultaneously open to the world.

'olicy:

- Initiate, develop, boost and popularise avant-garde ideas in terms of peace, reconstruction and peaceful cohabitation of population groups in crisis zones.
- Foster the emergence of a culture of negotiation (as opposed to a culture of death) based on the interests of the various groups.

)ossier

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Abbreviations and acronyms

ABAKIR	Autorité du Bassin du lac Kivu et de la Rusizi	Lake Kivu and Ruzizi River Basin Authority	
ALT	Autorité du Lac Tanganyika	Lake Tanganyika Authority	LTA
CEPGL	Communauté Economique des Pays des Grands Lacs	Economic Community of the Great Lakes Countries	ECGLC
		China National Offshore Oil Corporation	CNOOC
CTS	Cellule Technique de Surveillance	Technical Surveillance Cell	
EGL	Energie des Grands Lacs		
EIES	Etude d'Impact Environnemental et Social	Environmental and Social Impact Assessment	ESIA
ETD	Entités Territoriales Décentralisées		
ICCN	Institut Congolais pour la Conservation de la Nature	Congolese Institute for Nature Conservation	
ITIE	Initiative pour la Transparence dans l'Industrie Extractive	Extractive Industries Transparency Initiative	EITI
		National Environment Management Authority	NEMA
OCDE	Organisation de coopération et de Développement Economique	Organisation for Economic Co-operation and Development	OECD
PGES	Plan de Gestion de l'Environnement Social	Social Environment Management Plan	SEMP
		Publish What You Pay	PWYP
REA	Rift Est Africain	East African Rift System	EARS
		Rwanda Investment Group	RIG
SINELAC	Société Internationale d'Electricité des Pays des Grands Lacs	Regional power utility company	
		World Wildlife Fund	WWF

Executive summary

Africa used to be considered one of the last reserves to be exploited by the oil majors, but over the last decade, the continent has attracted renewed attention for the exploration and development of hydrocarbons. This trend is accentuated by the perspective of a gradual depletion of resources in parallel to an increase in needs, buoyed by the growing energy demand in emerging countries such as India and China, among others. These dynamics make Africa one of the final frontiers in the search for hydrocarbons.

As if by miracle, discoveries are being made one after the other, whereas not so long ago, oil was considered rare in sub-Saharan Africa. Paradoxically, now it is being discovered almost everywhere, from Angola to Guinea Bissau, and all along the western seafront, particularly in Ghana, Côte d'Ivoire and other countries. In East Africa, not only is there an interest in the offshore oil in the Indian Ocean (Mozambique, Tanzania), but also inside the continent in the geological structures formed by the East African Rift System (Ethiopia, Kenya, DR Congo-Ugandan border, Rwanda, Burundi and Tanzania) and even slightly further south, in the prolongation of the East African rift valley in Lake Malawi.

Since the beginning of the 2000s, interest has focused on countries in western and central Africa around the Gulf of Guinea as a new source of oil for North America, more reliable and closer than the Middle East. New producing countries such as Angola and Equatorial Guinea have joined the well established producers such as Nigeria, Gabon and Congo-Brazzaville. Further inland in the continent, Chad has also become a producer.

From 2006, and especially since 2010, East Africa has increasingly caught the attention of the major global oil companies, in parallel to the rise of Asia as the main source of anticipated demand, taking over from America. From Sudan to Mozambique, breakthrough discoveries have attracted investors and speculators. In an even more spectacular way, but without necessarily having the rapid follow-up initially hoped for, the discovery of huge oil reserves in Uganda from 2006 – the largest discovery under African soil for a generation – turned the African Great Lakes into a first rate promising region, from Lake Turkana on the Kenya-Ethiopia border as far as Lake Malawi on the border between Tanzania and Malawi. Since then, this area of the African Rift valley has become the veritable "frontier" of oil and gas exploration in Africa. But at the same time, these zones face conflicts and chronic instability with considerable infrastructure failures and some parts suffer the severe constraint of being land-locked, far removed from export ports.

Today there are no regions in Africa left which do not interest oil companies. As in the 19th century, when the European colonial explorers sought to explore every nook and cranny of the "black continent" to prepare for imperial conquest, in the 21st century oil explorers rush to each new "block" proposed by the African governments wishing to develop their "black gold", eager to take advantage of the oil windfall as quickly as possible. The similarities between the colonialist vision of a rich and mysterious Africa to be conquered to ensure imperial domination and the profiteering calculations around

colossal oil fields, the control of which would ensure market domination, have already been pointed out, especially by analysts in the oil sector[1].

The myth of instant wealth procured by striking oil turns out to be very tenacious, among the population and right up to government spheres. On 2 July 2010, on the mountain road between Bukavu and Uvira in South Kivu, in the Congolese town of Sange, an accident involving an oil tanker attracted hundreds of villagers who tried to recover the precious liquid escaping from the vehicle, causing an explosion that left 242 dead. At practically the same moment, obscure companies were paying the Congolese government millions of dollars in bonuses for the rights to oil exploration they ostensibly did not have the capacity to carry out, for purely speculative ends. According to one recent study, an oil exploration contract is signed somewhere in Africa every 4 days, and more than 2200 blocks are still awaiting a licence[2].

These new discoveries, along with earlier ones, leave Eastern Africa in a state of anxiety. There are already countless latent or more or less open conflicts over oil. South Sudan has been engaged in an insidious war with Sudan ever since it gained independence in 2011. With the secession of South Sudan, Sudan lost most of its oil wells, but retained control over the sole export pipeline, which leads to Port Sudan on the Red Sea, for South Sudanese oil – a tool for pressure which the Khartoum regime has not hesitated to use against the new authorities in Juba. The border between Sudan and South Sudan is not clearly defined and large oil fields are disputed between the two States.

Further South, the "Ilemi triangle" is disputed by South Sudan, Kenya and Ethiopia, right in the middle of an oil-producing region. No oil reserves have been found there yet, but the area is included in Kenyas oil blocks. South Sudan wants to build an export pipeline across Kenya to the port of Lamu on the Indian Ocean to free itself of its dependency on Sudan, creating a situation that would give Kenya hegemony.

Further to the North East, there are oil prospection areas in Ethiopia, in the region of Ogaden which the people of Somalia claim is theirs and over which the two countries have already waged war. In Somalia itself, the central government, which is still weak, is fighting with secessionist (such as Somaliland) or autonomist governments (such as Puntland) over the right to sign oil contracts. The maritime border between Kenya and Somalia, located as it is in a potentially promising oil area, is also the subject of litigation between the two countries.

Further south, Uganda and DRC periodically quarrel over their borders on Lake Albert, under which are to be found the larger part of the Ugandan oil reserves. And even further south, Tanzania and Malawi are in conflict over the official line of the maritime border on the potentially oil-rich Lake Malawi.

As the nations in the region are advancing at different paces in the development of their oil resources, they will not all become oil producers at the same time. An unequal, time lagged development of oil in East Africa could upset the balance of power in the region and have a major political impact.

This study will review the situation regarding oil and gas exploration and development in the region around the Albertine rift, analyse the policies of the countries concerned in this domain, and, if possible, draw the lessons to be learnt and the mistakes to be avoided. It will also examine the development potential of oil production, the cooperation mechanisms set up by the States and the regional and international organisations for the joint management of these cross-border resources, and the related issues at stake.

Finally, the study will examine the opportunities and risks associated with oil and gas exploration in the Albertine Rift, the African Great Lakes region arousing the greatest interest since the discovery of large reserves in Uganda in 2006. What is specific about this region is that all the known or presumed oil and gas reserves straddle the borders of DRC with its eastern neighbours - Uganda, Rwanda, Burundi and Tanzania. This phenomenon opens up unique possibilities for cross-border cooperation, but also comprises major risks of cross-border conflicts, if the stakeholders and their partners do not initiate preventive strategies.

General Introduction

1. Context and problematic

The East African Rift System is one of the geological and geophysical wonders of the world, a place where the earth's tectonic forces are presently trying to create new plates by splitting old ones apart. A rift can be thought of as a fracture in the earth's surface that widens over time, forming an elongate basin bounded by opposed steeply dipping normal faults. Exactly how rifting comes about is still the subject of research and scientific debate among geologists, geophysicians, etc. The East African Rift System is a veritable living laboratory materialising the splitting in two of a continental plate, the larger, western part of which has been christened the **Nubian plate** and is separating from the eastern part, which is pulling away, called the **Somalian plate**. These two plates are also moving away from the Arabian plate to the north, which they meet in the Afar region of Ethiopia, forming a triple junction which is linked to the Gulf of Aden and the Carlsberg Ridge in the Indian Ocean (Nolet and Mueller, 1982).

The East African Rift System starts on the shores of the Red Sea in the Afar region of Ethiopia and runs across Africa, southwards to Kenya and Uganda where it splits into two branches, east and west, reconnected to each other by the Assoua shear zone. The eastern part extends across 2,200 km, crosses the Ethiopian rift, then the Gregory rift, to end further south on the Tanzanian craton. Some put forward the hypothesis that from there, it branches right to the Davie Ridge in the Indian Ocean[3]. The western part begins on the Assoua shear zone to the North east of Uganda, starting from Lake Albert and runs south 2,100 km to Lake Malawi. The course of the Great Rift therefore covers a total distance of more than 6,000 km with an average width of 40 - 80 km and a variable depth[4].

The western branch is characterised by the presence of large lakes that form in the collapsed basins (Tanganyika, Albert, Kivu and Malawi), in a zone where the rifting is accompanied by little magmatism with the formation of small magmatic provinces (South Kivu, Rungwe, Virunga). In the eastern branch, the continental extension is accompanied by intense magmatism in relation with the presence of one or more deep plumes.

Along the eastern branch, the first signs of volcanic activity date from 40-45 Ma in the Turkana depression at the southern end of the Ethiopian rift. For approximately 5 Ma, the magmatic and tectonic activity of the branch has been concentrated in a narrow strip, approximately 50 km wide, that coincides with the axial valley of the EAR. In the quaternary period, that is to say, approximately 2 Ma ago, an important magmatism moved out of line with the rift towards the east flank of the rift, forming a range of

[3] Odhiambo, A.J., East Africa Rift System, seismic activity, ground deformation and tsunami hazard, Assessment on Kenya coast, 2010.
[4] Emilie Bédard, Isabelle Daoust and Agathe Bernard, "le rift est-africain : mère biologique ou mère tectonique", Géoscope, Vol.7, No.°5, 3 March 2006.

enormous volcanoes such as Marsabit (Turkana rift), Mount Kenya and Kilimanjaro (Tanzania).

The north Tanzanian divergence constitutes the southern end of this eastern branch and corresponds to a significant change in the structural style of the EAR. Associated with this exceptional structure is the development of large-scale volcanism, characterised by the edification of extremely large volcano systems: Ngorongoro, Mt Meru and Kilimanjaro[5].

The eastern rift also counts a dozen lakes, eight of which are in Kenya and four in Tanzania. The largest of the lakes in Kenya is Lake Turkana, a freshwater Lake of 6,405 km^2, and then there are lakes Logipi, Baringo (130 km^2), Bogoria (34 km^2), Nakuru (40 km^2), Elmeinteita, Naivasha (160 km^2) and Magadi (100 km^2). Lakes Natron (1040 km^2), Manyara (325 km^2), Eyasi (1050 km^2) and Makati are in Tanzania.

Table 1: Comparative view of the lakes in the Albertine rift

Characteristics	Albert	Edward	Kivu[6]	Tanganyika	Malawi
Altitude (m)	619	919	1460	773	474
Surface area (km^2)	5300	2150	2700	32900	6400
Volume (Km^3)	39,5	132	500	17800	8400
Maximum depth (m)	58	117	485	1471	706
Average depth (m)	25	34	240	572	292
Length (km)	160	58	89	677	580
Width (km)	30	25	48	72	80 (30-80)

[5] Nonotte Philippe, Etude volcano-tectonique de la zone de divergence nord tanzanienne (terminaison sud du rift kenyan), thèse de doctorat, Université de Bretagne occidental, 20 avril 2007, http://tel.archives-ouvertes.fr/docs/00/15/90/18/PDF/These_P.Nonnotte_web.pdf.

[6] The deep lakes of Kivu and Tanganyika are called meromictic, that is to say, the surface waters and deep waters do not mix, as opposed to polymictic lakes. (see http://www.ecologydictionary.org/MEROMICTIC_LAKE)

Figure 1: East African Rift Valley System

2. A new border for exploring and exploiting hydrocarbons

The oil majors had long turned their backs on the African Rift Valley, until the end of the 1980s. However, in some respects, this region has similar geophysical characteristics to the Middle East, whose rift systems join up in the Red Sea. But Middle Eastern oil was deemed easy to extract and of good quality, and the major oil companies owned concessions over periods of decades. The increasing pressure on hydrocarbon resources due to the energy needs of the emerging countries, and to the growing awareness that known resources are very limited, mean that attention is now turning to new regions in the world in the search for hydrocarbons.

For around a decade, taking advantage of the data available on the Rift Valley as a whole, the governments and the oil companies have gradually launched exploration campaigns at variable speeds depending on the priorities and organisation specific to each country. Today, the observation that emerges is that the different countries in the region are

advancing at different paces in this process. While some are ready to enter production, others are still at the initial stage of drawing the boundaries of the oil or gas blocks. Sometimes, within a particular country, progress is uneven, and varies according to the region. This differential progress can be observed while sometimes the zones being investigated are contiguous, which tends to suggest that there could be a significant source of potential conflict around these resources.

The discovery of oil in the Rift Valley, particularly in Lake Albert,on the Ugandan side, in the Tanzanian waters of Lake Tanganyika, in the Kenyan rift, and the known presence of methane in Lake Kivu have caused an acceleration of prospection in other parts of the western branch of the rift valley, in particular in the basins of Lakes Edward, Kivu and Tanganyika.

But there are a number of challenges associated with the presence of these potential or ascertained resources. First of all, they are all cross-border, for in most cases, from the north to the south of the Albertine rift, they straddle the border between DR Congo and the countries on the eastern edge of this zone, that is to say Uganda, Rwanda and Burundi and, further south, Tanzania, Zambia and Malawi. Surface borders are not clearly defined, and there is much uncertainty about them, as the incidents that occurred over Lake Albert have already shown, and so underground borders would be even more subject to doubt, or even to tensions, were exploitation to begin especially if this happens at different times in different places. There could be suspicions related to the non-sharing of underground oil reserves, and therefore their cross-border continuity.

On the other hand, oil and gas resources constitute a development and cooperation potential for the countries concerned, if the requisite conditions are effectively met. However, there are other challenges related to the relationships between the oil companies and the population, particularly regarding the advantages and disadvantages accruing to local people. For example, the lakes also constitute a source of water supply and revenue for the fishermen who operate there, and they also serve as a transport route. Problems may arise if there is discord between the damage caused by the oil business and the dividends the local population derives from it.

The development of the oil sector in the Albertine rift valley raises many environmental challenges. We know that almost all the lakes of the Albertine rift are endowed with exceptionally rich biodiversity, with thousands of endemic species. Some of the oil zones are in fact protected areas or are surrounded by protected areas. As an illustration of this, we can quote the example of Lake Edward, surrounded on both sides by major parks, Virunga in DR Congo, and Queen Elisabeth park in Uganda, Kibale park around the Ugandan part of Lake Albert. As for Lake Tanganyika, it is surrounded by nine parks and protected areas from North to South, from Burundi (4) to Zambia (2) via Tanzania (3).

While some stakeholders may be delighted at the progress that could be triggered by the exploitation of these resources, in particular government decision-makers and firms, the fact remains that it comprises exposure to multiple risks: internal, around equitable distribution of the revenue; international, around the sharing of the resources. Conflicts could also arise from the negative impacts on the environment and on the local population's livelihoods. This is why the environment and regional stability must be factored in, to achieve a fair balance that preserves regional peace and protects the interests of the local people and the environment.

This document, after drawing up an inventory of the cross-border situation regarding the prospecting and production of hydrocarbons in the region of the Albertine rift, proposes an analysis of what is at stake in order to trigger cross-border dynamics aimed at promoting a common reflection, negotiation between stakeholders and implementation of cooperation and regional development mechanisms around these resources.

Chapter 1: Geology and geophysics of the Albertine rift and its lakes

This region presents many common aspects but also disparities. The different zones of this region will be presented from north to south, from Uganda towards Burundi and further south, and the western part situated alongside in Eastern Democratic Republic of Congo.

1.1. Lake Albert

Lake Albert occupies the northern part of the western Rift valley. The Lake is approximately 130 km or 81 miles in length, and approximately 35 km or 22 miles wide. 57% of the lake belongs to Uganda and 43% to DR Congo.

It has a vast hydrological network with the Semliki river as the principal tributary in the south west coming from Lake Edward, Lake Victoria in the south east and the Nile Victoria coming from Lake Victoria in the south east and as an outlet, the Albert Nile to the North, also called the Nile of the mountains. It is quite shallow compared to most of the other great lakes of the same rift situated further south, with a maximum depth of 58 metres.

This Lake is situated at an altitude of 616 metres above sea level and covers a surface area of approximately 5,600 square kilometres. Deep sediment has been deposited in this lake since it formed, and the high rate of siltation around the Semliki outlet has created a shallow underwater zone. This shallow, southern part of the lake is a spawning ground for fish.

The maximum thickness of the sediments in this part of the Albert Graben has been estimated at approximately 4.6 km. The siltation of the southwestern part has created a delta in the lake, which is expanding at an annual rate of 3.5 kilometres.

Lake Albert is of major importance to Uganda and DR Congo for fishing and tourism. This lake is surrounded by zones largely classified as protected, as the whole constitutes a complex system. The fauna and the flora are exceptional, with enormous biodiversity, including mammals, birds and freshwater fish species that are unique in Africa. In 2009 for example, the national park of Murchison Falls received an annual 40,000 visitors approximately[7]. We know that the lakes in the Albertine rift are endowed with exceptionally rich biodiversity, with thousands of endemic species.

[7] NEMA, Environmental Sensitivity Atlas for the Albert Graben, Kampala, Uganda: New Era Printers publishers and Stationers Ltd, p.12, 2009.

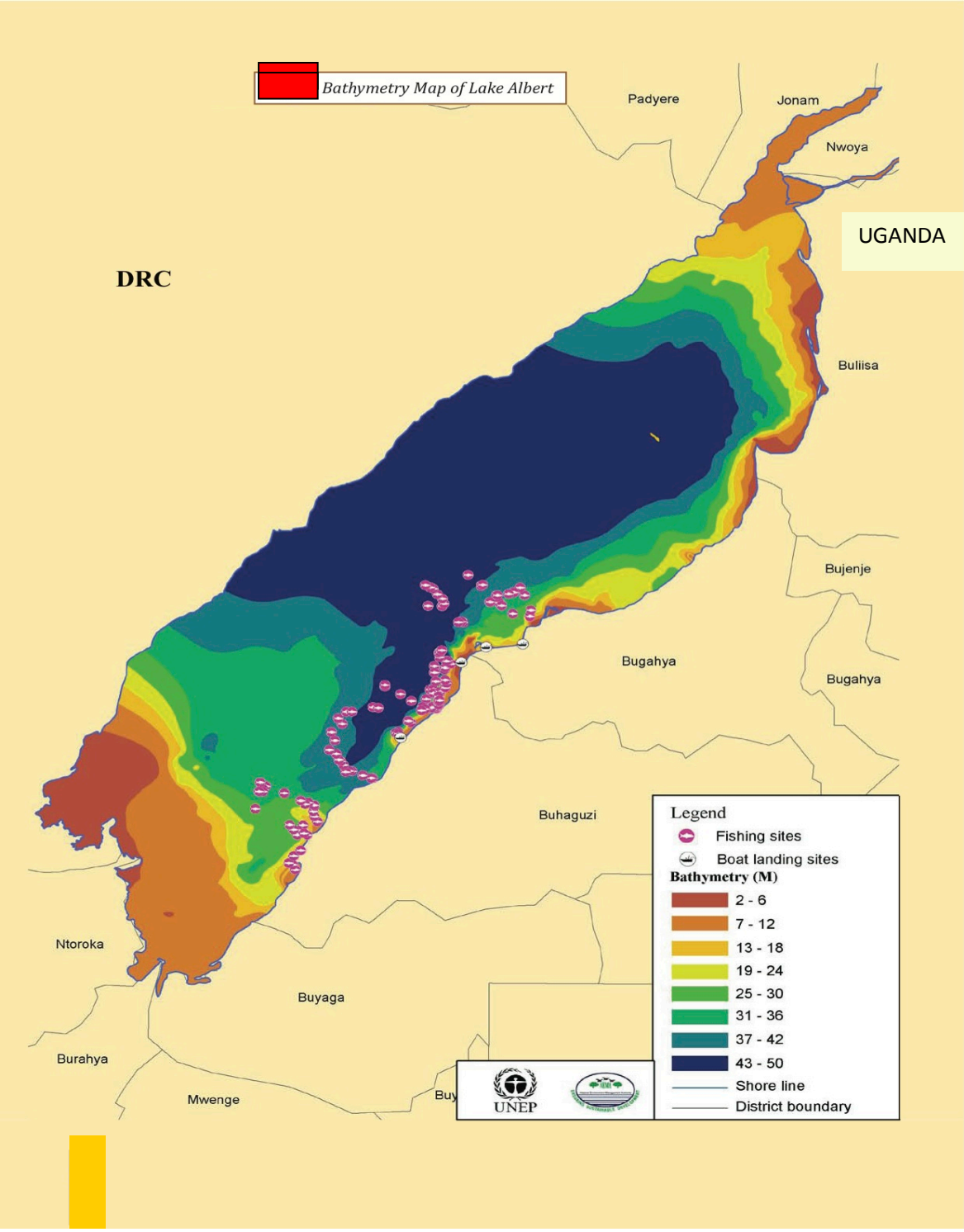


Figure 2: Bathymetric map of Lake Albert

1.2. Lake Edward

Lake Edward is situated immediately south of the equator towards the north end of the western Rift valley. Like Lake Albert, it straddles the border of Uganda and the Democratic Republic of Congo, which have respectively a 29% and 71% share of the waters.

This Lake is 90 kilometres long, with a maximum width of 40 km. The maximum depth is 117 metres, and the average is around 34 m. The principal affluent of Lake Edward flow along the axis of the rift basin or crosswise to the axis of the rift, where the low relief has allowed a large drainage system to develop.

The largest tributaries in the catchment basin of the Lake include the Rutshuru and Rwindi rivers, which drain water from the Virunga volcanoes in the South. The river Nyamugasani, which drains the waters from the Rwenzori Mountains in the north, also runs into the lake. A unique characteristic of the Lake Edward catchment basin is its connection to Lake George, a shallow basin linked to Lake Edward by the Kazinga canal.

Lake Edward has an open hydrological system, its waters running northwards into Lake Albert via the Semliki River. It is also an important reservoir for tropical rain in the catchment area of the river Nile, below the equator.

Lake Edward is surrounded by two national parks: Virunga, a world heritage site, in DR Congo, and Queen Elizabeth National Park in Uganda. It also constitutes an important source of fishing resources, which are unfortunately continuously decreasing[8].

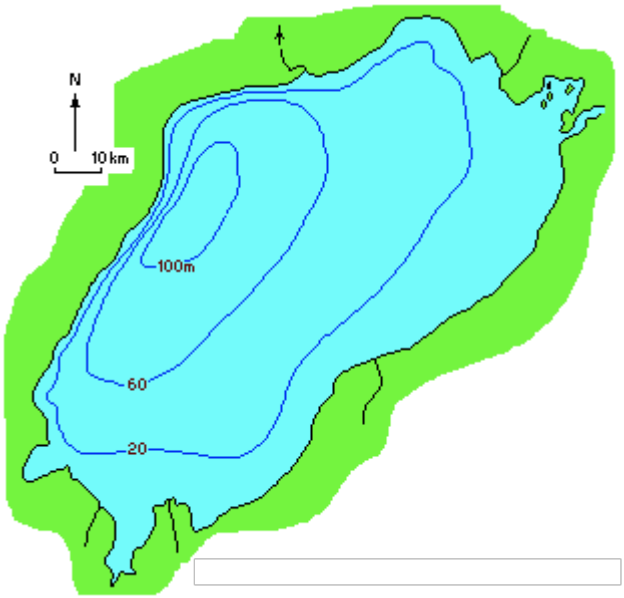


Figure 3: Bathymetric map of Lake Edward

1.3. Lake Kivu and basin

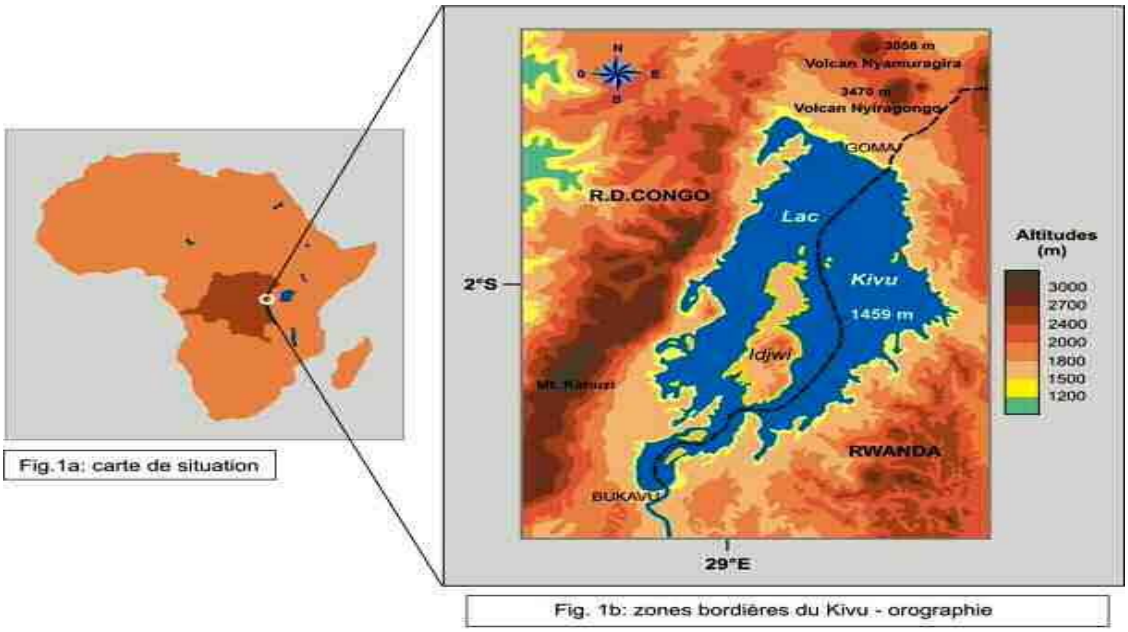
Lake Kivu also straddles a border – the one between DRC and Rwanda[9].

The surface area of the Lake is approximately 2,400 km^2, maximum depth 485 m and total volume of water approximately 580 km^3 (calculated according to a topographic map drawn up in 1959 by IRSAC and measurements made by A. CAPART in 1952/53)[10].

[8] African Development Fund, Multinational Project, August 2003.
[9] MUVUNDJA AMISI: *A Thesis submited to the Graduate School in partial fullfilment of the requirements for the award of a master of science degree (Fisheries and aquatic science) in zoology*, Makerere University, Sept. 2010.p.1.
[10] SAARBERG INTERPLAN, *Gaz Méthane du lac Kivu, Etude de préfaisabilité. Rapport final,* Toma1, February 1982, p1-1.

The water of Lake Kivu flows towards Lake Tanganyika, which lies at an elevation of approximately 700 m lower, by the river Ruzizi, which regulates the level of Lake Kivu at an elevation of between 1462.2 and 1463.2 m above sea level. The average flow rate has been approximately 3.2Km^3/year since 1960[11].

The hydrographical basin of Lake Kivu, covering a surface area of approximately 7,000 Km[12] is densely populated, in particular with the cities of Goma and Gisenyi on the northern point and Bukavu and Cyangugu on the southern point.



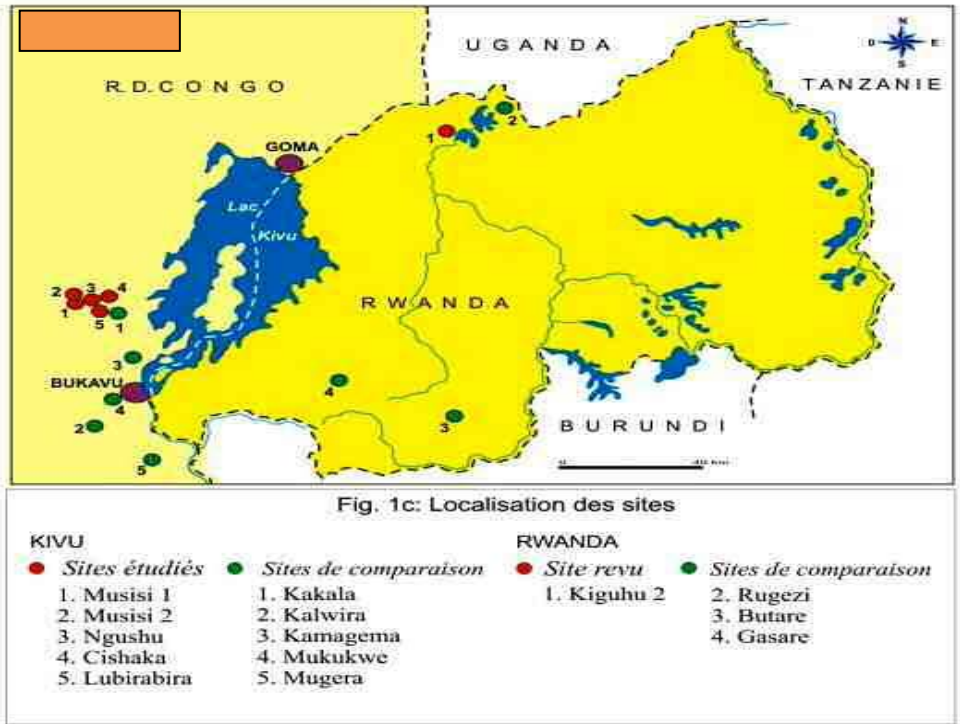


Figure 4: Physical map of Lake Kivu basin

[11] IDEM, p1-3
[12] IDEM p1-1.

The maximum depth of Lake Kivu is 485m in the North West, on the Congolese side. The slope on the North bank is very steep. In places the depth reaches 300 m at less than 1 km from the shore.

The very existence of Lake Kivu is the result of extraordinary geological events. Around 8,000 – 12,000 years ago, the eruption of the Virunga chain of volcanoes had the effect of barring the northward flow of rivers draining the current basin of Lake Kivu towards Lake Edward. The waters accumulated upstream of the new dam, forming the current lake. With the continual rise in level, the excess waters overflowed towards the South, over an older volcanic dam in the region of Bukavu-Cyangugu; this caused the formation of the Ruzizi river which links Lake Kivu and Lake Tanganyika[13].

Lake Kivu has the particularity of containing methane dissolved in its deep waters. It is the only lake of the Albertine rift to be situated in a volcanic region extending in a triple zone over the borders between Rwanda, Democratic Republic of Congo and Uganda.

[13] Action contre la faim, Study of the status of the northern part of Lake Tanganyika as part of Action contre la faim's fisheries programme in Democratic Republic of Congo, Y. Fermon, 2007.

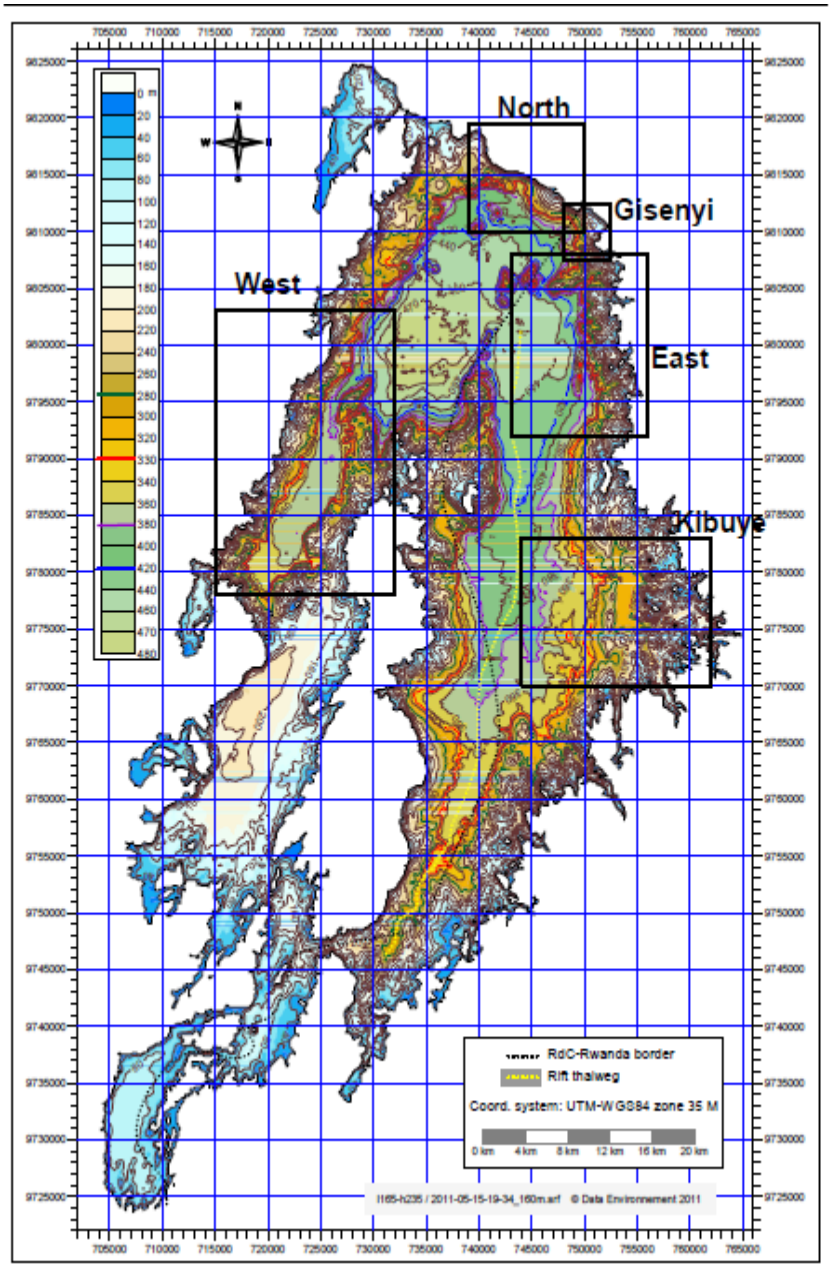


Figure 5: Bathymetric map of Lake Kivu

1.4. Lake Tanganyika and basin

This is a lake that accumulates superlatives: the longest in the world (677 km), the second deepest in the world after Lake Baikal, and the best stocked with fish. The average depth is approximately 570 m, reaching 1471 m at the deepest part. It contains 17% of the world's freshwater reserves.

Lake Tanganyika is situated in an active tectonic zone, characterised by earthquakes of up to magnitude 7 on the Richter scale[14].

[14] The strongest recent earthquake was on 20 December 2005, with a magnitude of 7.5 on the Richter scale.

It is shared unequally between four countries - Burundi (8%) in the north east, Tanzania (41%) in the east, the Democratic Republic of Congo (45%) in the west and Zambia (6%) in the south.

Lake Tanganyika was formed between 20 and 12 million years ago, in the Miocene. Lake Tanganyika has the richest freshwater ecosystem in the world, with approximately 2,156 species, 27% of which are endemic and unique. Groups rarely observed in a freshwater milieu, sponges and jellyfish, for instance, are found here. The two most remarkable groups of these species are the Gastropod Molluscs (snails) and tcertain kinds of fish[15].

Lake Tanganyika has a vast catchment basin of approximately 220,000 km2, mainly formed by the Ruzizi which drains the waters from Lake Kivu in the North and the Malagarazi which collects the waters from Tanzania in the south of the Lake Victoria basin. It has a single outflow, the Lukuga, although the direction of flow of this river has changed several times in the past[16].

The ecosystem of Lake Tanganyika resembles that of an isolated sea, and it has remained relatively stable over a long period of time. The Ruzizi river and plain were formed in the Pliocene (5,332-2,588 Ma), a much more recent age if we consider that of Lake Tanganyika. One of the main reasons scientists are interested in Lake Tanganyika is that it constitutes a microcosm which can be used to study the process of evolution. It is of practically unique interest in terms of biodiversity in the world. The lake's other important feature is related to its resources and the interest it represents for the local communities as a source of drinking water, a transport route and a source of fish. Approximately 160,000 tonnes of fish are caught annually by the four countries.

[15] Lake Tanganyika Biodiversity Project, Anti-pollution and other measures to protect biodiversity in lake Tanganyika, crossborder diagnostic analysis, 2001.
[16]Lake Tanganyika: Results and observations drawn from the conservation initiative of the UNDP/gef (raf/92/g32) in Burundi, the Democratic Republic of Congo, Tanzania and Zambia, 2001.

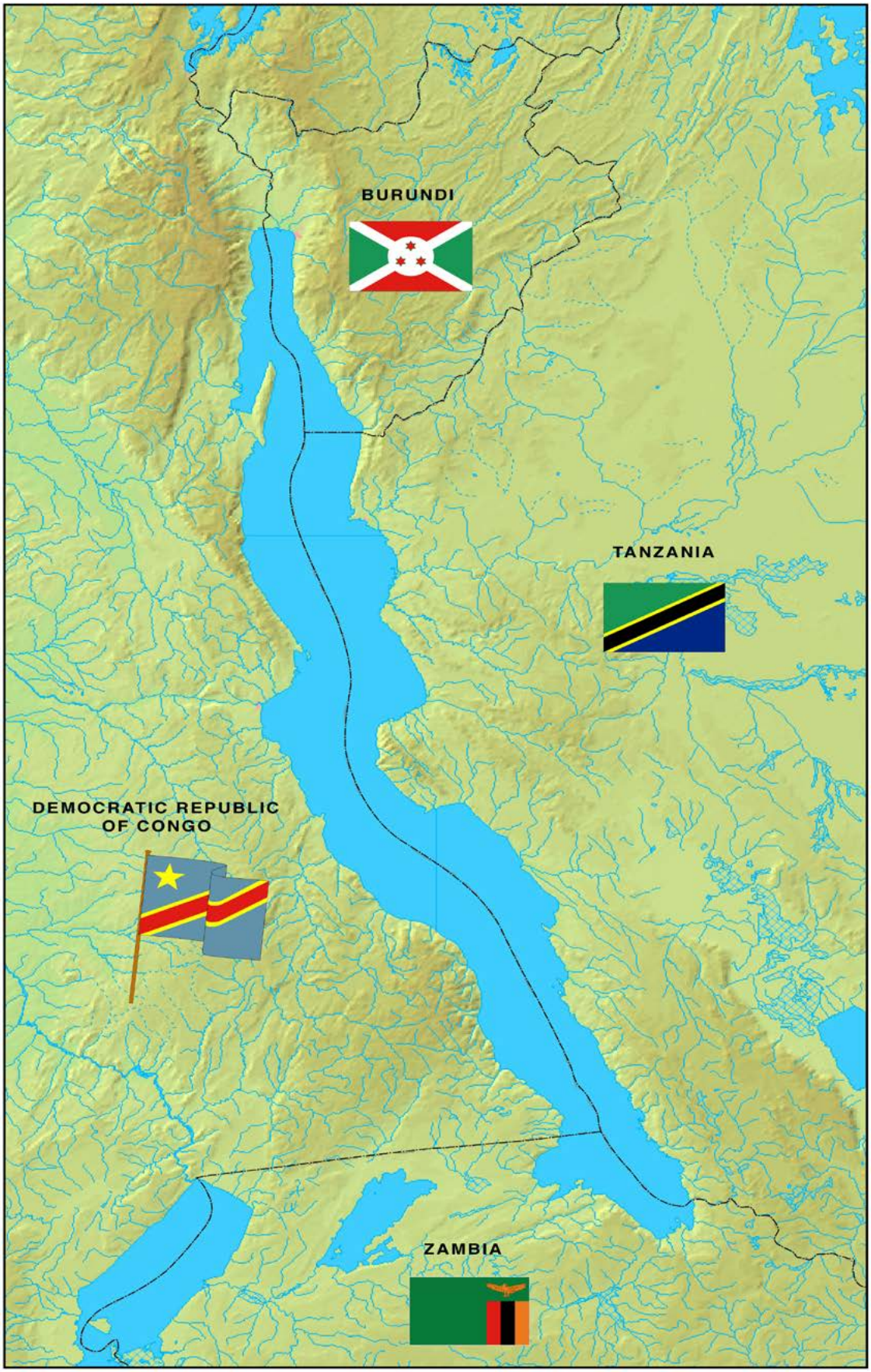


Figure 6: Physical map of Lake Tanganyika basin

Figure 7: The protolakes of Lake Tanganyika corresponding to the deepest zone

Chapter 2. The state of oil and gas exploration and development

2.1. Lakes Albert and Edward

Lake Albert is the only lake in the western part of the Albertine Rift where oil prospection has already proved the existence of exploitable oil reserves. According to the official Ugandan and Congolese sources, each country has possible reserves of 2 billion barrels of oil under the lake and the surrounding area. But it is not always clear whether this figure refers to the total reserves under the Lake or to the reserves of each country individually[17].

The Ugandan government has traced out 17 zones for exploration in the Albert Graben. These are the zones situated in blocks 1, 2, 3A, 3B, 3C, 3D, 4A, 4B, 5 along the Ugandan-Congolese border from north to south. Blocks 2 and 3A encompass almost all of the Ugandan waters of Lake Albert. Block 1A is located at the northern tip of this lake at the Nile outlet of the waters of Lake Albert, and upstream of the Nile, block 5 which extends to the border with South Sudan. At the south end of the Lake are Blocks 3B and 3C in the Semliki valley, then Block 4A around Lake George and its canal towards Lake Edward and lastly Block 4B, which is located in the Ugandan waters of Lake Edward at the southwest extremity of Ugandan territory.

In DRC, Blocks I - V are symmetrical with the Ugandan blocks on the other side of the border. Block I is the furthest north and encompasses the northern part of the Congolese half of Lake Albert, while Block II occupies the southern part. Block III follows south from Ituri facing the Ugandan blocks 3 and is already partially inside Virunga National Park, while block IV lies in the Congolese foothills of the Rwenzori to the north of Lake Edward and lastly block V south of Lake Edward into the territories of Rutshuru and Masisi in NorthKivu.

[17] Presentations made at the Kinshasa iPAD-DRC oil summit, September 2013, and various statements in Uganda since 2009.

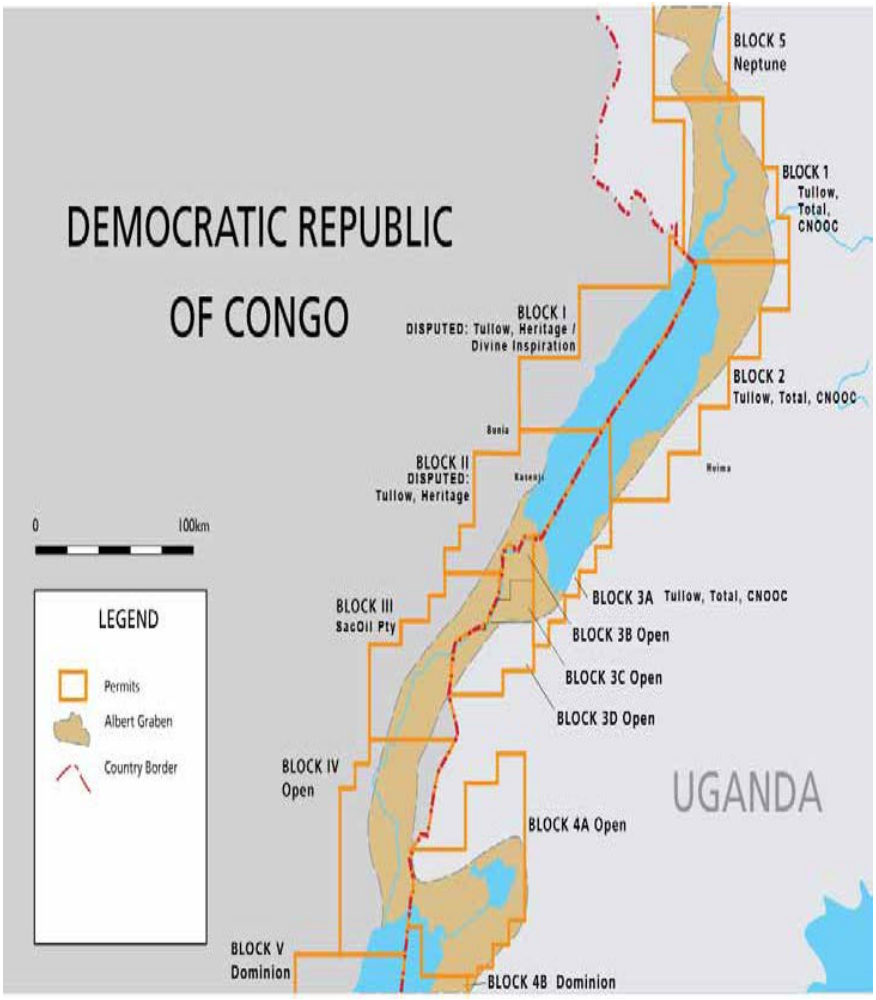


Figure 8: Oil blocks on both sides of the Albertine rift in Uganda and DRC

2.1.1. History of oil exploration in the Rift valley in Uganda

The first reference to oil in Uganda was made after oil seepage was observed near Kibiro on the shore of Lake Albert, which was well known to the local people. The first contribution to the evaluation of the country's potential in hydrocarbons was from government geologist E. J. Wayland, who documented numerous manifestations of the presence of hydrocarbons in the Albert Graben in the 1920s.

Shallow stratigraphic wells drilled by an Afro-European investment Company between 1936 and 195618, revealed the presence of oil. Subsequently, geological studies conducted in the 1940s and 1950s established the presence of clay and silt sedimentary sequences in the region of Kaiso on the eastern shores of Lake Albert and along the bed of the Kisegi river in the Semliki basin. These beds were later called respectively Kaiso and Kisegi[19].

[18] Harris N., Pallister J.W., and Brown, J.M., Oil in Uganda. Memoir no. IX, Geological Survey of Uganda, 1956, 1-33.
[19] Memoirs of Geological Survey, 1959.

Subsequently, oil exploration continued intermittently from the 1930s onward, interrupted by World War II. Systematic exploration resumed at the beginning of the 1980s with the acquisition of aerial magnetic data on the whole of the Graben. Geophysical and geological prospecting on the ground took place towards the end of 1990. In 1998, a seismic campaign was conducted to gather data throughout the Graben. Also several seismic studies in 2 dimensions and in 3 dimensions were undertaken. To date, more than 104 wells have been drilled.

Also, an aeromagnetic survey was carried out in the northeast and centre of Uganda in 1992 to identify other regions of the country with a potential to form and accumulate oil. The results of these surveys identified two relatively shallow sediment basins, Kyoga and Kadam – Moroto, which are now awaiting field prospection.

All the geophysical works carried out in the Graben have confirmed the existence of sediment at least 5 km thick. Surface geological mapping shows that the Albert Graben is an interior collapse basin containing organic rich source rocks and excellent quality sandstone reservoirs. The wells drilled in the region have also confirmed the existence of rocks with similar properties at a greater depth.

The presence of fifteen oil seeps around Lake Albert indicates that mature organic rich source rocks are present in this part of the Graben and that some of them have generated and expelled. The seismic data shows the existence of anticlinal features and large faults in the basement rock of the Albert Graben. Prospection wells drilled at Turaco, Mputa, WARAGA, Kingfisher, NGASSA and NZIZI between 2002-2007 not only confirmed the existence of an oil system in the region, but also highlighted the presence of commercially exploitable hydrocarbons in the Graben. With the exceptions of Turaco and Ngassa, the presence of hydrocarbons has been established with certainty.

2.1.2. Oil activities and the positioning of companies

Year	Prospecting activities
1990	Cooperation agreement between DR Congo and Uganda for the exploration and development of shared oil fields
1991	Production sharing agreement signed by Uganda and FINA, covering the whole of the Graben. The Graben subdivided into nine oil blocks.
1993	The licence granted to FINA not renewed due to lack of significant work.
1997	Licences concerning 3 blocks in the Semliki basin granted to Heritage Oil and Gas Limited.
1998	Heritage collects the first 2-D seismic data on a distance of 170 km in Uganda.
2001	Heritage completes its seismic data on a distance of 228.39 km 2-D in the Semliki basin identifying wells already located from gravimetric and magnetic data
2002	Drilling of Turaco-1 by Heritage and Energy Africa on 17 September 2002, reaching a depth of 2487 m.
2003	Drilling of Turaco-2 near Turaco-1 but with a deviation on a total depth of 2963 m. Acquisition of seismic data on Lake Albert by Hardman, Energy Africa

	and Heritage
2004	Exploration Licence granted to Heritage and Energy Africa (bought over by Tullow oil) in July 2004. Exploration block 3A (Semliki Basin) granted again to Heritage and Energy Africa (which subsequently became Tullow Oil) in September 2004. Drilling of Turaco-3 well by Heritage and Energy Africa to a depth of 2980 m. One of the zones of the well reveals the presence of gas BUT contaminated by carbon dioxide. Heritage acquires 390 km of 3-D seismic data in the Semliki basin.
2005	Acquisition of 2-D seismic data on the Kaiso - Tonya zone by Hardman and Energy Africa and also on the Buhuka/Bugoma, EA 3A zone by Heritage. Exploration of zone 5 (Rhino Camp basin) granted to Neptune Petroleum (Tower resources). Drilling of Mputa-1 by Hardman and Energy Africa in the Kaiso - Tonya zone. Mputa-1 becomes the first oil-rich well discovered in the Kaiso - Tonya region.
2006	Drilling of Waraga-1 by Hardman and Tullow in February-March 2006 to a total depth (TD) of 2,010 m. Drilling of Mputa-2 evaluation well of the Mputa discovery. Flow tests of the Waraga-1 well. End of flow tests of Mputa–1 well. Drilling of Kingfisher-1 and by Heritage and Tullow Oil in the Buhuka/Bugoma zone. Drilling of the Nzizi-1 well but with no flow test. Hardman also bought by Tullow which becomes the future principal oil firm in Uganda alongside Heritage.
2007	An exploration licence granted to Dominion Petroleum for block 4B of Lake Edward and the George basin
2008	The government adopts the national oil and gas policy. A flow test is carried out at Kingfisher - 2 August 2008 (14,000 bpd). Heritage drills at Kingfisher – 3;. The 3-D seismic campaign is completed for an area of 485 km^2. Important drilling is undertaken by Tullow in block 1 in the Ngiri, Jobu and Rii wells; the oil discoveries are announced as the largest in Africa for 20 years.
2009	Drilling of Mputa-5, Karuka-2, Ngassa-2, Nsoga-1, Kogogole-3, Wahrindi-1, Ngara-1, Awaka-1 and Iti wells. Tests of Kasemene-1 and Kigogole-1. Acquisition of data on the variations in gravity. Acquisition of additional seismic data in the Graben
2010 - 2012	The Heritage parts in blocks 1 and 3A are bought by Tullow. Acquisition of seismic data and drilling of new wells in exploration blocks 2, 1, 5 and 4B and other related activities that confirm the discoveries of the years 2006-08.
2013	Promulgation of the two laws on oil. Acquisition of land to build a refinery at Kabaale, a scheme to relocate displaced persons is set up and compensation is being paid. The first production contract is granted to the Chinese company CNOOC for the Kingfisher 1A well

Oil prospection in Uganda has been marked by litigation between the oil firms and the Ugandan government. Through time, Tullow Oil imposed itself as the major player in Ugandan oil, having first bought Energy Africa in 2004, Hardman Resources in 2006 and then Heritage Oil's shares in the promising blocks 1 and 3A in 2010 for $1.45 billion. The

Ugandan government then demanded the payment of large amounts of taxes from the vendor Heritage, and there followed a legal battle in which Tullow paid a share of this tax bill, deducting the amount from the price paid to Heritage. But the Ugandan government demanded yet more payments from Tullow. These repeated demands pushed Tullow to renounce its ambitions to dominate Ugandan oil, at the same time as it lost its rights in the Democratic Republic of Congo. In 2012, Tullow set up a partnership with the Chinese company CNOOC and the French company Total to prepare oil production activities, and diversified its exploration to other countries in the region such as Kenya and Ethiopia.

2.1.3. Licences granted in Uganda

In September 2013, the Chinese state compamy CNOOC became the first oil company to obtain a production licence in Uganda. This licence was issued to Tullow Uganda Limited in the form of a conditional production licence for the Kingfisher well in block 3A, where oil was discovered in February 2012. The condition laid down to the contractor was to present an amended field development plan (FDP) and an Oil deposit report (ODR) acceptable to the government and compliant with oil legislation and best practices on the subject.

Following Tullow's sale of 66.6% of its interests in the Ugandan oil sector, CNOOC was granted leeway to develop Kingfisher in preparation for oil exploitation. In November 2012, CNOOC presented a revised FDP and ODR, which were then largely amended by the government. This led to the transformation of the conditional licence into a production licence, the first of this type issued in Uganda. The government shall have a 15% stake in Kingfisher up until the start of oil production.

The Kingfisher reserves are estimated at 635 million barrels of oil, of which 196 million barrels are exploitable. From 2017, the field will be developed to produce between 30,000 - 40,000 bpd. The gas exploited in the process will be used to produce electricity for field operations, and the excess gas will be transported to the Kabaale refinery for electricity production.

Tullow Uganda Operations Pty Limited has also submitted applications to government for production licences for eight fields (8) in EA 2, comprising Mputa, Nzizi, Kasamene, Wahrindi, Kigogole, Ngege, Ngara and Nsoga. The government is currently still examining the FDP and ODR presented by Tullow.

2.2. History of oil exploration in the Congolese Rift valley

On the Congolese side, there has been no prospection to date. The estimates relative to the DR Congo's oil reserves in the Lake Albert basin are based on the assumption that the geological conditions are similar to those on the Ugandan side.

The Graben that runs along the Ugandan border has been divided into five blocks, whose history is full of contrasts and controversies. It all began on 10 June 2002, when London-based firm Heritage Oil announced the signing of an exclusive agreement with the government of DRC to develop the terms of a contract giving it the rights to commence oil exploration in a region located in eastern Congo, with a surface area of approximately 30,000 km^2, extending all along the border between DR Congo and Uganda, from Lake

Albert to North-Kivu. This region encompasses all five blocks as subsequently defined. It was reported that this agreement had been signed in Kinshasa on 2 June 2002[20].

Given Heritage Oil's[21] experience working in conflict zones, the granting of the 2002 Congolese contract was only logical, for it mainly concerned the district of Ituri, in the throes of violent clashes. At that time, rebels and various militia groups controlled it. As some of these groups were allegedly supported by Uganda, where Heritage Oil was already carrying out oil exploration, some observers asserted that the signing of this contract was a way for Uganda to consolidate its control over the eastern DR Congo.

In reality, Heritage Oil was not carrying out exploration in DRC, whereas on the Ugandan side, the pace was accelerating and discoveries were announced successively by Hardman Resources in May 2006[22], followed by Heritage Oil in February and March 2007[23], with the announcement of larger strikes in June and August 2007[24]. On the Ugandan side, a succession of purchase and sale operations allowed Tullow Oil to acquire Hardman Resources and become the leading oil firm in Uganda.

On 13 September 2006, Heritage Oil announced that, with Tullow Oil, it had signed a production sharing agreement with the Congolese government for Congolese blocks I and II, which cover the areas adjacent to Lake Albert[25]. The government of DRC confirmed the signing of this agreement on 21 July 2006, a few days before the historic elections that put an end to the political transition in DRC[26]. Tullow was the sole operator in this partnership with the Congolese government with a 48.5% share; Heritage Oil held 39.5% and the State company Congolese Cohydro, 12%. On this occasion, a signing bonus of 500,000 dollars was paid.

In 2007, at a time of tension with Uganda, the Congolese government tried to interest oil companies other than those based in Uganda, that it had invited to Ituri in 2006. On 18 August 2007, DRC announced the cancellation of the existing contract with Tullow Oil for block I. However, Tullow Oil would be authorised to submit a new application in competition with other interested companies[27]. On 8 February 2008, the Minister of hydrocarbons, Lambert Mende, stated that Tullow now only held Block II and had voluntarily given up Block I. Subsequently; Tullow denied these statements[28]. Their representatives called into question the repeated demands for money from Minister

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[20] See: Dominic Johnson, "Shifting Sands: Oil Exploration in the Rift Valley and the Congo Conflict", Pole Institute, Goma 2003.
[21] Founded and directed by Tony Buckingham, a veteran of the SAS elite unit of the British Army, at the beginning of the 1990s Heritage Oil had been the pioneer of the use of South African private security company Executive Outcomes to protect oil facilities from Unita rebels in Soyo, Angola, on the South bank of the Congo river.
[22] "Good oil found on L. Albert", New Vision, 27 May 2006.
[23] "More oil found on Lake Albert", New Vision, 28 February 2007; "Heritage reports largest oil find", New Vision, 2 March 2007.
[24] "New oil discovery worth SH15,000b", New Vision, 25 June 2007; "Another huge oil well found", New Vision, 23 August 2007.
[25] "Heritage Oil Signs Production Sharing Agreement in DRC", press release, 13 September 2006.
[26] "Communiqué du Ministère des Hydrocarbures sur les projets Tullow Oil dans le Graben Albertine", 29 April 2008, in La Prospérité, 30 April 2008.
[27] "Congo revokes one Tullow Oil exploration licence", Reuters, 18 August 2007.
[28] "Congo Wants Petroleum Companies to Help in Oil Search"; "Tullow Withdraws From Congolese Oil Block, Minister Says", "Tullow Denies It has Relinquished Congo Oil Field", Bloomberg, 8 February 2008.

Lambert Mende[29], who was demanding the payment of two signature bonuses instead of one.

The main beneficiaries of this new licensing round, enforced by the Minister of Hydrocarbons, were South African firms in cahoots with certain Congolese political decision-makers. Thus on 21 January 2008, block I was assigned to a consortium directed by the South African State-run company PetroSA, a 37% minority share in which was granted to "H-Oil", a Spanish group[30]. For block III, the Minister stated that he had granted the rights to South African company SacOil; while block V, situated further south beside Lake Edward, was given to Dominion Petroleum. This company, already active in exploration on the Ugandan side of Lake Edward, confirmed the information on 17 March 2008, and announced a partnership with SOCO, already active in western Congo[31], on the said block.

The PetroSA consortium comprises Divine Inspiration and SacOil. This last company was bought by SAMROC (South African Mineral Resources Corporation). Some information mentions the payment of a signing bonus of $3.5 million instead of $500,000. The Encha Group, owned by the Moseneke family, described in the South African press as "a heavy weight group in terms of 'black empowerment'" holds a 65% share in SAMROC. One of the Moseneke brothers, Dikgang Moseneke, was a judge at the South African Supreme Court[32].

In 2010, DRC redistributed the oil cards again in the East. A presidential decree of 18 June 2010 published four days later, on 22 June, reassigned blocks I, II, III and V in the Graben. Blocks I-III (Ituri) went to South African firms, Block V remained with Soco International and Dominion Petroleum, acting as a consortium under the British label Soco.

2.2.1. The reassigning of blocks I & II

Blocks I and II were assigned to South African firms Caprikat and Foxwhelp, from whom DRC asked for a signature bonus of $6 million°[33].This contract was signed on 5 May 2010 jointly by the Congolese Minister of Hydrocarbons Célestin Mbuyu, Minister of Finances Matata Ponyo and Minister of the Portfolio Jeannine Mabunda. The two firms were represented by Khulubuse Zuma of Caprikat, who is also a nephew of the South African President Jacob Zuma; and for Foxwhelp by Michael Hulley, President Zuma's lawyer. The two had obtained a proxy from the director of both companies, Marc Bonnant[34].

While Tullow contested the legality and the validity of this contract, the representative of Caprikat stated that "The contract should be regarded in the context of an emerging strategic partnership between DRC and South Africa, and it represents an important stage in the setting up of a broader industrial partnership between the two countries in the oil

[29] Interviews with Tullow Oil in Kampala, November 2007

[30] "Congo Wants Petroleum Companies to Help in Oil Search"; Bloomberg, 8 February 2008; see also: "Dossier Explosif: Polémique autour du Graben Albertine", Géopolis Magazine, June 2008, p.9-14. This article reproduces material used by the Congolese MP Jean Bamanisa (today governor of Orientale Province in which the blocks are situated), in his oral questions to Lambert Mende in April 2008

[31] "Acquisition of New Exploration Licence in the DRC", communiqué, 17 March 2008

[32] "SA consortium loses DRC oil concession", The Times (South Africa), 4 April 2009

[33] "Congo Gives Zuma Nephew Lake Albert Tullow Oil Blocks", Bloomberg, 24 June 2010, "Congo strips Tullow of oil block rights", Reuters, 24 June 2010

[34] The contract is published here: http://ericjoyce.co.uk/wp-content/uploads/2011/11/contrat_rdc_caprikat_foxwhelp.pdf

and gas sectors"[35]. The press highlighted the fact that the production sharing agreement was signed before the presidential decree, on 5 May 2010, and the two companies paid a signing bonus of 20 million dollars[36]. Tullow lost the legal battle in November 2010. The Supreme Court of the Eastern Caribbean – Caprikat & Foxwhelp are registered in the British Virgin Islands – refused to renew an interim injunction against the two firms because it did not believe Tullow would win[37].

These contracts were awarded to Caprikat & Foxwhelp despite the fact that the two companies had no known experience in the oil sector, which raised a lot of questions regarding the true beneficiaries and backers of this operation. According to some of the South African media, the two companies are part of the "Impinda Group" of Khulubuse Zuma, the nephew of President Jacob Zuma. They were only registered in March 2010. Their sole director, Marc Bonnant, is a security consultant of Swiss nationality, and their addresses correspond to those of Mvelaphanda Holdings, owned by Tokyo Sexwale, at the time Minister of Construction in South Africa and before that linked to Divine Inspiration and SacOil[38].

According to other analysts, this contract was considered "much worse" for DRC than the previous one. According to research conducted by Platform, a British NGO: "Caprikat and Foxwhelp shall retain 60% of the net revenue for the first 12 million barrels and 55% after that; in the first contract with Divine Inspiration these percentages were respectively 50% and 40%. Subsequently, Caprikat and Foxwhelp shall pay royalties of only 9% for the first 12 million barrels and then 12.5%, whereas Divine would have paid 12.5% from the start. For community development, Caprikat and Foxwhelp will allocate an annual $125,000 per block whereas Divine Inspiration had been asked to pay first of all $250,000, then $300,000.[39]"

As the two companies have no expertise in terms of prospecting, they had to contract to Oil of DRC, founded recently by Dan Gertler, an Israeli mining magnate and presented as a close friend of the Congolese President, Joseph Kabila. In turn, Oil of DRC contracted the services of Ugandan firm Tesla-IMC, for seismic exploration. They undertook to invest $700 million over 18 months. After this period, Oil of DRC will conduct drilling for 18 months. Later, it was announced that seismic exploration in blocks I and II would be carried out by the Italian company Medea.

Right from the start, it was clear that Caprikat & Foxwhelp and also Oil of DR Congo were only fronts to allow speculation in the sale of the acquired rights to the oil majors, because they had neither the technical skills nor the financial capacity to carry out exploration work which requires substantial amounts of capital investment. This was confirmed indirectly by Khulubuse Zuma, the owner of Caprikat & Foxwhelp, who stated that he wanted to merge these companies into "Congo Oil" to be able to attract investors[40].

In Kinshasa in August 2013, after the end of the second phase of exploration, the director of Oil of DR Congo, Giovanni Pedaci, stated that several billion dollars had to be invested.

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[35] Bloomberg, op.cit.
[36] "Le premier baril du pétrole de l'Ituri projeté à l'horizon 2015", Le Phare, 1 September 2011.
[37] "Tullow loses Congo oil injunction – court document", Reuters, 25 November 2010.
[38] "Zuma Inc's DRC oil coup (and the Tokyo factor)", Mail & Guardian, 30 July 2010.
[39] Ibid.
[40] "S Africans stake claims to Congolese oil", Financial Times, 2 August 2010.

He also added "my shareholders are looking for people to share the risks"41. To all appearances, these people have not yet come forward.

2.2.2. The licence for block III

SacOil and partner Divine Inspiration sold a majority stake (60%) in block III to the French oil giant Total in March 2011. After submitting an exploration programme of $30 million, Total's licence was approved by presidential decree, in January 2012[42]. SacOil retained a 12.5% stake, the value of which was estimated at the time by CEO Robin Vele at an amount between $100 and 200 million, double the total worth of the company's capital[43]. A few days later, the Congolese Minister of Hydrocarbons Célestin Mbuyu visited Bunia to announce the agreement with Total on the ground. He expressed the hope that the exploration of blocks I, II and III would allow DRC to increase its budget from $20 to 40 billion"[44].

The agreement signed with Total, successor of the French national company Elf with its history of political involvement in Francafrique, could have a political impact to judge by the diligence with which President Kabila signed the corresponding ordinance. He signed on 27 December 2011, just one week after he was sworn in for his second term as president and one of the very first tasks he accomplished in this new term of office[45]. A French company already has a monopoly on oil production in the Western Congo. The agreement with Total provides it with a first rate positioning in Eastern DR Congo.

Total wanted to drill two exploration wells in the northern part of Block III, therefore outside the limits of Virunga Park[46]. But this exploration work met with hostility from the FRPI (*Forces de Résistance Patriotique d'Ituri*) militia led by war leader "Cobra Matata" in Irumu territory in the southern part of the district of Ituri. A military mutiny, followed by the withdrawal of most of the governmental forces from this zone at the beginning of 2012, allowed the FRPI to establish territorial control in this strategic and sensitive region. Having taken control of a large part of the zone around Gety, including the roads that are access routes to the Total exploration zone, Cobra Matata has since been able to hold to ransom the authorities and Total[47]. The FARDC had a great deal of trouble getting rid of the FRPI.

In 2013, Total announced that it would not be carrying out exploration in the Virunga National Park[48].

2.2.3. The operations around block IV

Block IV is also much coveted. At the end of October and the beginning of November 2011, in the middle of the extremely tense electoral campaign in the Congo, Albatros Oil DRC, a firm described as an American-Canadian joint venture, directed by Congolese expatriate Claude Muntu, presented the results of research to Kinshasa. Following this, he took the cabinet of the Congolese Ministry of Hydrocarbons to Canada and the United

41 "Billionaire Gertler Seeks Partner for Potential Congo Oil Find", Bloomberg News, 18 September 2013.
42 "Total to get to work on Congo block", Upstream Online, 17 January 2012.
43 "SacOil Holdings – Total gets Congo presidential ordinance", Moneyweb, 17 January 2012.
44 "Ituri: Total obtient l'autorisation d'exploiter le pétrole du Lac Albert", Radio Okapi, 24 January 2012.
45 According to Africa Energy Intelligence.
46 "Total veut forer chez les gorilles", Francois Misser, article for die tageszeitung, 2012.
47 "Milizenchef trickst Ölsucher aus", Simone Schlindwein, die tageszeitung, 18 March 2012.
48 Les Echos, "Total exclut toute exploration pétrolière dans le parc national des Virunga au Congo", 17 May 2013.

States to raise money to fund an investment of $700 million for the exploration of Block IV[49]. According to Claude Muntu, the name of his company – a protected sea bird– is proof not only that the environment will be respected and protected, but that his company specialises in deep sea exploration[50].

2.2.4. Block V

Block V, located in the part of Virunga Park where the mountain gorillas live, has given rise to much heated environmental controversy.

In June 2010, block V was assigned by presidential decree to a consortium formed by Dominion Petroleum Congo (46.75%) and Soco International through its Congolese subsidiary Soco Exploration & Production) (38.25%) with the Congolese company Cohydro (15%), who had already signed a production sharing agreement with the government in 2007. Dominion's part went to Ophir, a South African firm, and then to Soco in July 2012, making this British firm Cohydro's sole partner; with this sale, Ophir could finance the oil exploration in Uganda and Tanzania[51°]. Soco is therefore the appointed operator of block V.

2.3. Lake Kivu

2.3.1. Exploration and reserves of Lake Kivu

In 1937, a scientific expedition discovered that Lake Kivu contained exceptionally high concentrations of carbon dioxide and methane in its deep waters[52]. Since then, successive studies have shown the mechanisms behind the formation of this methane, how it is distributed, the risks and possibilities for development.

One of the hypotheses expressed about the formation of the methane is that it is the result of two simultaneous mechanisms: one due to the fermentation of biogenic sediments, the other resulting from the bacterial reduction of magmatic CO_2.

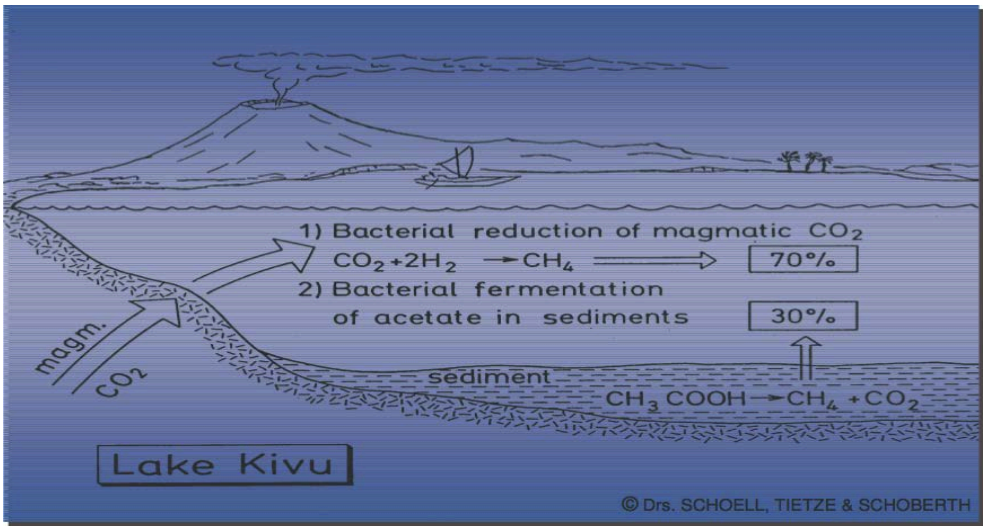

Figure 9: Model of methane formation in Lake Kivu

[49] "Albatros Oil DRC prend pied dans le Graben Albertine", Le Potentiel, 2 November 2011.
[50] "Cinq questions à Claude Muntu Potshika", Le Potentiel, 3 November 2011.
[51] "Soco buys out Ophir's assets", Africa Energy Intelligence, 29 August 2012.
[52] Lahmeyer I and OSAE, 1988.

The methanogenic bacteria directly reduce the carbon dioxide dissolved in proximity and in the sediment. Simultaneously, the methane is formed from organic materials through the fermentation of acetate. It has been estimated that the reduction of carbon dioxide generates 67% of the methane, while fermentation creates 33%[53].

These dissolved gases apparently represent a considerable danger for the local population, but at the same time are a precious source of renewable energy[54]. A study conducted in 2004 showed a considerable increase in the methane concentration compared to the measurements made 30 years previously, due to changes in the nutrient cycle.

For the whole of Lake Kivu, on the basis of a bathymetric survey established in 1998 and gas concentrations measured in 1974/75, the Lake could contain reserves estimated at 55 billion m^3 of methane, 250 billion m^3 of carbon dioxide, 5 billion m^3 of nitrogen, and a multiplicity of traces of other available gases.

The current results indicate that the available volume of methane gas is 39-45 billion m^3 (13%), which is lower than the volume estimated on the basis of the SaarbergInterplan bathymetric survey (see table below).

Table 2: Methane reserves in Lake Kivu

Author	Quantity of CH_4 in billion Nm^3	Quantity of available CH4 in billion Nm^3	Remark
SAARBERG INTERPLAN[55]	58.5	50	Degree of certainty of the figures ± 10%
Dr Klaus TIETZE[56]	55	39-45	
Michel HALBWACHS	54	29.6-31.5	

While the methane reserves in Lake Kivu are significant at sub-regional level, they are not enormous when compared to other regions of the world. They are lower, for example, than the annual exports of Algeria (more than 80 Gm^3), or Egypt (58.9 Gm^3)[57].

[53] Tietze et al., The genesis of methane in lake Kivu (central Africa), Geol. Rundsch 69:452-472.
[54] Lahmeyer I and OSAE, 1988.
[55] Based on BGR measurements (Feb. 1982).
[56] Calculations based on data (TIETZE 1978) on the concentration of gases and bathymetric maps drawn up by CAPART (1960) and LAHMEYER & OSAE (1998) (December 2000).
[57] L'énergie en Afrique à l'horizon 2050,/Energy in Africa in 2050, 2009.

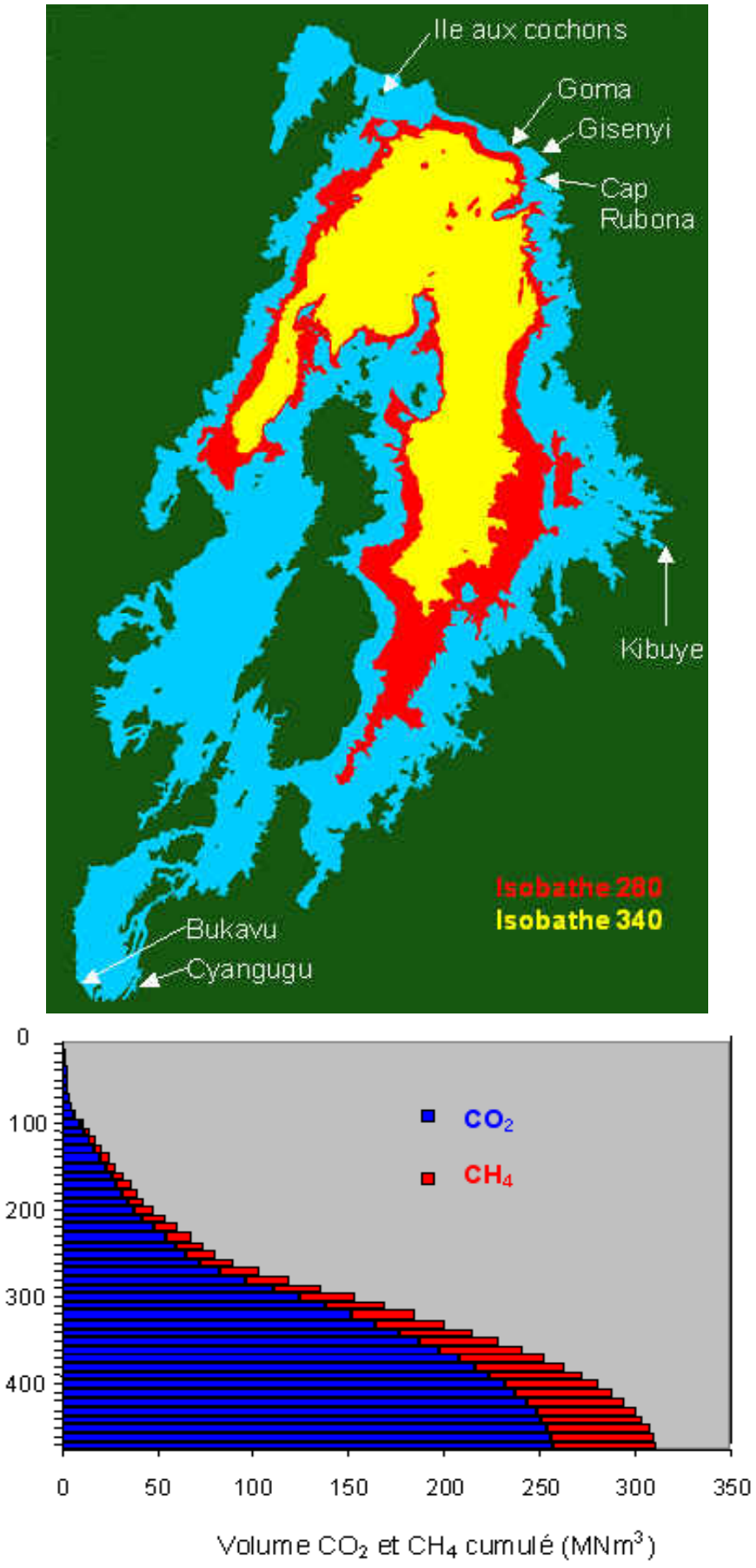

Figure 10: Estimation of the distribution of methane gas in Lake Kivu (Source: Michel Halbwachs[58])

2.3.2. Methane production contracts granted to Rwanda

Following the discovery of gas in Lake Kivu in 1937, only one pilot plant was operational, built in 1963 with an installed capacity of 5000m^3/day of methane gas. This pilot project aimed to test the feasibility of exploiting and commercialising the gas contained in the depths of the Lake. Today, a much more modern platform is operational. It is visible from the city of Gisenyi. Kivuwatt is currently building a platform for the large scale project, with scheduled production of 25MW.

To develop the methane gas, Rwanda signed three concession and electricity purchase contracts with two private enterprises. The first is Contour Global which runs the Kivuwatt project in the district of Karongi; the second is Rwanda Energy Company (REC)/Rwanda Investment Group (RIG), which intends to install a platform from the district of Rubavu.

The Rwandan government, in partnership with the private sector, also initiated the Kibuye Power 1 project. Today, the Kibuye Power 1 facility generates around 2MW for an installed capacity of 5MW.

2.3.2.1. Contour Global/Kivuwatt

Kivuwatt is a subsidiary of ContourGlobal by virtue of a concession agreement signed with the Rwandan government in 2009. The KivuWatt power project will develop the methane gas resources in Lake Kivu while at the same time reducing the risk of a potentially serious accident for the local population. KivuWatt will extract methane gas from the waters of Lake Kivu and process the methane to produce electricity. The methane gas produced will initially be used to fuel a set of three generators, "*Installations d'Extraction de Gaz*" (IEG), which will produce approximately 25 MW electricity for the Rwandan network in phase 1. Phase 2 will produce an additional 75 MW electricity, using another nine IEGs to expand KivuWatt to a little over 100 MW.

The project facilities will comprise: (i) a gas extraction and processing plant on a floating platform, or barge, in the deep waters of the Lake – there will be one platform for 25 MW of energy capacity, (ii) an immersed floating pipeline for the transport of the fuel gas to land, (iii) a gas reception plant, and (iv) a temporary navy landing site (*Site d'Atterrissage de la Marine* (SAM)), where the IEGs will be assembled. The SAM will be run by KivuWatt during the building phase and will subsequently be handed back to the government of Rwanda.

2.3.2.2. Rwanda Energy Company (REC)

REC, a subsidiary of Rwanda Investment Group (RIG), is the main local gas operator in Rwanda. It was founded in February 2007. REC obtained a gas concession from the Rwandan government to increase the production of electricity by 5MW, up to 50MW, with the option of achieving up to 100 MW.

2.3.2.3. Kibuye Power 1 (KP1)

KP1 is the only company operational today in the exploitation of methane in Lake Kivu. The Rwandan government partnered with Dane Associates to build and run a methane gas extraction and production plant with a production capacity of 5MW. The High Court banned Dane Associates from being a part of KP1, which has remained a company

managed by the Rwandan government. Today the Company is being sold to other private investors.

Details of the concession contracts and electrical power purchase agreements are not known to the public given that they are subject to a confidentiality clause.

2.3.3. The search for oil in Lake Kivu basin in Rwanda

The search already conducted leads to the conclusion that the eastern basin of Lake Kivu presents a depth of basement of 3500 m with a maximum of 3,000 m of consolidated sediment dating from the Jurassic period (203-135 Ma). There is a possibility of accumulated hydrocarbons, in particular in the deep consolidated sediment in the east and in the North Kivu basins as described in various studies.

A 2D seismic campaign is necessary to confirm the deep sediment sequences and refine the interpreted structures. In addition, a gravimetric survey in the region of the north-western basin would be useful to complete the interpretation of the structure and the thickness of the sediment.

A genetic characterisation of the gas in Lake Kivu, on the Rwandan side, with 13 gas samples, has shown the presence of ethane and propane. Even at very low concentrations, this suggests a possible contribution from petroleum derivative gas.

In February and March 2012, Syracuse University carried out a first seismic reflection survey, the main conclusion of which is that there is a large transversal or mid-basin fold in the central part of the zone studied, which was probably produced by the differential subsidence on the fault segments on the border. This could constitute a major trapping zone, if there is a hydrocarbon system present in the basin.

Canadian firm Vangold, today called Vanoil, spent more than six years exploring the region of Lake Kivu. The exploration has produced promising results. The company has identified what could be a large reserve of gas. Vanoil hopes that it is part of a similar system to the one discovered in Uganda by Heritage Oil PLC and Tullow Oil PLC.

Rwanda does not have a legal framework that would allow Vanoil to sign a production sharing agreement with the government. Consequently, the said company worked within a framework called a “Technical Evaluation Agreement” while trying to negotiate a good contract.

According to Vanoil, the process seemed to be working up until the summer of 2013, when the government stopped the contractual negotiations and ended Vanoil's rights to develop the basin[59]. However, Vanoil affirms that it has never received an explanation concerning the ending of the negotiations. The company has initiated “conciliation” discussions with the Rwandan government in the hope of settling the dispute. In the event of failure, formal arbitrage will be the probable solution.

2.3.4. The search for oil and gas in the Congolese Kivu basin

The Congolese government has divided the Congolese part of Lake Kivu into six blocks for which it is seeking partners to carry out oil and gas prospecting[60]. Until now everything shows that no contracts have yet been signed on Lake Kivu, on the DRC side. Various

[59] www.business.financialpost.com
[60] Congo to open oil blocks on Lakes Tanganyika, Kivu, Reuters, 27 March 2010

sources indicate that some players have been or are still in the race to obtain contracts. These are, among others, the following companies:

2.3.4.1. Kivu Lake Energy Corporation, acronym "KLEC"

Apparently a subsidiary of the Canadian Gee-Ten Ventures Inc. based in Rwanda[61]. After a meeting in May 2013 with the Vice-governor of North Kivu, the Technical Director of KLEC stated that the company was ready to invest US$ 150,000,000 for the launch of the first phase of methane production with a target of 25MW. This project was to be carried out with a firm called TECHNOBUILD. He added that he had been granted exclusive rights over the exploitation of the methane dissolved in the Congolese waters of Lake Kivu from the Ministry of Hydrocarbons, but this exclusivity has not been confirmed officially. According to this technical director, the company has proven expertise on an international level with operations in the USA, China, South Africa and Botswana, where another project is underway in the same CH_4 sector.

2.3.4.2. Bantu Investment Holding (B.I.H.)

The ownership of B.I.H is not clear. Mr Claude Ibalanky, a Congolese former executive at IBM and Hewlett Packard, was the CEO until December 2012[62].

2.3.4.3. Société des Gaz et des Hydrocarbures du Kivu, "S.G.H.K."

A company owned by Goma-based businessman Jean Pierre Muongo wa Shabahanga who, in 2006, signed a memorandum of understanding with the government, relative to the extraction of methane gas. SGHK is a partner of Ivan Twagirishema's Rwanda Energy Company (R.E.C) in a production project of 20 MW to be sold to the SNEL, to supply the capital of North Kivu with electricity.

2.3.4.4. Other companies competing for methane production

In addition to these three companies, there are three others who are or have been competing for the development of methane in Lake Kivu. These are: Cathic Power, a Chinese company; Vitava, from Slovenia; and Methane Hydrates Ltd belonging to South African chemical engineer Philip Morkel.

2.4. Lake Tanganyika

Lake Tanganyika has been the target of much hydrocarbon exploration, launched by several companies, universities and organisations. All the more so since in certain parts of the basin or in the lake itself oil seepage is visible and in the Congolese part occurrences are impressive in magnitude, some being the largest oil seepages in the world. On the Tanzanian side, research is more advanced and indicates the existence of significant oil reserves. Burundi has also started exploration and has already granted exploration licences; DRC and Zambia are somewhat behind.

2.4.1. The search for oil in Lake Tanganyika basin and licences granted

The search for hydrocarbons in Burundi began in 1959-1960 with gravimetric prospecting aimed at evaluating the thickness of the sediment in the basin of the Rusizi

[61] The "founder" of KLEC is Mr Clinton Wood from Johannesbourg, South Africa. (http//:za.linkedin.com/in/clintonwood.). The technical director was Dr John Herselman (AEI 652).
[62] http://za.linkedin.com/pub/claude-ben-baruch-ibalanky/69/622/a13.

plain, both at the surface and in depth. Following this work, the maximuml thickness of the sediment was estimated at 4000 m. In addition, three major NS faults were detected.

In 1968, geophysical reconnaissance was carried out in the Rusizi basin by the Lerici Foundation using the seismic reflection method, within the framework of an FED project. Three major reflectors were identified. On this occasion, it was observed that the maximum subsidence could correspond to the central area of the plain.

In 1982, an aerial magnetic survey was financed by the UNDP and carried out in Rusizi plain and the Northern part of Lake Tanganyika. Data acquisition and compilation were done by Kenting Earth Ltd under the supervision of Paterson Grant & Wattso Ltd (Canada). The aim of this survey was to show the general layout of the base and determine the thickness of the sediment of the basins of Lake Tanganyika and Rusizi plain as well as the expanse of sediment rocks in the two Onshore and Offshore zones.

The results were drawn as colour maps showing the curves of the total magnetic field. The values of the total magnetic field measured were also put into the form of grids. This survey outlined the base, determined the geological orientations, the limits of the different structures and the positions of the faults (near the surface). The most significant local anomaly is located at point 3° 15' South and 20° 15 east and corresponds to the place where the lake is shallow.

Two sediment depressions separated by a vault (South basin and North basin) have been identified with a maximum depth of 4,000 m, thereby confirming the results of the work undertaken in 1959-1960.

The Graben is slightly asymmetrical, with greater depth on the Congolese side. Due to the significant variances in the values of magnetic susceptibility obtained, these results were deemed inconclusive.

In 1983, Duke University carried out seismic prospecting in Lake Tanganyika financed by the oil company AMOCO as part of the Probe project. The purpose of this prospecting was to extract the sediment thickness from the lake and identify the principal reflectors in the different sediment basins. In 1985, AMOCO also carried out seismic, gravity and magnetic surveys and other geological surface works in Rusizi plain.

The interpretation of the seismic data matching that of the gravimetric and magnetic data shows that the Rusizi plain is an asymmetrical half-Graben with an S-W incline. The thickness of the sediment increases towards the interior of the lake to its maximum in the Rusizi delta. The seismic sections obtained have shown the existence of four large reflectors. The magnetic results have shown that there are no magnetic bodies in the sediments.

The structure of the basin is dominated by normal N-N-E faults. Two anticlinal structures have been identified: Rusizi and Buringa.

A hypothesis has been put forward on the seal, reservoir, and source rocks: the source rocks could be present in the progressive sequence and in the lake sediments.

In the deep part towards the South-West of the basin, some indications confirm the existence of this category of rock. Organic carbon (5%) is produced locally and oil seepage was observed in the lake by a mission from Duke University during the seismic

data survey in 1984. These elements would confirm that the genesis of hydrocarbons probably took place in the deepest part of the basin.

Under this assumption, the reservoir rocks are in the sediment section above the Precambrian basement, although not confirmed lithologically, the progressive sequence towards the west and the lake sediments contain fluvial, alluvial and marine deposits in depth[63].

In the 1980s, AMOCO PRODUCTION COMPANY, interested in exploring for hydrocarbons in Lake Tanganyika basin, began a series of searches on Lake Tanganyika from 1982 to 1989. On this occasion, it carried out a multidisciplinary scientific study consisting essentially in seismic coverage and a sediment study on the lake, conducted within the framework of the PROBE and GEORIFT projects. Taking account of the shared nature of the resources, AMOCO negotiated and signed hydrocarbon exploration/production agreements with three of the countries that share Lake Tanganyika: Burundi, Tanzania and Zaire (DRC).

In 1987, AMOCO carried out exploratory drilling on the Rusizi plain. Two wells were situated and drilled in the BURINGA -1 and RUSIZI 1 sectors but neither produced any oil. Hypotheses were formulated to explain this result, which was inconclusive but did not exclude the presence of hydrocarbons in the zone, which justified further exploratory searches.

A taxes & royalties agreement was signed with Burundi on 31 December 1984 for a concession of 6,069km^2. Amoco signed a Production Sharing Agreement with Tanzania on 24 December 1986 for a concession covering a surface area of 17,883km^2, while the Zairian part covering a surface area of 32,368 km^2 was acquired on 5 December 1987 under the taxes and royalties conditions.

Despite this clear understanding of the stakes, AMOCO only carried out significant work in the onshore part of the Burundi concession, where a seismic survey was conducted and 2 shallow wells drilled. In the Congolese part, soil and tar samples were taken and oil seepages collected and analysed. The Tanzanian concession was abandoned around January 1988. AMOCO had abandoned all the concessions by the end of 1989[64].

Recently, when collecting and reinterpreting data, Surestream Petroleum Ltd decided that the model of Lake Tanganyika basin is similar to that of Lake Albert basin, and so the chances were high of finding available hydrocarbons in the basin. An additional seismic survey was scheduled.

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[63] This section draws on the document by Riragonya Damien, Mining Engineer who was Managing Director of Geology and Mines of Burundi. The title is: Note sur la recherche pétrolière au Burundi/Memo on Oil research in Burundi, February 2012.

[64] Songore Tharcisse, *Les gisements pétroliers*, in "Pollution Control and Other Measures to Protect Biodiversity in Lake Tanganyika", Analyse Diagnostique Nationale" – Burundi, 07 - 11 September 1998, Bujumbura

2.4.2. Licences granted

While the first explorations date from the 1960s, apart from the contracts signed in the 1980s, with AMOCO, other permit applications were only submitted in 2006. They led to the signing of the first agreements in 2008[65].

Blocks B and D situated in Lake Tanganyika were awarded to Surestream Petroleum, in 2008. Blocks A and C were awarded respectively to A-Z Petroleum Products Limited[66], and MINERGY R.E. Limited[67], on 30 June 2011.

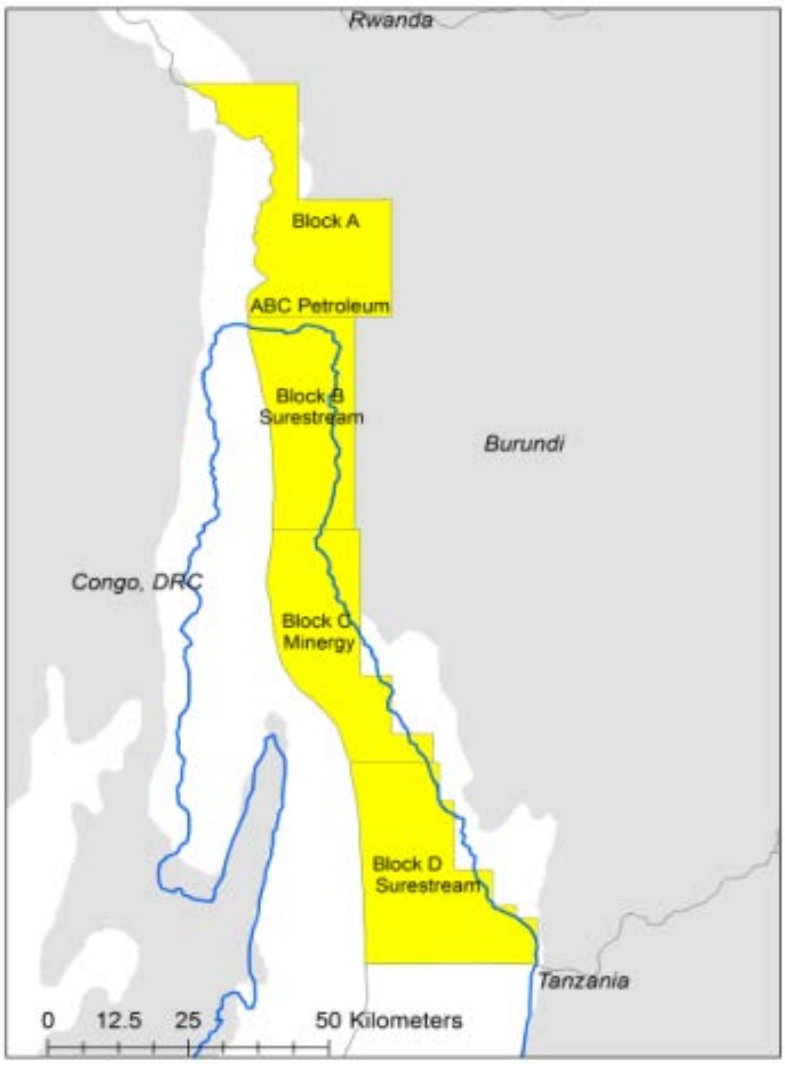

Figure 11: Boundaries of the oil blocks in Lake Tanganyika- on the Burundi side

While blocks B and D were granted to Surestream in 2008, the other two blocks were only assigned three years later. The reason for this time difference is not known.

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[65]See French article about Burundi being about to produce oil, http://www.rnw.nl/afrique/article/le-burundi-sur-le-point-de-produire-du-pétrole

[66]This company is part of the Chicason Group belonging to Nigerian leader Alexander Chika Okafor. He also signed a contract for the prospection of block L1 A in Tanzania, http://www.africa-energy.com/burundi?type=articles

[67] Communiqué from the Council of Ministers, signed by Philippe Nzobonariba, General Secretary and Government Spokesman, 12 May 2012.

According to a report by International Crisis Group (ICG), the procedure for awarding the concessions was not transparent: while licences are granted by presidential decree as proposed by the relevant Minister as in many countries, applications for exploration and production are managed by a select committee of the presidency before being presented in the Council of Ministers[68].

The consequence of the lack of transparency in the granting of contracts is a lack of competition, favouring the selection of companies who do not necessarily have the requisite investment clout - for, given the depth of Lake Tanganyika, exploration requires considerable technical and financial means. The extreme fragmentation of the area to be explored, which reduces the surface area of the blocks to approximately 700 km^2 each, can be interpreted as speculative in nature, to multiply the number of contracts and bonuses. Officially, this approach was justified by the Burundi Minister of Energy and mines "to meet demand and gather the maximum amount of investments that these sectors have been divided into 4 blocks called A, B, C and D; A being the Rusizi basin and the other blocks in Lake Tanganyika, Burundi side, successively from the North to the South with a surface area of approximately 700 km^2 for each block[69]".

The narrowness of the blocks discourages the major companies from investing, given the subsequent difficulties in amortizing the funds committed, even if the search is fruitful. According to information gathered, certain companies contacted by the authorities had demanded the subdivision of the whole zone into no more than two blocks[70]. On the contrary, this aspect encourages speculation companies, who lack the requisite means, to position themselves as intermediaries, with a view to selling the rights acquired to richer companies.

The "speculation bubble" which seems to take hold of the companies who hold exploration licences just after they obtain them seems to corroborate these hypotheses.

When Minergy R.E. Ltd. obtained a licence for the exploration of block C in Lake Tanganyika, a company called Petroleum bought an 87.5% stake in it. Then Polo Ressources acquired shares in Signet worth §7 million, in November 2011, increasing its stake to 15.7%, with the option of buying other shares worth $10 million at the same share price[71]. Signet has announced it will use the funds obtained in this way to carry out seismic prospecting in Tanzania and Burundi.

In this framework, Signet Petroleum has announced that it is planning to reinterpret the existing seismic data in association with Surestream. The two companies have created a jointventure and set up a partnership to carry out a seismic survey together.

In March 2012, Signet signed a 10-year agreement with the Democratic Republic of Congo consisting in seismic data acquisition on Lake Tanganyika. 2D reflection seismic

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[68] ICG, Burundi: La crise de corruption No. 185, 21 March 2012.

[69] Spoken by Côme Manirakiza, Burundi's Minister for Energy and Mines, http://www.rnw.nl/afrique/article/le-burundi-sur-le-point-de-produire-du-pétrole

[70] These areas are very small if we compare them to the dimensions of the Tanzanian blocks on Lake Tanganyika. Tanzania divided the zone to be searched in Lake Tanganyika into two blocks: the North block, granted to TOTAL, with a surface area of 11,183 km2 and the South block, given to Beach Energy, with a surface area of approximately 10,000 km^2.

[71] See the website of Polo ressources: http://www.poloresources.com/Investments_Signet.htm

data will be acquired and interpreted on a length of 10,100 km and a data bank set up. After interpretation, the company will trace the boundaries of the blocks and assist the DRC government throughout the process of publication of the offer until licences are granted[72].

Lastly, to complete this analysis, it should be noted that Surestream has carried out the same operation on the western Congolese side. In October 2007, it launched a bid for the sale of 40% of its share in the rights obtained in the Ndunda block in the Democratic Republic of Congo,the stated goal being to have a strategic partner to take part in the prospecting phase[73]. These operations, despite their more or less normal strategic nature, corroborate the hypothesis that this firm lacks the resources to support the efforts of developing an oil block. We should also note that on 17 April 2008, Surestream's bid for the South Tanzanian block of Lake Tanganyika was not successful, because the firm could not evidence past or current experience in oil development. However, it was noted that the company was carrying out exploration of three blocks in DRC: Yema, Matamba-Makanzi and Ndunda.

2.5. History of oil exploration in the Tanzanian and Congolese basins of Lake Tanganyika

2.5.1. In Tanzania

The Tanzanian basin of Lake Tanganyika has been divided into two blocks, North and South, each covering a surface area of approximately 10.000 km^2. In a first phase, the licence for the South block was awarded to Australian firm Beach Energy. Three years later, the North block was granted to a subsidiary of Total.

In 2008, the South block of Lake Tanganyika was awarded to Beach Energy. A production sharing agreement was signed in June 2010[74]. In June 2012, the company undertook a seismic reflection survey the results of which were announced as conforming to expectations. According to the company's spokesman, “The results are fantastic and similar to what we expected, with a potential of 200 million barrels. But additional exploration was necessary to identify the most interesting zones"[75].

For the northern block, on Tuesday, 16 August 2011 Tanzania Petroleum Development Corp (TPDC) had announced the attribution of oil and gas exploration rights in the North basin of Lake Tanganyika to French company Total E&P Activités Pétrolières. Its representative indicated that new negotiations were in progress on the details of a production sharing agreement.

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[72] http://legacy.firstenergy.com/UserFiles/File/Signet%20Petroleum%20Ltd%20-%20Flyer.pdf. See also the full document entitled: Proposed Investment in Signet Petroleum Limited, Notice of meeting of shareholders, Polo Ressources Ltd.

[73] The Ndunda block has a surface area of 932 km2. It is contiguous to the oil field Nboundi of Congo Brazzaville and is located in the strip between the estuary of the Congo river, Angola to the South and the strip of Cabinda to the North. The sale of these parts was announced by the company Nanes Delorme Capital Management LLC, acting on the instructions of Surestream. For more details, see http://www.businesswire.com/news/home/20071029006178/en/Nanes-Delorme-Capital-Advises-Surestream-Petroleum-Farm.

[74] See website of Beach Energy: http://www.beachenergy.com.au/irm/content/tanzania.aspx?RID=265

[75] Spoken by Chris Jamieson, spokesman for Beach Energy, on the announcement of the first results of the prospecting in the South block of Lake Tanganyika, http: www.voanews.com/content/survey_shows_lake-tanganyika_oil_potential/1497, 01/10/2012

According to a press release from TPDC, the choice of this company was justified by the fact that it has shown itself capable of respecting the minimum work programme and the possession of greater technical and financial means than the other candidates for conducting the exploration operations in the North zone of Lake Tanganyika[76]". This attribution was done following a selection after a call for tenders which received bids from eight other companies – Australian, Canadian, British and American.

However, on 25 October 2013, a new call for tenders was launched concerning 7 offshore blocks in the Indian ocean and on the North block of Lake Tanganyika. The latter was therefore relaunched. The call for tenders will be closed on 15 May 2014.

2.5.2. In DR Congo

In the Congolese basin of Lake Tanganyika, things are not clear. What is sure is that the process is late compared to the other countries around the lake. According to certain sources, the boundaries of 10 blocks have already been traced and materialised on maps.

According to other sources, DR Congo will be using the services of Signet Petrolem which will provide technical assistance to draw the boundaries of the blocks. In March 2012, Signet announced the signing of a 10-year agreement with the Democratic Republic of Congo consisting in the acquisition of seismic data on Lake Tanganyika. 2D reflection seismic data will be acquired and interpreted on a length of 10,100 km and a data bank set up. After interpretation, the company will trace the boundaries of the blocks and assist the government of DRC throughout the process of publication of the offer until licences are granted[77].

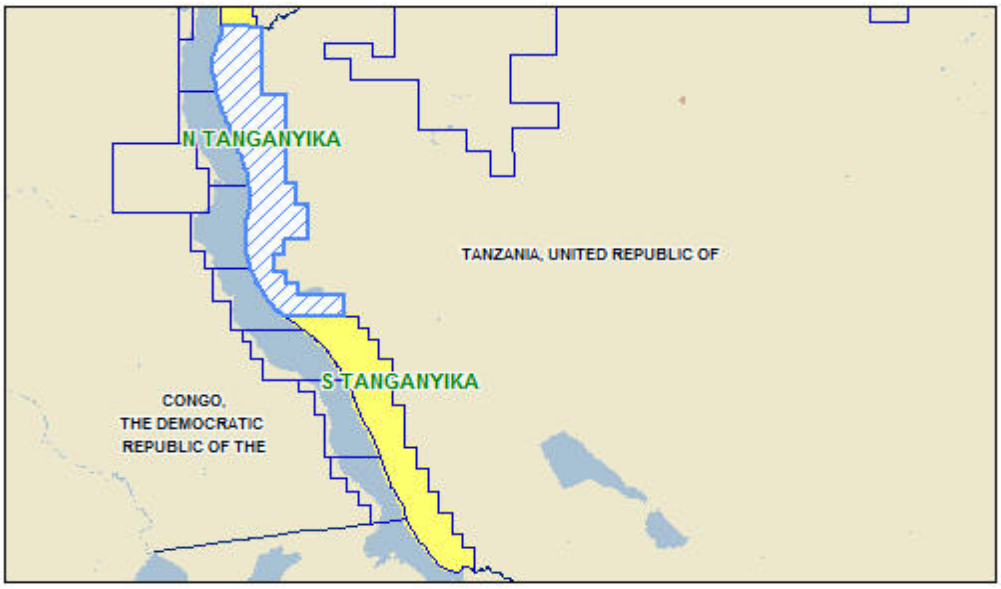

Figure 12: Tanzanian and Congolese Oil Blocks in Lake Tanganyika

[76] Total gains the rights to the north block in Lake Tanganyika basin, http://bourse.lesechos.fr/infos-conseils-boursiers/infos-conseils-valeurs/infos/total-obtient-les-droits-bloc-nord-du-bassin-du-lac-tanganika-365684.php

[77] http://legacy.firstenergy.com/UserFiles/File/Signet%20Petroleum%20Ltd%20-%20Flyer.pdf. See also the full document entitled: Proposed Investment in Signet Petroleum Limited, Notice of meeeting of shareholders, Polo Ressources Ltd.

Chapter 3. National Hydrocarbon Policies and Legislation

3.1 Introduction

Oil and gas exploration and production require enormous amounts of financial resources, especially in exploration where companies take risks without knowing whether there will be a return on their investment. Already during this phase, there are many issues and challenges, related in particular to transparency and competition for the attribution of licences, the bonuses paid and how they are managed, the corporate citizenship of the enterprises, and environmental issues. In the event that commercially profitable hydrocarbons are discovered, the management and sharing of the resources generated constitute an essential question. For these resources should not only allow the company to make profits, they should also allow the State and especially its citizens to take advantage of oil revenue for equitable and sustainable development.

The commitment of the companies to such high risk, long-term investments requires the existence of a consistent and reassuring legal framework. From the point of view of the companies, the development of a successful oil industry is based on legal prerequisites which are not necessarily in place in most of the countries of the region. A legal framework that guarantees long term stability for investors is necessary**.** For oil exploration and production require considerable upstream investments which are only amortised over the long term. In Uganda alone, investments of approximately US$ 10 billion have been scheduled before the first drop of oil arrives. This amount will be used for the development of the different phases from exploration to production, refining storage and transport, but also other, related aspects such as waste management and others.

The legal frameworks must be reassuring for all the stakeholders and founded on some guiding principles, in particular a clear, solid justice system. They must specify the rules of the game, for example concerning contracts, tax regimes, the sharing of revenue between companies and governments and the regulatory bodies. These rules must be accepted by all, predictable, stable and effective. For more details on the types of contracts in the oil sector[78], see the contents of the box below.

[78] Angelier, Jean Pierre., L'évolution des relations contractuelles dans le domaine pétrolier, Liaison énergie francophone, 80, 2008, pp.23-26 for the contents of the box.

3.1.1. A framework that allows stable, committed investors to emerge

Oil policies and legislation should also make it possible to filter and retain the serious investors ready to commit over the long term and capable of meeting their commitments. In this domain, we see companies appearing which do not have the requisite capabilities and who start speculating once the existence of the oil resources has been proven. These speculations lead to poor management of the resource and to corruption. To prevent this, it is necessary to implement a transparent system that is open to competition.

3.1.2. Participatory, transparent systems

Another important aspect concerns the redistribution of resources and preventive conflict management around the distribution of resources. This dimension is crucial and should be taken into consideration. In this respect, participatory, transparent systems are necessary to allow the communities concerned to take part in decision making and benefit from the spin-off from production. To ensure this, all information relative to oil contracts and financial flows should be made public and a broad consensus of the stakeholders is necessary already at the stage when policies are being drawn up.

3.1.3. Responsible, democratic nations.

Without democratic and participatory governance in which no community feels excluded from the management of power and resources, the oil business could generate or exacerbate internal conflicts instead of helping to resolve them. The possibility of denouncing and sanctioning abuses without fear of reprisals should not only be written into the law, it should also be ascertained in practice.

Among the four countries concerned, Uganda is the most advanced of all in terms of oil policies and legislation. The process at work has even given rise to a public debate worthy of interest. This will be discussed further on. Burundi has an oil and mining code that dates from 1976; the part relative to mines was amended in 2013, leaving the oil legislation unchanged. To date, Rwanda has neither a policy nor legislation on hydrocarbons, but a bill is currently being drafted. For its part, DRC is the only country in the region that already produces oil. It has not devised a policy in terms of hydrocarbons, but there is legislation. It is currently being amended. Its experiences as a producing country should therefore serve as lessons for the others. In this chapter, the oil and gas policies and legislation in the four countries will be examined, and, where relevant, the best practices will be highlighted, as will the worst practices, to be avoided at all costs.

3.2. Ugandan policies and legislation

Article 244 of the Ugandan Constitution stipulates that Parliament will draft laws regulating the exploitation of minerals, the sharing of royalties, the payment conditions of taxes following the exploitation of minerals and the conditions for restoring abandoned land. It stipulates that the minerals will be exploited taking account of the interests of the individual land owners, local governments and the central government. The provisions of this article constitute the source of all the oil legislation of Uganda.

The discussions around the legislation on hydrocarbons have been long and complex but the exploration activities did not wait for the laws to be enacted. It was only in 2008 that a “National Oil and Gas Policy" was adopted by the government, whereas exploration activities had begun ten years previously. Four years later, in 2012, the Ugandan

parliament voted for the Petroleum Exploration, Production and Development Act and the Petroleum Refining, Gas Processing and Conversion, Transportation and Storage Act. The two laws were assented to by the President in 2013.

3.2.1. Ugandan oil and gas policy

The discovery of oil in Uganda created the need for legislation to organise the sector. The National Oil and Gas Policy was drawn up following a vast consultation process which involved the examination and comparison of the oil policies of numerous oil producing countries. This debate involved discussions within the different state institutions, the local authorities and cultural institutions, particularly in the zones with an oil production potential, as well as civil society and the academic sphere.

The principal questions posed related to institutional development; the quantity of the reserves; management of the revenue from the oil and gas; the impact of oil and gas activities on the environment; the contribution of oil and gas resources to power production; the promotion of investment; national participation; and the preoccupations and expectations of the public.

The policies and laws drafted revolve around a few guiding principles. These are based on the necessity of promoting the rational use of these limited resources in order to create more sustainable revenue for the country through efficient, transparent, accountable management. Furthermore, competitiveness and productivity must be encouraged, along with a spirit of cooperation. The newness of the sector means that it is necessary to factor in institutional capacity building. Lastly, there is a crucial and indispensable aspect regarding the protection of the environment and biodiversity.

The global objective expressed in the Ugandan oil and gas policy aims at using the oil and gas resources in such a way as to contribute to the swift attenuation of poverty and to create sustainable investments for society. To do so, the following specific objectives were formulated:

- Ensure efficacy in the granting of licences for the zones with a high potential;
- Establish and effectively manage the potential oil and gas resources;
- Produce oil and gas efficiently;
- Promote the parsimonious use of the national oil and gas reserves;
- Initiate the development of storage and transport solutions to develop the country's oil and gas;
- Ensure proper revenue collection to create sustainable investments for the whole nation;
- Guarantee optimal national participation in the oil and gas business;
- Support the sustainable development of national skills and expertise;
- Make sure the oil and gas activities are conducted in a way that preserves the environment and biodiversity;
- Ensure mutually beneficial relations between all the stakeholders for the harmonious development of the oil and gas sector.

The policy for managing oil and gas revenue has also been implemented. It revolves around the three main lines detailed below.

Expenditure of revenue and dividends in favour of the local authorities

The national priorities for spending the oil and gas revenue in the country have been specified. This allows for the retention of part of the oil revenue and tax collected, up to 7% of oil royalties to be held back and shared among the local authorities located in the oil and gas production zones.

Sustainability of the resources and constitution of funds for future generations

At the macro-economic level, a special fund shall be set up with the Bank of Uganda, with the aim of funding the national budget and savings for future generations from oil revenue. This is intended to prevent doping the economy in the short term and then experiencing a depression when the oil runs out.

The oil and gas sector has the potential to compromise the government's goal of increasing the revenue from non-oil products, from agriculture, for example, and so the government should continue to focus its efforts on increasing income from non-oil products, given that oil is a limited resource and its revenue is volatile.

The government shall continue to place emphasis on investments in infrastructure such as transport, energy and ICT as growth engines. These priority infrastructure investments will require substantial funding, to which the oil and gas revenue will contribute. However, these investments will not be wholly funded by such resources and, consequently, the government will continue to seek subsidies and borrow in compliance with the national debt strategy. No debts shall be secured on the basis of future oil and gas revenue.

Reduction of the impact of price volatility

Oil and the gas revenue is subject to the volatility of both volumes and prices. It is therefore indispensable to have a budget mechanism to manage the volatility of oil and gas revenue to mitigate the related financial risks. Furthermore, as oil and gas revenue has the potential to inhibit government initiatives to promote non-oil revenue, special efforts need to be invested in this direction. The mechanism fixes the level of oil and gas revenue to be integrated annually as part of the global budget, to limit the impact on the other sectors of the economy.

To ensure transparency, all oil and gas revenue must be collected, managed and used subject to strict control pursuant to the Constitution, the law on national audit and other relevant public finance legislation.

3.2.2. Ugandan oil and gas legislation

Ugandan legislation on hydrocarbons comprises two separate laws – one related to "**upstream**" activities – exploration and production and another governing "**downstream**" activities – exploitation.

3.2.2.1. Petroleum Exploration, Production and Development Act 2013

The purpose of this law is to create an environment propitious to the effective and efficient management of Uganda's oil resources and organise the implementation of a legal framework and efficient institutional structures to ensure that the exploration, development and production of Uganda's oil resources are carried out in a sustainable

manner, guaranteeing optimal benefits for all Ugandans of present and future generations.

By virtue of these principles, the act creates the Petroleum Authority of Uganda. This authority will be a legal entity headed by an executive director, appointed by the appropriate Minister. Its principal mission will be to monitor and regulate the exploration, development and production of oil in Uganda. This law also reinforces the environmental legislation, particularly regarding responsibilities and sanctions. It is under this regime that licences are granted to the prospection companies for the exploration and production of hydrocarbons.

Article 32 of this law stipulates that “Subject to this law and to the 2005 law on access to information, a person who is a member of the board or a member of the personnel of the Authority cannot divulge information obtained as part of their job". A person who contravenes this provision commits an infringement liable to a fine that may not exceed two million Ugandan shillings[79], a prison sentence of up to four years or both.

The law also allows for the setting up of a National Oil Company in charge of managing all the commercial aspects of the oil business and the State's participation in oil agreements.

3.2.2.2. Petroleum Refining, Gas Processing and Conversion, Transportation and Storage Act 2013

This law of 2013 aims to operationalize the hydrocarbons policy. This legal framework, in conformity with the guiding principles announced in the oil policy, governs oil refining, gas conversion, oil and gas pipelines and storage facilities. It aims to promote investment in these different sectors. It rules on the regulation, planning, preparation, granting of licences, installation and maintenance of the facilities for the abovementioned activities. It enacts legislation on questions of security for these different activities and equitable access to the facilities. Lastly, this law deals with important questions such as public security, the protection of the environment and the participation of the State and the citizens in all these operations.

The law also allows for sanctions in the event of the infringement of environmental legislation.

3.3. Public debate around oil and gas legislation

National policy and the various laws on hydrocarbons have been amply commented and criticised at national and international levels. Certain salient points that recur in the debate are presented here. This public debate has witnessed a strong involvement of national and international organisations which have offered an appropriate framework for expression to the Ugandan experts. The principal criticisms have formed around the lack of independence of the regulatory authority, the extent of the supervising Minister's powers, the inadequacy of environmental standards and a series of important questions not dealt with by the legislation. These questions in debate are briefly broached below.

[79] In English this is “One hundred currency points”. One currency point is equivalent to 20,000 uganda shillings. See: http://www.bou.or.ug/bou/media/from_the_bank/Minimum_Capital_Requirements_FIs_Supervised_by_BoU.html

3.3.1. Extremely limited independence of the regulatory authority

The Ugandan Oil and Gas Authority is supposed to be independent but remains subject to the directives of the Minister of Hydrocarbons, whose powers are not circumscribed in a specific way. According to Article 14 (1) of the law of 2013, "The Minister can give written directives to the Authority on the policies to be observed and implemented and the Authority shall conform to these directives". According to Article 15, "the Authority shall be independent in the performance of its functions and the exercise of its powers".

3.3.2. The exorbitant extent of the Oil Minister's powers

The Minister appoints the director of the regulatory Authority. The latter reports to him. But the decisions of the Minister, including oil contracts, are not subject to parliamentary approval. The regime of these contracts is very open and does not specify whether they are production sharing agreements or oil concessions. Even in this case, the Minister alone decides, on a case-by-case basis. Generally, it appears that many details that should be made explicit in a set of Oil Regulations are left aside and implicitly conferred on the discretionary power of the Minister.

The presidential personalisation of oil management in many African countries, and vis-à-vis the Ugandan experience, suggests that this super Minister, to whom enormous powers of management and decision have been recognised, will certainly be in the confidence of the President, which gives him control over the oil.

3.3.3. Political participation is undermined, national participation is vague

Apart from the Oil Minister, the laws do not give powers to parliament, the decentralised entities, the public anti-corruption organisations, environmental policy bodies, the traditional kingdoms or civil society organisations. This contradicts the national hydrocarbons policy[80].

National participation is also shrouded in vagueness, for neither the competencies nor the exact structure of the national public hydrocarbons company are defined. There is no minimum threshold for the national participation in the oil business, and there is no distinction between "national" participation (Republic of Uganda) and "local" participation (the oil region).

3.3.4. Insufficient transparency

A few aspects bear witness to a less than ideal level of transparency. For example, the call for tenders procedure is instituted but can be suspended for reasons of national interest, leaving a margin for discretionary decisions. This goes hand in hand with the restriction of the right to information in this sector. The Minister can in fact give the public information, but he is not obliged to do so, and is under no obligation to publish the contracts[81]. In this framework, many organisations have advocated the application of the

[80] Shem Byakagaba, "Review of Petroleum Bills 2012", Public Dialogue at Uganda Museum, 24 May 2012, http://www.natureuganda.org/downloads/presentations/Public%20Dialogue%20on%20petroleum%20Bills.pdf

[81] Global Witness, "Uganda's petroleum legislation: Safeguarding the sector", 28 February 2012, http://www.globalwitness.org/sites/default/files/library/Ugandas%20petroleum%20legislation%20-%20Safeguarding%20the%20sector.pdf

international transparency standards of EITI[82] and PWYP[83], leading to the legal obligation to publish all the contracts[84].

3.3.5. Inadequate environmental standards

The oil operators are obliged to conform to Ugandan environmental legislation, but this pre-dates the exploration for oil and does not take into account the specific problems posed by the exploitation of hydrocarbons.

3.3.6. Cross-border cooperation

In the Graben, the problems related to the environment and the conservation of nature in the rift valley must be handled at sub-regional level and with recourse to the knowledge of the local inhabitants. On the other hand, oil resources can be cross-border and therefore necessarily shared, hence the need for legislation on the joint exploitation and sharing of the resources. In view of the experience and the incidents that occurred on Lake Albert, this question should have captured the attention of the legislator.

3.3.7. Important questions not dealt with

Certain important questions have not been dealt with as they deserve to be. Financial legislation specific to oil revenue was necessary to accompany the legislation voted in 2012 and thereby eliminate fears of the misappropriation of oil resources. The aspects concerning the promotion of local skills and community development are no longer mentioned. We know that when oil resources do not benefit the local population, the perception of inequalities and injustice generates conflicts. The State therefore has the duty to set thresholds and determine the legal framework for interventions with the oil companies.

3.3.8. Preoccupations raised by the parliamentarians

The question of land, compensation and population resettlement has caught the attention of the Ugandan parliamentarians. The speculations surrounding land in the oil regions have raised a lot of concerns. Informed speculators have bought land from farmers at low prices with the aim of selling it on at a very high price. Other preoccupations concern the compensation deemed derisory because the farmers do not necessarily have the ability to negotiate effectively. Worries have been raised about the gender aspect. In fact, if we are not careful, the compensation and resettlement process can have negative impacts on women and children, for the financial compensation, given to husbands only, is sometimes used to the detriment of wives and children. Sometimes, the husbands use the money to take younger wives and abandon their first wives and children.

Some people have suggested that the government negotiate in place of the farmers, some of whom have expressed their disappointment as they feel they have been robbed. Some parliamentarians have proposed proper relocation, settling displaced people in sites with basic infrastructure such as roads, schools, hospitals and access to drinking water. The parliamentarians representing the oil districts have raised the question of the sharing of royalties. According to them, the quota of 7% allotted to the districts is insignificant.

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[82] Extractive Industries Transparency Initiative (EITI)
[83] Publish What You Pay
[84] International Alert: "Oil and Gas Laws in Uganda. A Legislator's Guide", May 2011.

3.4. DRC policies and legislation

3.4.1. Current legislation and draft bills

Until now, the hydrocarbons sector of the DRC has been governed by law No. 67/231 of 11 May 1967 within the framework of which the State signed several oil conventions in 1969, and by Ordinance law No. 81/013 of 12 April 1981 on the General Legislation on mines and hydrocarbons, which repealed that of 1967 within the framework of "Zairianisation".

It was under title VIII of this Ordinance-Law that the general principles of the reconnaissance, exploration and development of liquid, solid and gaseous hydrocarbons were covered by Articles 79-87.

This law stipulates that hydrocarbon rights are granted by convention and that oil conventions, although duly signed by the parties, are only effective once they have been approved by an Ordinance of the President of the Republic.

IN the Democratic Republic of Congo, Ordinance-Law No. 81/013 has been deemed obsolete, and a draft bill for the general hydrocarbons regime has been submitted to the National Assembly, to bring it up to date.

Among the important innovations in this bill are:

The introduction of the procedure for calls for tender for the attribution of the blocks, exploration and/or production licences;

The creation of a fund for the benefit of future generations;

The allocation of an annual fixed amount in favour of the local communities;

Involvement of the Province, the Decentralised Territorial Entities (ETD) and the communities concerned as a tool for watching over the proper unfolding of the hydrocarbon activities;

The principle according to which the State grants hydrocarbon rights through production sharing agreements or service contracts;

Like all laws, important aspects are referred to "Hydrocarbon Regulations'' in particular the determination of the applicants' technical and financial capacities, the conditions of cession, transmission (but not farming out) of an exploration right; and the fixing of the mechanisms for the use of the CH_4 in lake Kivu.

In this draft law, certain provisions have raised controversies and protests. This is the case of Art.24, paragraph 2 which stipulates that: "For reasons of public interest, a decree deliberated in the Council of Ministers can derogate the restrictive measures concerning the protected areas and prohibited zones".

This project has raised a lot of criticism, all the more so as several versions have circulated. A first version of "proposed law on the general hydrocarbons regime" was presented by the National Assembly sub-committee on natural resources, the environment and tourism, in December 2010. A new version was presented in March

2013, after the elections of November 2011, and was amended again in the new session of the National Assembly of September 2013 to be discussed starting in January 2014.

The text of 2013 is much more liberal than that of 2010. The new project presents some positive progress as it removes much of the bureaucratic unwieldiness that traditionally suffocated the private sector in the Congo. On the negative side, the 2013 draft also removes a lot of protection with respect to the local population, such as the right to be consulted, the obligation imposed on companies to make provisions against oil pollution and the sanctions for illegal activities. The rights to compensation are weakened and certain corporate obligations become subject to negotiation.

The text amended on October 2013 further reinforces the role of the State, in particular of the presidency. It further reduces transparency and the possibilities of renegotiating contracts.

Here are the main differences between the propositions[85]:

Text of 2010	***Text of March 2013***	***Text of October 2013 (changes in relation to March 2013 only)***
Public control (§4, 13, 14): the "activities of investigation of the soil and sub-soil" are reserved for "a specialist body created for the purpose by decree of the Prime Minister", later called the "Hydrocarbons register". Again, "the control after the fact of hydrocarbon activities and the regulation of the sector are assured by a public establishment" with defined jobs and "a public body is created with a view to ensuring the efficient management and control of national energy resources" (§14)	**Public Control (§4):** the investigation activities are reserved for "the national oil company or legal entities governed by Congolese law", therefore also for private enterprises. *Control after the fact and public body are not mentioned.*	A new **§12** indicates that "the national hydrocarbons company holds the State's interests in the oil contracts and can develop specific commercial activity to the exclusion of any regulatory activity"
Oil concessions (§77): the contractor of the concession should include un "national public body" and pay a "royalty fee".	**Oil concessions:** this regime is suppressed.	
Attribution of titles (§70, 73): the titles can be attributed "by private arrangement" in the following conditions: "to favour a swift development of the deposit if there is insufficient data, inter-State agreements or in view of bi- or multinational pre-financing". They are granted by presidential order.	**Attribution of titles (§63-65):** A call for tenders is possible, but not binding and the titles are granted "after deliberation of the Council of ministers". "When a request is declared admissible, no other requests concerning whole or part of the same block, can be examined until a decision has been made".	The contracts "only come into effect after approval by order of the President of the Republic" (§67)
Reconnaissance/prospection rights (§16, 17, 70): "reconnaissance" activities are conducted on order of the body defined in §14. The rights are granted for one year, renewable once.	**Prospection rights (§14, 63):** "is eligible for prospection rights any legal entity under Congolese or foreign law" with the necessary qualifications and	§16, 65

[85] Draft of 2010: in the author's possession. Draft of March 2013: http://www.globalwitness.org/sites/default/files/library/DRCHyrdoCarbonsLaw_0.pdf. Draft of October 2013: circulated by Global Witness in January 2014

Text of 2010	*Text of March 2013*	*Text of October 2013 (changes in relation to March 2013 only)*
	means. The rights are granted for one year, renewable once. They are not subject to a call for tenders.	
Exploration rights (§25, 26): These are granted to "any private individual or legal entity under Congolese or foreign law" with the competence for three years renewable twice for two years.	**Exploration rights (§20, 22):** These are granted to "any legal entity under Congolese law" with the requisite competence for three years renewable twice for two years.	§ 22, 24
Exploration conditions: not specified	**Exploration conditions (§21):** the holder of an exploration permit should submit their work programme to the ministry of hydrocarbons, carry out social and environmental impact studies, pay an annual fixed amount "in favour of the local communities" (but not directly to them) and deposit "an environmental security fund" with the Central bank.	§23
Exploitation rights (§42, 44): These are granted for 25 years, renewable for 10 years, and the activities should commence within 18 months (originally 24 months).	**Exploitation rights (§35, 38):** These are granted for 20 years, renewable for 10 years, and the activities should commence within 3 years.	§37, 40
Exploitation conditions (§41): to obtain these rights, you have to submit "an attenuation and rehabilitation plan" and "an environmental and social impact study".	**Exploitation conditions (§34):** to obtain these rights, you have to submit "a prior environmental and social impact study and its duly approved management plan".	§36
Conflicts of rights (§29): "the holder of a land, mining or other concession cannot claim a hydrocarbons right in the concession and vice versa" and "in the case of superimposition of the rights on a single surface" the most recent takes precedence, possibly subject to compensation payable in advance.	**Conflicts of rights (§62):** in the case of superimposition of rights, "the Council of ministers in seized to arbitrate".	§64
The exceptions to exploration and exploitation rights (§58): these activities are not permitted in inhabited areas, water sources, public buildings, roads and sacred sites except with advance agreement and indemnification. Exploration and/or exploitation can be prohibited or subject to conditions "in return for fair indemnification" (§58).	**The exceptions to exploration and exploitation rights (§49):** these activities are not permitted in inhabited areas, water sources, public buildings, roads and sacred sites except with advance agreement and compensation. Exploration and/or exploitation can be prohibited or subject to conditions and the holder "cannot claim compensation" (§49).	§51

Text of 2010	*Text of March 2013*	*Text of October 2013 (changes in relation to March 2013 only)*
The area surrounding the exploration and exploitation sites (§59, 60): the holder has the right to use the resources inside their title pursuant to the legislation. Outside they may "establish the means of communication and of transport of any nature pursuant to the legislation in force" and "seek to obtain any rights of way to a neighbouring exploitation pursuant to the legislation in force".	**The area surrounding the exploration and exploitation sites (§51):** the holder has the right to use the resources inside their title pursuant to the legislation. Outside, they may "establish means of communication and transport of any nature" and "seek right of way" *(without reference to the legislation).*	§53
Obligations of permit holders (§61, 63, 68, 69): "the holder of a hydrocarbon right may not oppose, inside their block, the execution of works of public utility". They should repair any damage to other people's property and in the case of damage to the fertility of the land they should "pay fixed compensation in compliance with the provisions of the hydrocarbons regulations". They should finance infrastructure and community development in compliance with the contracts and "contribute, depending on their operating revenue, to infrastructure and development projects". They should give priority to the Congolese when hiring and, failing this, "provide equivalent training to a Congolese citizen".	**Obligations of permit holders (§53, 55, 60):** "the holder of a hydrocarbon right may (not) oppose, inside their block, the execution of works of public utility". They should repair any damage to other people's property and in the case of damage to the fertility of the land they should "pay a jointly agreed amount". They should finance infrastructure and community development in compliance with the contracts but no longer contribute depending on their operating revenue. *There is no longer a clause giving preference to national citizens for jobs.*	§55, 57, 62
Environmental obligations (§108, 110): the holder of a permit should respect the environmental legislation. They are "obliged to constitute, to meet their obligations in terms of the environment, a financial guarantee the amount of which is fixed in the contract" and to take "the necessary measures with a view to preventing and combating all instances of pollution by hydrocarbons", including an emergency plan.	**Environmental obligations:** the holder of a permit should respect the environmental legislation, *with no further details*.	
Public consultation (§111): "The carrying out of works by the holder of a hydrocarbons title is preceded by a public survey for the purpose of i) informing the public in general and the population in particular about the project; ii) gathering information on the nature and extent of the rights that could be held by third parties on the zone affected by the project, in particular the land concessions and the local communities; iii) collect appreciations, suggestions and counter-proposals in order to allow the	**Public consultation:** no provisions.	

Text of 2010	*Text of March 2013*	*Text of October 2013 (changes in relation to March 2013 only)*
competent authority to have all the elements necessary for making decisions".		
Environmental Audit (§112): the competent ministry "proceeds to an environmental audit of any oil facility presenting a potential risk for the environment, human health or the safety of the population". Exceptions to the prohibition to carry out oil activities in the protected zones are possible.	**Environmental audit (§99):** the ministries of the environment and of hydrocarbons "proceed to an audit of any oil facility presenting a potential risk for the environment and the population". Exceptions to the prohibition to carry out oil activities in the protected zones are possible.	§101
Gas flaring (§47): "prohibited in principle" with possible exceptions.	**Gas flaring (§40):** "prohibited" with possible exceptions.	§42
Production sharing agreements (§76, two versions): the "cost oil" is limited to 60% of the production, 70% in the event of difficulties. For "profit oil", the State's share cannot be less than 40% or 50% depending on the version.	**Production sharing agreements (§68):** "cost oil" is limited to 60% of the production, 70% in case of difficulties. *As for "profit oil", no minimum is given for the State' share.*	§70
Signing bonus (§94): when a title is granted, a "signing bonus" is payable to the state; "the amount and the terms and conditions of payment are fixed by the hydrocarbons regulations".	**Signing bonus:***no details about the amount or the terms and conditions.*	
Taxes and duties (§123-127, 131-137): introduction of a "royalty on production" of 12.5%, a "statistics duty" of 1%, a "margin duty" of at least 40%, a "negotiable participation duty", A "profit tax" of 40% (§127); customs taxes of 1% on the equipment imported with a further 5% after the start of production; exemptions for imports with proof that they increase production by at least 20%; an "exit duty" of 1% and the obligation to inform the authorities of any movements of equipment.	**Taxes and duties (§108):** the operators must comply with the legislation in force and respect EITI procedures: "to ensure transparency, the payments and the receipts of the oil and gas companies are declared and published in a form that is credible and comprehensible to the general public"	In addition to royalties, bonuses and profit oil, there is the introduction of "the participation of the State" (§109). The phrase "in a form that is credible and comprehensible to the general public" is deleted (§110).
Penalties (§146-152): the following are punishable: illegal exploration or exploitation activities, false declarations to obtain a title, false declarations of production, damage or the improper identification of "a post, a sign post or milestone" and the exploitation of oil without an anti-pollution plan, as well as corruption and deliberate destruction.	**Penalties (§118-120):** the following are punishable: corruption and deliberate destruction.	§120-122

Text of 2010	*Text of March 2013*	*Text of October 2013 (changes in relation to March 2013 only)*
Transitional clauses: the existing contracts remain valid.	**Transitional clauses (§121, 124):** the existing contracts remain valid but "subject to renegotiation". In the six months after law was passed, the Prime Minister "enacted by decree the hydrocarbons regulations fixing the implementing measures".	The existing contracts remain valid for 3 years; "after this period, they comply with the provisions of the present law" (§123)
Methane gas in Lake Kivu: no specific clauses	**Methane gas in Lake Kivu (§46, 47):** "the hydrocarbon rights to the methane gas in the Lake Kivu are subject to the same conditions as liquid hydrocarbons, with the exception of the issuing of the exploration permit". "The legal entity under Congolese law who seeks the hydrocarbon rights to the methane gas shall trace the boundaries of the block"	§48,49

The debate on this law is still underway. But certain observers fear that it will not provide answers to the concerns already expressed.

Other provisions also evidence a regression, especially concerning the social spinoff from the hydrocarbons. Priority hiring of Congolese citizens is no longer mentioned in the new bill. Similarly, public consultation which had the status of a rule in the previous legislation, is purely and simply repealed in the draft. Lastly, regarding the sharing of production for "profitoil", the minimum which was set for the State no longer exists. This can represent a considerable loss of earnings, and an opening that invites corruption in favour of the decision-making Authority, whose job it is to evaluate.

3.4.2. Specific provisions for methane gas in Lake Kivu

After creating the ''Regulatory Authority of the Lake at national level", by ministerial decree No.004/CAB/MIN-HYDRO/CMK/2012 of 31 January 2012 implementing the Technical Surveillance Cell (CTS) of Lake Kivu in DRC, the Minister of hydrocarbons published two texts:

- A Specifications Document No.001/13/M-HYD/CATM/ CAB/MIN/13 of 9 May 2013 for the exploitation of methane gas in Lake Kivu;
- Ministerial decree No. 008/M-HYD/CATM/CAB/ MIN/2013 of 24 May 2013 fixing the geographic coordinates defining the contours of the blocks opened for gas exploitation in Lake Kivu.

The Specifications Document provides clarification on certain technical, social and economic aspects related to the exploitation of gas.

The gas extraction methods are clarified, inspired by the results of the workshop on the exploitation of methane gas in Lake Kivu organised in Kinshasa from 12 - 14 June 2012. Starting from the fact that the density gradients in the Lake are far from mastered, the

principle recommended is “modular and progressive extraction starting from a small scale (under 5MW)”. Furthermore, emphasis is placed on public security, the protection of the environment and maximising social advantages when the methane is extracted. The document insists on the necessity for operators to achieve the maximum of social advantages and minimise losses of recoverable methane. It is also compulsory to demonstrate the economic and financial profitability of the project previously justified by a feasibility study.

Other principles are also stated in the specifications. The gas operator has a duty to extract efficiently to produce electricity in priority and subsequently other derivative products and for miscellaneous usages such as conversion to fuel, production of chemical fertilizers and household gas. Also, there is the constraint for the gas operator to draw up an ESIA, and a Social and environmental management plan (SEMP) and/or any other studies required by the extraction of the CH_4 from Lake Kivu. Concerning information, the CTS must make sure the public is fully informed of the nature of the surveillance programme and the location of equipment.

Regarding cross-border cooperation, the specifications evoke the possibility of setting up a bilateral regulatory authority.

As for Ministerial decree No. 008, it determines a zone open to gas exploitation in Lake Kivu which comprises 4 gas concessions covering a total surface area of 900,02km^2; the Goma, Makelele, Lwandjofu and Idjwi blocks; which conceptually are now only a radial model, centred on the deepest part of the Lake.

3.5. Burundi oil and gas legislation

An examination of all Burundi's strategy documents (CSLP II, Vision 2025) reveals no mention of a hydrocarbons policy. It is therefore possible to assert that Burundi has no real policy in this domain. The few elements that exist are legislative in nature and are written into the Mining and Oil Code (CMP) which dates from 1976. The contracts already signed in terms of hydrocarbons are therefore governed by this Mining and Oil Code (CMP) passed on 17 July 1976[86]. In this code, hydrocarbons are classified as licensable substances comprising, on the one hand, liquid and gas hydrocarbons, and, on the other hand, solid products such as asphalt, ozokerite[87], bitumen, oil sandstone and shale.

The right to explore for hydrocarbons can only be acquired through a hydrocarbon exploration licence called H license, or hydrocarbons concession, inside the perimeter of the latter[88]. The H license is granted to a commercial company or, jointly, to several commercial companies evidencing the necessary technical and financial capacities to conduct the exploration and, as the case may be, the production (art.46). The H license concerns a polygon whose shape and surface area are defined in the initiating deed. At least one of the sides of the polygon should lie along the geographic North-South axis (art.47).

[86] Only the Mining code has been amended and will be passed. The text has already been voted by Parliament.
[87] Only the Mining code has been amended and will be passed. The text has already been voted by Parliament.
[88] Republic of Burundi, Mining and Oil Code, article 15, 17 July 1976.

3.5.1. The CMP enshrines the principle of transparency in the contract award process.

To issue an H license to a company, there is a compulsory publication and call for competition procedure. Publication is in the official gazette of the government at least three months in advance (art.48).

Prior to the granting of an H license, a convention is signed by the applicant and the Minister in charge of Mines. This convention defines the rights and obligations of the future holder, both during the exploration period and in the event of production.(art.49). It fixes, in particular, the minimal phases of financial and technical efforts required during the exploration; the fiscal regime applicable during production, where relevant; the reductions in surface area which must necessarily occur on each renewal; and the event of a mutation, the new holder should undertake in writing, with no restrictions or reservations, to respect the convention relative to the mining licence granted.

3.5.1.1. Technical and financial capacities requirement

Obtaining an exploration license is subject to the possession of the technical and financial capacities for conducting the exploration and possible production of the substances for which it was issued. In this respect, the applicant is obliged to present a general schedule of the works corresponding to the duration requested and adapted to the geographic and geological characteristics of the zone in question, and to possess the requisite technical and financial capacities for conducting this programme (art.33).

3.5.1.2. The duration of the H license

The duration of the H license may not exceed three years. It can be renewed no more than twice for a period of three years. The renewal is subject to an application submitted before the end of the period of validity in progress, on condition that the holder has, during this same period, fulfilled the agreed minimum amount of work or expenditure and presents work schedule for the new period of validity of the permit, with a commitment to provide during this new period a minimum financial effort in relation to the schedule.

3.5.1.3. Provisional authorisation to operate during exploration

The holder of an exploration license is obliged, following a discovery pointing to the existence of a deposit, to actively continue the delineation of this deposit in order to assess its potential. As soon as the existence of an economically viable deposit of licensable substances is established, the holder of the exploration license is obliged to apply for mining rights and to continue the work of development (art.169).

The holder of an H license can, as soon as the existence of a productive oil well has been established, apply for a provisional authorisation to operate. The holder of a valid H license can, on request and provisionally, be authorised by decree to operate productive wells or boreholes. The duration of the authorisation shall not exceed one year and it can be withdrawn in the same way as it is granted, if the delineation and development work on the deposits are not continued with the requisite diligence, the provisions of the convention are no longer observed.

3.5.2. Type of contract stipulated in the CMP

The CMP stipulates a resource sharing contract. Article 56 of this code stipulates that, in addition to the predefined prior statements and authorisations, and regarding an H license, the following are subject to prior approval by decree: memorandums, contracts, conventions or agreements relative in particular to the conducting of exploration operations and possibly hydrocarbon production; the sharing of expenses, financial results and assets in the event of dissolution; and the sharing and disposal of the products extracted. without further details.

Prior approval is also required for contracts with the holders of mining rights and between third parties or between holders and third parties[89].

The holders of operating rights and operators of mineral or fossil substances are obliged to conduct their work in such a way as to ensure the best and most complete use of the deposits, given the economic conditions of the moment and the probable economic conditions in the foreseeable future (article 171).

3.5.2.1. Conditions afforded by H license compared to the legislation

This part is based on the contents of a convention, considered a standard contract, granted to one of the companies, the holder of an H license in Burundi[90].

The purpose and field of application of the convention relative to the H license fix the general, legal, environmental, fiscal, customs, financial, economic and social conditions applicable to the holder (or its affiliated companies and successors) for oil operations.

Pursuant to the CMP, the license is initiated for a period of three years, renewable twice for the same duration if the requisite conditions are met. The government undertakes to award no other licenses for the same perimeter in the course of this period. At each renewal, the surface area of the perimeter should be reduced by 5%. The holder has an exclusive right to obtain, personally or through the setting up of an operating company, a concession for any commercially viable deposits found inside the perimeter before the permit expires.

Concessions are initiated for a period of 25 years, after a public enquiry announced via notice in the official gazette. It can be renewed twice for a period of ten years.

3.5.2.2. Contractual rights granted to the holder of the H license [91]

The holder of the H license acquires the right to explore for hydrocarbons inside the perimeter and to extract, store, transport, carry out primary processing or liquefaction, sell, export the hydrocarbons and related substances and derivatives by separation or treatment, originating from the deposits contained within the concessions. He may create all the facilities necessary, use water on condition that it does not prejudice the water

[89] See CMP, article 56

[90] The contracts are bound by a confidentiality clause. However, we were able to access and examine contracts signed by the government and Surestream, which are referred to here.

[91] Convention relative to H license for block D between Republic of Burundi and Surestream Petroleum(Burundi) Limited, article 3.1.6., 2 September 2008.

supply of the local population and livestock. In addition, for the needs of oil operations and related industries he can use non licensable substances and other elements located inside the perimeter including, in particular, stones, sand, clay, gypsum and lime.

The holder is authorised to transfer outside of Burundi any samples taken during the oil operations to have them analysed or processed; and use and have access to all the geological and other information controlled by the State pertaining to the license or concessions.

3.5.2.3. Implementation and monitoring of the contracts

Administrative monitoring is governed by title IX of the CMP and especially article 182. According to this article: “It is the mission of the civil servants from the department of mines and geology, duly accredited for the purpose, under the authority of the Minister in charge of Mines, to make sure the Mining and Oil Code and the implementing decrees, orders and regulations are enforced. Under in the same conditions, they are responsible for the administrative and technical monitoring of the activities mentioned in the code and contribute, in the enterprises it mentions, to controlling the application of the legislation and the regulation of the work."

The parts of the contract relative to administrative monitoring describe this provision in detail. Implementation monitoring is supervised by the ministry responsible for mines and geology, and particularly the department of geology and mines. It is done through the following mechanisms: access to work sites and to information relative to oil operations, the declaration of works, quarterly reports and declarations on the situation of remaining reserves, distinguishing between certain, possible and probable reserves.

Also, the holder should communicate straight away to the Minister any information relative to amendments to the articles of association of the holder, the last financial statement and banking references, the board of administration and its powers.

In terms of public security, worker safety, mines and public sources and works, all connected information should be brought to the knowledge of the managing director of mines and geology. The holder is obliged to submit to preventive measures and other measures likely to remove the causes of danger which are ordered by the civil servants in the department of mines and geology.

The contract holder is obliged to provide the civil servants in the department of mines and geology with all the means of access to the work sites and routes of the oil operations. They should provide internal and external plans, progress report on oil operations, workforce, production, storage, dispatch, investment, operation, analysis and of commercialisation of the hydrocarbons. The holder should also provide information regarding the state of progress of the exploration process and operation and provide competent guides to the civil servants who can provide the requisite information.

Monitoring also concerns the exploitation of the resources to assess whether it is optimal. If this is not the case, the holder may be ordered by the department of geology and mines to take measures to implement the recommended changes.

While the monitoring and implementation mechanisms seem clear depending on the contractual provisions, what poses a problem are the capacities of the public service in charge of controlling. In the current conditions, the department of geology and mines has

neither the material nor technical capacity to perform this mission properly. We therefore can only count on the good faith of the license holder who is most probably better endowed in terms of means and skills than the body responsible for monitoring it.

3.5.2.4. Transparency and integrity in awarding contracts

According to the CMP**,** in the case of an H license, if the request is recognised as admissible in form, the Minister has it completed as required, then publishes in the Burundi Official Gazette a notice regarding the public knowledge of the information on the licensable substances concerned, the definition of the perimeter and the duration of the license. This notice invites possible candidates to apply for an H license in partial or total competition with the first applicant within no more than three months starting from this notice (art.69).

The notice can be publicised widely by the press and radio. It should be remembered that information about disputes between license holders, the restriction or withdrawal of licenses remains confidential (art.70). Competing applications are examined under the same conditions and in same time frame as the first request (Article 71).

After examination of the applications, the Minister establishes, with the certified applicant, the special rules of the convention with a view to the H license. Noted especially is the minimum financial effort the applicant undertakes to devote to the of the general schedule.

This commitment can be completed by the definition of a corrective index for annual revision (Article 72).

The CMP does not allow for public calls for tender for exploration licenses. Publication takes place only when an applicant comes forward to compete. However, the Burundi code of government contracts allows for the imperative publication of this type of contract subject to the risk of the procedure being considered null and void (art.47)[92].

Instead of this, concessions are now awarded according to a procedure that is not transparent: while the licences are granted by presidential decree as proposed by the relevant Minister as in many countries, applications for exploration and production are managed by a committee restricted to the presidency of the Republic before being presented in the Council of ministers[93]. Lack of transparency seems to be the rule in this type of transaction for the contracts cannot be made public either. Point 10.1.1. of the abovementioned contract, stipulates that the convention remains confidential throughout its duration and cannot be divulged to third parties by one of the Parties without the express agreement of the other Party. However, each party may divulge the terms of the Convention to any person in their employment or working on their behalf, on condition that this person undertakes to treat the information confidentially (10.1.2).

There is nonetheless no lack of good practice in this domain, in particular in Tanzania. Through the Tanzanian hydrocarbons development company, the government proceeded

[92] Republic of Burundi, Law no. 1/01 on the code for government contracts in Burundi, Burundi official gazette, no. 2bis, 4 February 2008.
[93] International Crisis Group, Burundi: a deepening corruption crisis, Africa Report no. 185, March 2012.

to widely publicise the calls for tender in the media and on the website of this state company[94].

3.5.3. Exploration schedule: commitment not met

Appended to the above-mentioned convention is a general schedule of reconnaissance and exploration work. It extends over the first period of three years and opens perspectives for the following period. this three year programme is itemised in sub periods of 12 months. For the first period, the programme aims to collect geological data to determine the potential of the zone by comparison with similar regional data, produce the cartography in order to identify possible seepage or surface exposures, and lastly, to collect samples in the field and have them analysed. In the second phase, the holder undertakes to acquire magnetic and gravimetric data, use the regional data from previous wells, and a geophysics firm will be identified to prepare the acquisition of seismic data covering a minimum of 300 kilometres. For these two periods, Surestream committed to spending a minimum of one million and two million dollars respectively.

For the third year, the company committed to preparing the acquisition of new seismic data on a minimum of 300 linear kms covering the offshore zone. And it is stipulated that, unless there is a necessity, the use of 3D seismic data is not envisaged. For years 4-6, the programme should comprise evaluations of drilling schedule and possibly the acquisition of 3D seismic data. the holder undertakes to spend a minimum of 2 million dollars during the third year, or a minimum total of 5 million dollars for the first period of the licence.

Since 2008, the convention with Surestream has been continuously renewed. However, five years later, even the programme scheduled for the first period of three years has not been completed. This situation unavoidably raises questions about the company's wherewithal. And it is legitimate to wonder, given the manoeuvres that followed the signing of the contracts, both for Minergy R.E., who acquired block C, and Surestream (blocks B and D), if their position is not merely speculative, and the idea is to sell the rights to the oil majors who have greater resources for carrying out exploration and development in conditions as costly as is the case in Lake Tanganyika. For the average depth of the lake is 500 m, and it is over 1,000 metres deep in places, so the financial efforts for exploration and drilling will be very high. To meet this challenge, the two companies set up a joint venture to carry out the acquisition of 2D seismic data. This phase was still in preparation at the end of 2013. While the concern to minimise costs may have presided over the signing of this agreement, especially given the relatively small size of the blocks, and therefore the related financial risks, the fact remains that the financial capacities of the two companies were certainly decisive factors.

But this also poses the question of the enforcement of the provisions of the CMP, some very important ones having been infringed by the contracts signed. These included the publication of the offers, and therefore the transparency in awarding contracts, but also the analysis of the capacities of the applicants. As this process was not followed as

[94] Tanzania has launched a call for tenders for the offshore sea blocks and in Lake Tanganyika through the second conference on gas and oil which was held on 25 October and the deadline for submission is 15 May 2014. The announcement gives all the information required, or how to access it, particularly the boundaries of the blocks and other relevant information. See http://www.tpdc-tz.com/Lake_Tanganyika_Licensing.pdf.

expected, the results can only be affected. Especially, the appointment of firms that do not have the requisite capacity, as experience has shown. This situation can only lead to suspicions of corruption in favour of the decision-making authority which in this case is the presidency of the Republic, where all the decisions in this domain are taken.

3.5.4. Environment issues

The licence holder undertakes to take all the necessary measures to protect the environment and, in particular, respect the provisions of the Burundi law in force. They should perform the environmental and ecological studies stipulated in the texts in force in Burundi. They should proceed throughout the duration of the license, periodically, to control the quality of the soil, the air, and the waters inside the perimeter and neighbouring areas. In addition, they must make sure the hydrocarbons and sludge and any other products are not wasted and do not pollute the water table. The hydrocarbons must be placed in purpose-built storage tanks, and it is forbidden to store crude oil in underground reservoirs, except temporarily in an emergency or with authorisation from the Minister. Generally, the contracting company should protect the environment, prevent accidents and limit their consequences and in particular reduce and control environmental pollution if this takes place, restore the sites and undertake the work of abandoning oil operations under the conditions stipulated[95]. The company assumes full responsibility for damage to the environment, health and security, on condition, however that it is shown that such damage has occurred.

The contract lists a number of constraints for the protection of the environment and recommends the restoration of the sites in case of abandon. Apart from the constraint of verifying that the oil operations follow the oil standards, nowhere is the respect of the 16 pertinent regional and international conventions ratified by Burundi mentioned[96]. However, speaking of responsibility, the contract remains vague and does not specify the consequences in terms of sanctions and actions in reparation that could incumb upon the company in the event of pollution. Also, a periodic check should be carried out by the company itself on the basis of a reference EIA established, once again, by the company itself. This conflict of interests does not allow an objective evaluation. And the public regulatory authority does not have the means to monitor these issues. Given the immense biodiversity of Lake Tanganyika and its surrounding area, strict control of the application of environmental norms is a question of major importance.

3.5.5. Tax provisions: contradiction between the CMP and the conventions

With respect to the company, only the following duties and taxes are due on oil operations: a) the fixed duties, under the conditions determined by the convention (article 5.2), b) the ordinary royalties and additional royalties for mines under the conditions fixed in article 5.5, c) ad valorem tax, d) tax on industrial and commercial profits.

On the occasion of the institution, the duty payable is $12 per km^2, with a minimum of 8,000 dollars. For the two possible renewals, the duty payable is $12 dper km^2, with a minimum of $8,000. For concessions, an ordinary royalty is due annually, and for the first

[95] See point 4. of the contract introducing dispositions relative to the protection of the environment.
[96] We may mention the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the UNESCO Convention concerning the Protection of World Cultural and Natural Heritage, the Convention on the sustainable management of Lake Tanganyika, etc.

three years, it is $10 per km², when the surface area is under 400 ha; when the surface area is between 400 and 10,000 ha, the annual fee is $12 per km². For a surface area greater than 10,000 ha, the annual fee rises to $14/km². From the fourth year, for the respective surface areas mentioned, the respective annual royalties are $50, 60 and 70/km². The additional royalties for mines are imposed when the concession is deemed insufficiently exploited.

While the mining royalty is payable at the start of the agreement, the ad valorem tax is paid when the exploitation of the concession commences. It is payable on the occasion of the first commercial operation concerning the hydrocarbons extracted from the concession. The rate of the ad valorem tax for liquid hydrocarbons has been fixed at 12.5%. 5% for gaseous hydrocarbons and 7% for solid hydrocarbons. The other tax paid concerns industrial and commercial profits. The rate has been fixed at 35%.

Compared to the bonuses paid elsewhere, the taxes paid in Burundi seem derisory. As the surface areas of the Burundi blocks are around 700 km², taking the rate of duty as $14, the tax to be paid by block is approximately $9,800, which is insignificant. However, given the lack of transparency surrounding the awarding of contracts, and given the state of corruption in Burundi, we may well suppose that much larger sums have changed hands as bonuses, under the table. Another important fact to be stressed is that the contracts are in blatant contradiction with the CMP which they are supposed to be based on. Whereas the CMP recommends that the exploitation of oil be managed within the framework of resource sharing agreements, the contract we have been referring to is more like a concession contract.

3.5.6. Socio-economic provisions of the H license

Throughout the duration of the convention, the holder undertakes to employ personnel from Burundi, within the framework of the oil operations, for the same qualifications, and implement a scheme for the training and promotion of Burundi personnel. This will enable the gradual replacement of expatriate personnel with qualified nationals.

In favour of the local population, throughout the duration of the convention, the holder undertakes to allocate a minimum amount of two hundred thousand dollars (US$200,000) per year before the institution of a concession and five hundred thousand (US $500,000) per year starting from the institution of the first concession.

No details are specified about the terms and conditions of allocation of these amounts to the local population, particularly about the way of identifying them, and the terms and conditions for managing these amounts, in particular the management entity. As most of the blocks are located in Lake Tanganyika, nothing is mentioned either about what measures would be taken in favour of groups the oil activity could harm, such as fishermen and other people who live around the lake. These questions are all the more urgent as payments have already been made, and it is therefore important to find out where the money went.

3.6. Policies and legislation on hydrocarbons: concerns and omissions

While DR Congo is the only oil producing country, Uganda is the only country of the four being examined which has a policy and more or less complete legislation on the sector. Rwanda already produces gas on a small scale, but does not yet have a hydrocarbons policy or legislation. A bill is currently being drawn up. In Burundi, the oil code dates from

1976, and in DR Congo, the legislation on hydrocarbons is currently being amended. While, generally, these legislations contain provisions compliant with the accepted standards in the sector, other, sometimes common aspects pose problems. In Uganda, and in DR Congo, these questions have been the subject of much public debate and research.

Among the crucial questions, the most important relate to transparency in the awarding of contracts, the risk of personalisation of the sector by the Head of State, and lack of access to information about contracts due to the confidentiality clauses they contain. Many of the preoccupations concern environmental questions, especially because the oil and gas reserves are generally located in the Graben inside protected areas, like the Murchison Falls Park, in Uganda, Virunga Park in DRC and Lake Tanganyika and the protected areas that surround it, in Burundi. Certain dispositions introduced in the draft laws in DRC are of particular concern, because they imply the possibility of authorising exploration and development inside Virunga Park, which is a world heritage site. The concern is all the greater as Virunga Park has been classified a world heritage site since 1979 and since 1994 has been in the category of endangered sites.

Other preoccupations concern the decent resettlement of the population, indemnification in the event of displacement, the sharing of oil dividends and measures in favour of the local population in the oil or gas zones. Experience has also shown that oil rhymes with corruption but there are no preventive measures written into the existing legislation especially in terms of transparency in the oil sector development process.

Experience has shown that in unstable countries, minor arrangements around the granting of the contracts, for example the payment of signing bonuses, may turn out to be the principal benefit from oil exploration for leaders who are not sure they will still be in place when the oil manna starts to flow in abundance. In these cases, it may be in the interests of both political leaders and investors to have oil contracts that do not lead to actual production. The investors can sell their shares to the majors after having discovered and announced massive reserves they are not able to exploit themselves, and the politicians can cash in on bonuses twice, first of all from the “juniors” who don't have the requisite capacity and then from better equipped investors, and in some cases other stages can be added involving bogus companies.

Local operating partners, for example public enterprises created for the purpose, can also become sources of corruption which help to stabilise the powers in place and protect them against public protest, while at the same time helping to create a new local entrepreneurship around the redistribution of oil money and sub-contracting agreements within a small elite. The examples of Angola and Nigeria serve to illustrate these phenomena.

In the end, the aim of good legislation in the hydrocarbons sector is to avoid these abuses and counteract the potential conflicts of interest by guaranteeing a framework that takes individual interests into account and orients the exploitation of oil and gas towards development needs. It is therefore urgent for Burundi, DR Congo and Rwanda to endow themselves with complete oil and gas policies and sets of legislation.

Chapter 4. Challenges and risks related to hydrocarbon exploration and production

4.1. The political issues: Blessing or curse?

The discovery of black gold in a country is often perceived or presented idyllically in terms of economic impact, the transformation of the population's standard of living and development.

However, in view of the impact oil has had on the economies and development of other African oil-producing countries, in particular those who have been producing oil the longest (Angola, Nigeria and Congo), we may well wonder. Is oil a blessing, that is to say an opportunity for sustainable development and to improve the lives of the population, or rather a source of misfortune, corruption and instability? On this subject, when Ghana joined the club of African oil-producing countries, the Ghanaian Finance Minister posed this question in clear terms: "*The major challenge will be how to use oil revenue to transform the economy, boost growth without sacrificing macro-economic stability or aggravating inequalities*[97]".

This phrase sums up the experiences observed in some African oil-producing countries. On the one hand, oil revenue may indeed be an asset for sustainable development, but it can also be a source of political and economic instability.

Oil can effectively be an engine that drives sustainable development. First of all, it is an important source of foreign currency. It is also a means of putting an end to the energy dependence and deficit typical of many African countries. The exploitation of oil can also lead to the development of infrastructure, the petrochemicals industry and even agriculture. It can also help with the control of urban space by stimulating urban development.

On the other hand, oil creates a windfall economy which constitutes a factor of economic destabilisation. In many situations, the oil manna leads States to turn away from the sustainably productive sectors and engenders what has been called the "***Dutch syndrome***". Profiting a small oligarchy in power, it is an important source of corruption and bad governance, leading to political instability.

Interdisciplinary studies seem to indicate that the impact of the natural resources depends on the initial situation and so exporting countries with solid institutions and a consequential amount of human capital tend to suffer less from the "oil curse[98]".

The lessons drawn from most of the African oil countries show that great weakness of governance is related to the lack of transparency which characterises the signing of the contracts. Contracts between the governments concerned by this study (Burundi, DR Congo, Rwanda and Uganda) are signed with a total lack of transparency. In addition, they

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[97] Spoken by the Ghanaian Minister of finance Kwabena Duffuor, see article: *Pétrole en Afrique : or noir, misère noire* by René Dassié, http://www.afrik.com/article21841.html, 9 April 2011.
[98] Alan Gelb and Sina Grasmann, op.cit.

are subject to confidentiality clauses that prevent the public from having access to the information contained in them. This is true for all four countries, without exception. Like other African oil producers, the whole process leading to the signing of the contracts is in the hands of a very restricted circle around the President of the Republic[99].

In Burundi, concessions have been awarded according to a procedure that is not transparent: while the licences are granted by presidential decree as proposed by the relevant Minister as in many countries, applications for exploration and production are managed by a committee restricted to the presidency of the Republic before being presented in the Council of ministers[100].

In Uganda, the Permanent Secretariat of the ministry of Energy and Mineral Development manages all questions concerning oil and mines. Kaliisa Kabagambe is an experienced engineer in this domain. Another influential person in this arena is the Commissioner of the Petroleum Exploration and Production Department – PEPD. Kaliisa Kabagambe is very close to President Museveni, and the power he has over all the substances related to oil, is nothing other than a materialisation of the presidentialisation of the oil sector in Uganda[101].

In DR Congo, the oil sector is also tormented and in addition suffers from characteristic bad governance. A single area, for example, was the subject of three production sharing agreements signed by three different governments between 2006 and 2010. The latest was signed by President Joseph Kabila himself and awarded to two hitherto unknown companies, Caprikat and Foxwhelp, created two months earlier. They are jointly owned by South African shareholders and Congolese businessmen close to the President, such as itinerant ambassador Antoine Ghonda[102]. This operation gives a clear vision of the president's control over the sector.

Another major aspect observed is that oil revenue is used to finance and sustain authoritarian regimes. The main beneficiaries of petrodollars are a small group of oligarchs around the President of the Republic, the most typical case being that of Equatorial Guinea. In many cases in Africa, the considerable revenue derived from oil, instead of contributing to growth and poverty attenuation serves rather to aggravate inequalities and contributes to establishing bad political and economic governance. The example of Nigeria is emblematic of this situation.

In Uganda and DRC, there has been a national debate on hydrocarbons, in the wake of the legislative process. In DR Congo, the debate, which focuses on environmental issues, was triggered by the controversial and contradiction-ridden authorisation granted by the government to allow prospection in Virunga National Park. But it is also the lack of transparency surrounding oil exploitation in the Western part of the country that has aroused a lot of debate and brought to the surface a number of concerns. In Uganda, the drafting of the political and legislative mechanism on hydrocarbons gave rise to intense debate leading to in-depth reflection on the issues of oil exploration and production. In Rwanda, apart from the concerns expressed by targeted groups consulted during the ESIA related to the exploitation of Lake Kivu, no other debate has taken place. The same can be said for Burundi, where the granting of oil exploration licences has not given rise to debate.

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[99] This involves contacts with the companies, the negotiation and the signing of an agreement. But also and especially the negociation of bonuses and other financial aspects.
[100] ICG, Burundi: a deepening corruption crisis, No. 185, 21 March 2012.
[101] Augé Benjamin and Nakayi Rose, op.cit.
[102] Ibidem.

The debates that took place in Uganda and DR Congo highlight the issues related to the exploration and production of hydrocarbons. The concerns focus on the management of oil revenue, and how to take the local population's interests into account. The exceptional wealth of biodiversity in the Graben and the dangers weighing on it consecutively to the exploration and exploitation of hydrocarbons becomes a major issue. Furthermore, the ecosystems concerned not only constitute the habitats of rare species but are also sources of livelihood and income for the local people.

The region's hydrocarbons are located essentially in buffer zones the limits of which are not clearly and definitively established and recognised as such. This aspect contains an enormous potential of sources of conflict, if nothing is done upstream to defuse them. The tensions around Lake Albert between DR Congo and Uganda are emblematic of this latent situation. There are major interests at stake, and the region's resources are sharpening appetites both inside and outside the region.

4.1.1. Debates and political issues in Uganda: the distribution of the oil manna

Uganda is approaching its oil boom in a tense political situation, with a President preparing to stand for re-election and an oil production horizon that is continually receding. We are now quoting 2017 as the plausible first year for oil production, therefore after the forthcoming elections of 2016. In this context, it seems improbable that President Museveni would agree to leave power before he himself has profited from the fruits of the oil boom, to which he has devoted much of his time.

Only two months after being re-elected with 68% of the vote in February 2011, President Yoweri Museveni faced mass protests in the capital of Kampala against inflation of food and fuel prices, which were joined momentarily by the defeated opposition around Kiiza Besigye. At the same time, the debate around the laws on hydrocarbons was in full swing. Towards the end of the year, three members of the Council of Ministers were accused in parliament of having received large bribes from the oil companies. Following this, the parliament voted a resolution demanding the stoppage of the transfer of Tullow Oil's oil rights to newcomers Total and CNOOC before the vote of the laws on hydrocarbons. But the government decided to override this parliamentary resolution by signing the contracts with Total and CNOOC anyway, in 2012.

Despite the fact that the hydrocarbon laws have been passed and enacted, it is clear that certain questions raised in the debates, which remained unanswered, are still unanswered today.

First of all, the pathetic state of public services will be increasingly unacceptable if the oil manna begins to flow. Second is the debate around federalism and the rights of the basic communities in the oil regions. This already lively debate will be exacerbated as soon as the revenue starts to be distributed. While oil revenue could help the government arrange allegiances, it could also give rise to intense rivalries. The 2008 national hydrocarbons policy stipulates that 7% of the oil revenue will be redistributed to the 25 oil districts. But the elected members of parliament for these districts do not find this quota satisfactory.

One particular controversy concerns the traditional kingdom of Bunyoro where the principal oil reserves are and where the refinery planned by the Ugandan government will be built, more precisely at Kibaale, in the district of Hoima, where the king of Bunyoro lives. There is a broadly shared feeling in Bunyoro that the oil in the Graben belongs to the king and should be used to restore his former,pre-colonial glory.

Precise expectations have been expressed by the kingdom, for example the building of basic infrastructure, a university, a railway line, the supply of uninterrupted electrical

power, jobs for the Banyoro and help to combat the ills associated with oil such as prostitution, immigration and HIV. More generally, the kingdom has asked to be recognised as a partner on the same footing as the central government.

In this respect, it has proposed the introduction of a "regions" level, which, in addition to the 7% revenue for the districts, would be given an additional share; for its part, the kingdom has suggested 12.5%. This proposition joins the other federalist claims that regularly inflame Uganda and on which the government has always been inflexible[103].

As the current laws contain no specific dispositions for kingdoms, Bunyoro is supposed to share the 7% allowed for with the oil districts. This has created tension between the government and Bunyoro. But the government is not showing any signs of agreeing to the Bunyoro proposals.

Part of the remaining 93% will be invested in irrigation systems to increase productivity in the Ugandan agricultural sector. But these investments could produce counterproductive effects, for agricultural technology can contribute to increasing unemployment in rural areas.

Another sizeable debate relates to the displacement of population in favour of oil facilities, in particular the planned refinery. In a parliamentary debate on 26 September 2013, it was noted that land speculators had already bought large stretches of land at very low prices to sell it later at very high prices. According to parliamentarian Kasirivu Atwooki and others, if the farmers realise they have sold their land too cheaply, the feeling of having been robbed will have a negative effect on their support for oil projects.

On this subject, MP Betty Amongi asked the government to handle the negotiations with the speculators itself. In addition, according to this parliamentarian, the children of the farmers concerned should be given priority for jobs in the oil sector. The government should also give not only financial compensation for the land, but also build basic infrastructure before displacing the population. A question related to gender was raised concerning the payment of the compensation to husbands only. In this case, certain husbands are inclined to take new wives and abandon their former wives and children. Wafula Oguttu, one of the leaders of the parliamentary opposition, has asked for the possibility of the rural population of the region to obtain shares in the future refinery.

In this public debate, alerts were launched on the danger Uganda is facing of falling into the traps observed in Nigeria, where oil has generated corruption and conflicts.

Emmanuel Tumusiime Mutebile, Governor of the Central Bank, responded by affirming that Uganda would comply with the model of Norway and Botswana. According to him, “Uganda should become the Norway of Africa. We must manage our oil reserves in as exemplary a manner as Botswana with its diamond reserves."

On the same wavelength as the parliamentarian, mingling prudence with optimism, Ugandan journalist Henry Ford Miirima, who has published a book on Ugandan oil, stated: "Fortunately for Uganda, oil has been discovered at a time when the disastrous damage caused in other countries has attracted worldwide attention. The Ugandan leaders have drawn lessons from this. If the national hydrocarbons policy is followed to the letter and

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[103] For an in-depth analysis of the oil debate in Bunyoro kingdom and surrounding area, see: Lawrence Bategeka, Julius Kiiza, Sarah Ssewanyana, "Oil Discovery in Uganda: Managing Expectations", Makerere University, Kampala, no date; and: Anna Moore, "Investigation of Causes of Ethnic Identification and Mobilization in Oil-Rich Regions: Ethnicity, Birthplace, and Revenue-Sharing in Bunyoro, Uganda", M.A. Thesis, Yale University, April 2013

the country's leaders show their good faith, Uganda could become another Malaysia. The population is praying to God that the promising start to oil exploration in Uganda is not just an illusion.[104]"

4.1.2 Debate and political issues in DRC: the bad experiences of Bas-Congo

In the debate surrounding the oil in the African Great Lakes region, the Democratic Republic of Congo is a case in its own right, for it is the only country that is already an oil producer. The Congolese experience in terms of hydrocarbons is based on concrete, observed facts.

The Congo's oil wells are in the coastal basin of the Congo river estuary, a area of 5992 km^2, 1012 km^2 of which are in the waters of the Atlantic Ocean and the remainder on dry land[105]. Oil production in DRC began in 1975 offshore and in 1981 onshore and reached its peak in 1985 with 33,494 bpd, before declining sharply in the 1990s, and stabilising at a rather low level, but increased again to 28,000 bpd, then declined again, and is currently trending downwards.

Oil production in DRC (Source: Central Bank of the Congo, Summary of statistical information)

Year	Total production (barrels)	Barrels per day (bpd)
2006	9,009m	24681
2007	8,816m	24153
2008	8.365m	22855
2009	9,382m	25704
2010	8,628m	23638
2011	8,558m	23447
2012	8,545m	23347
2013	8,351m	22879
2014 (Jan-May)	3,400m	22517

The first operator of Congolese offshore oil was Chevron/Texaco through its local subsidiary MIOC (Muanda International Oil Company). In 2004, MIOC was bought over by French firm Perenco, which had already acquired the offshore blocks in 2003. Since then, Perenco, which already had a presence in Gabon, has become the sole oil operator and producer in DRC[106]. Onshore, the two subsidiaries of Perenco, Perenco-Rep and Lirex, ensure production; the national company Cohydro is a shareholder in Lirex. Offshore, it is the subsidiary of Perenco, MIOC, which also works on behalf of its partners Teikeko and Chevron.

Other onshore zones, initially owned by the French Fina (later a part of Elf, today Total) are not yet being exploited, and have been resized and reattributed by the Congolese government in 2005-06. Other enterprises such as Surestream and Soco, also active in the East of the country, have acquired some of these new blocks, but are not yet producing.

During the war of 1998-2003, the oil, exported entirely to the United States, represented the second source of currency for the Kinshasa government, after Kasai diamonds. This importance has long made oil “an exclusive preserve” with very little transparency, regarding both contracts and financial flows. The oil produced by Perenco, the only operator active in DRC, is stored on the offshore floating terminal of Kalumu, often

[104] Henry Ford Miirima, "Demystifying Oil Exploration in Uganda", Kampala 2009, pp. 141-144.
[105] Ministry of Hydrocarbons, Investors' Guide, Kinshasa 2003.
[106] Map of Perenco's operations: http://www.perenco-drc.com/about-us/permit-area.html.

without even touching Congolese soil. The contracts between the Congolese government and Perenco have never been published, unlike DRC's other oil contracts.

For some years now, the revenue from the hydrocarbons sector has been increasing steeply but the underlying reasons for this trend, which goes against the fact that production is declining, are unknown. According to the official sources, the country's oil revenue exceeded $200m in 2000 and $300m in 2007, and the government's income amounted to $37m in 2001, $82m in 2007 and even $314m in 2010, according to DRC's EITI reports[107]:

Year	Payments made by oil companies declared by them according to EITI	Public revenue declared by the government according to EITI
2008	FC 421bn	FC 320bn
2009	FC 181bn	FC 162bn
2010	FC 329bn	FC 327bn

Almost all of the public revenue in the hydrocarbons sector comes from companies operating in the West. Those who obtained blocks in the East pay next to nothing, apart from the signature bonus[108]:

Oil company	Public revenue 2010 according to the government
Mioc (Perenco)	$104,469m
Teikoku (Perenco's partner)	$79,855m
Lirex (Perenco's partner)	$46,282m
Perenco-REP (Perenco)	$44,336m
Chevron (Perenco's partner)	$32,599m
Oil of DR Congo (Caprikat/Foxwhelp)	$6m
Soco	$0,006m
Energulf	$0,006m
Nessergy	$0,005m
Divine Inspiration	-
Surestream	-
Total:	**$313,554m**

Since then, the revenue has increased further, but with a downward trend in 2013, according to the monthly and quarterly figures published – with gaps and sometimes delays - by the ministry of finances of DRC. Whereas in 2011-12 the revenue from the hydrocarbons sector was sometimes higher than that from the mining sector, in 2013 it fell to one third of mining revenue[109].

Quarter	Public revenue in the hydrocarbons sector
IV/2011	$131,712m
I/2012	$127,904m
II/2012	$104,547m
I/2013	$201,641m
II/2013	$66,370m
III/2013	$33,322m
IV/2013	$69,611m

This public revenue represents a considerable amount of oil manna given the low production, and DRC appears to benefit enormously from its hydrocarbons sector. With revenue of close to a million dollars per day, compared to production of 24,000 bpd, this

[107] All the reports are available in French at www.itie-rdc.org
[108] http://www.congomines.org/category/themes/budget/budget-national/
[109] http://www.congomines.org/category/themes/budget/budget-national/

amounts to more than $40 of public revenue per barrel, which seems improbably high and gives a real foundation to the regularly voiced but unproven suspicions that the volume of oil production is largely under-declared by the oil companies.

The high amount of public revenue makes the question of how it is used all the more relevant. According to the Constitution of 2005, 40% of this revenue should go to the producing provinces, in this instance, Bas-Congo. But this does not happen.

This situation is responsible for the discontent of the politicians and NGOs in this oil province, the visible manifestation of which was the vote expressed by the population of the region against the current power, in 2006 and 2011. But even in the province of Bas-Congo, the oil zone is closed. Perenco's operations cover a tenth of the surface area of the territory of Muanda. Several hundred wells have been drilled and an average of 25 new wells appear each year.

The population complains that it does not benefit economically at all from oil production. The town of Muanda, with a population of approximately 100,000, has an unemployment rate of 95%, and it is not connected to the rest of the country by a tar macadam road. The standard of living is described as detestable, the local population has no access to the social services of the oil sector or to their land[110].

In 2008, a conference was organised in the town of Boma by the NGO ADEV (Action for development and life) with the provincial government of Bas-Congo. Several problems were raised and can be grouped together in the following four categories:

- No consultation of the communities: the local communities are not consulted or informed prior to prospecting operations.
- No compensation paid, or a negligible amount only, for expropriation: complaints have been expressed about non payment of compensation for customary rights or that the amounts paid are very low.
- Enormous amounts of multiple types of damage caused to the environment: the environmental damage has been denounced, in particular the destruction of the forest ecosystems and sacred sites during seismic operations, the drying out of springs and the pollution of the water table, rivers and ocean. This pollution extends to the marine mangrove park which is drying out because of the spillage of hydrocarbons in the river. The air is also polluted by gas flaring. In addition, toxic waste is being buried on the edges of villages (the village of Kaï Tsanga, for example). On the subject of the environment, the general observation is that the companies do not even respect their own environmental policy, and this is aggravated by the inefficiency of the environment services of Muanda territory.
- Socio-economic concerns: it has been noted that oil production has very few economic benefits for the local communities. On the contrary, oil development causes the destruction of crops, with no compensation, in particular due to a bad

[110] The most detailed and most recent study of Perenco's oil operations at Muanda was done by French NGO CCFD (Catholic committee against hunger and for development – Terre solidaire): "*Pétrole à Muanda: La justice au rabais*", CCFD, November 2013, http://ccfd-terresolidaire.org/IMG/pdf/petrole_muanda_201113.pdf. See also: Pastor Jacques Bakulu, "*Développement durable et responsabilités sociales des entreprises", ADEV, "Atelier de formation sur la Démocratie, l'Environnement et le Développement Durable: pour une exploitation pétrolière et minière responsable dans le Territoire de Muanda*", 2008; Antoine Mingashanga, "*Exploitation et production du pétrole à Moanda au Bas-Congo: Quelle est la part des communities locales*?", Cenadep, Kinshasa 2006; Babi Kundu & Jacques di Mapianda Bakulu, "*Le pétrole de Moanda au Bas-Congo: Qui en Bénéficie*?", Sarwatch, Johannesburg 2008

> employment policy towards the local labour force. Much more serious than this are the divisive strategies supposedly implemented within the communities. In the face of all this, the local authority is described as complacent, and ineffective, with a tendency to defend the oil companies. This situation contributes to maintaining the fear and resignation of the local communities[111].

A parliamentary inquiry recommended a revision of the conventions with Perenco. In its report of 27 December 2007, a Congolese parliamentary inquiry commission recommended targeting the correction of a certain number of defects identified. It suggested the revision of the agreement and successive addenda binding Perenco, MIOC and Teikoku to the DRC government to factor in environmental and social aspects and the sustainable development of Muanda territory and the province of Bas-Congo. It also proposed to raise the amount of funds allocated annually to the development of the city of Muanda and the province from $210,000 to $1 million. According to this commission, companies should be obliged to conduct environmental impact studies, combined with management plans for the environment of the oil fields. Lastly, it was suggested that the government set up a Commission for the Continuous Surveillance of the environment in the Congo river estuary and sign a memorandum of understanding regarding the commitments of the oil companies[112].

These recommendations do not appear to have been followed. In November 2013, a Congolese Senate commission reiterated the request to Perenco to depollute the Muanda sites. According to the President of this senatorial commission, Flore Mosendu “the government should carefully instruct Perenco, which is today the sole oil operator in Muanda, to respect environmental norms. Especially, it is important to capture all the gas that emanates from oil production to process, liquefy and, where relevant, make it available to the local population as an alternative source of energy to electricity."[113]

The challenge facing DRC over the coming years will be to avoid repeating these negative experiences in the eastern part of the country, where the potential for conflict is greater. To do so, the country should tackle the problems of governance which are not specific to the oil sector.

Already in 2007, the *Fédération des Entreprises Congolese* (FEC) had drawn attention to a certain number of principal “constraints” in the oil sector[114]. These included all the red tape the oil companies are subjected to, the factoring in of the demands of the “native communities” and the “inappropriate requests" from the provincial and local authorities, for services, extra-conventional privileges (heavy machinery for road repairs, vehicles, fuel, etc.).

This is the backdrop for the debate on DRC's new oil legislation, which is strongly contested (see section 3.4). Unfortunately, there are no appropriate answers to these different problems of governance in the current draft law. The lack of clarity and transparency in the oil sector at the level of the Congolese State has been one of the battlefields of Jean Bamanisa, elected member of the National Assembly, in the legislature

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111 ADEV, op. cit., p. 15-16
112 Kundu & Mapianda, op. cit., p. 52-54
113 Radio Okapi, 22 November 2013
114 FEC, "État des lieux de l'économie congolaise", Kinshasa, March 2007, p.36-37, http://www.fec.cd/pdf/etat_des_lieux.pdf

from 2006-11[115].

The development of a renovated oil policy in DRC is all the more important as the geologists say that the reserves in the coastal basin are almost exhausted. According to Perenco, the potential of the basin is today "low", with certain fields at the end of their lifetime – more than 90% of the proven reserves have been recovered – and other "marginal" ones, with small quantities of hydrocarbons, or "difficult to develop in normal operating conditions."[116]. These constraints are further complicated by border disputes with Angola, in the Atlantic ocean, which should be resolved as part of a global cross-border resource management strategy.

4.1.3 Debate and political issues in Rwanda: expropriation the main concern

According to the Rwandan legislation, project promoters are obliged to conduct an environmental impact assessment (EIA). This constraint ensures that the desired measures for environmental protection are integrated into the planning, design, execution, monitoring and decommissioning of the project. On this subject, article 63 of the *loi organique* (organic law) on the protection of the environment stipulates that the population is entitled to have access to information, to express its opinion on the subject and be represented on the decision making bodies.

For certain types of projects likely to have a negative impact on the environment and the socio-economic life of the local population, it is compulsory to conduct a public consultation. The objectives of this include offering stakeholders and communities the opportunity of raising issues and concerns relative to the project, carrying out a socio-economic survey, providing information about the project, establishing dialogue, and involving the stakeholders in identifying their interests. In addition, the aim of the public consultation is to highlight solutions in response to the concerns expressed and incorporate them into project design, production and management with the ultimate goal of improving it through the incorporation of the expertise of private individuals, professionals, local authorities and organisations.

In this context, three public consultations were conducted for the KP1, REC and Kivuwatt projects. For this last project, the consultation involved people from the following groups: individual fishermen, fishing cooperatives, farmers, local authorities and the personnel of Kigali Health Institute (KHI). Other resource persons were been invited to contribute. These include the people in charge of the district of Karongi, the offices of EWSA (Energy, Water and Sanitation Agency) in the districts of Karongi and Kigali, and representatives of the Ministry of Infrastructure (MININFRA) and the private sector.

The main concern raised was the expropriation the KivuWatt project will bring about. Thirty-nine people and a primary school have been displaced following the building of the electric power station. Expropriation for reasons of public utility is written into the land ownership legislation (*loi organique* 08/2005 on land ownership system in Rwanda) which stipulates that this procedure can be used pursuant to the law and prior to the appropriate compensation. (Article 3). Generally the problem which arises is related to

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[115] In 2012, Jean Bamanisa was elected governor of the Orientale Province, which contains the major part of the oil blocks of the Graben. If he remains faithful to his political line, he should also advocate the oil activities in his province being given a tighter framework than in Bas-Congo.

[116] Thierry Supa (senior geologist, Perenco), "*Particularité Géologique du Bassin Côtier*", presentation at iPAD DRC Oil & Gas Forum, Kinshasa, 17-18 September 2013, http://www.miningreview.com/wp-content/uploads/i/OilGas/Thierry-SUPA.pdf

the fact that the compensation is not fair and paid in advance and that the procedure does not make it possible to respond to the numerous risks consecutive to displacement.

The other concern raised is associated with the risk of an increase in the spread of HIV/AIDS due to the influx of unmarried seasonal employees from outside the region. The people consulted also expressed the fear of not being able to take advantage of the job opportunities due to a lack of technical skills, leading to their exclusion from this type of advantage.

4.2. The environmental issues: destroy to produce?

All over the world, experience has shown that the exploitation of oil has negative effects on health, agriculture, livestock breeding, fishing, the quality of the air, the soil, water and the water table in and around the oil zones[117].

Oil exploitation in the Albertine Rift is associated with numerous particular environmental risks due to the fact that it will take place in a unique set of ecosystems with exceptionally rich biodiversity.

Many studies have already shown how sensitive fishing resources are to oil exploitation, associated with the high frequency noise of oil development activities, oil spillages and pollution from hydrocarbon compounds and chemical products mixed with mud caps. A production platform can discharge approximately 60,000 m^3 of drilling fluids and 15,000 m^3 of cuttings. Generally, production takes place after the drilling of approximately 50 exploratory deposits on average. These elements that pollute can provoke drastic changes in the aquatic environment, leading to the migration or the death of fish.

Furthermore, the waste from drilling also increase the turbidity of the water. This causes physical damage to the filtration and respiration organs of marine animals. In addition, cancers in fish, particularly in sediment-dwelling organisms have been directly linked to the pollution originating from off-shore oil production facilities.

It has also been observed that the presence of hydrocarbons in seawater encourages the development of new bacteria that feed on the oil, thereby changing the initial biodiversity. A Norwegian study has recently shown that in small doses, polycyclic aromatic hydrocarbons cause the feminisation of male fish. The direct consequence of this is decreased fertility[118].

Other serious risks have been noted, in particular those resulting from the pollutants discharged into the water which fix onto marine sediment and thereby modify chemical components and physical characteristics. This can lead to a reduction in the number and diversity of the species that live on and in this sediment. The phenomenon can be observed within a radius of two kilometres around the drilling zone. Coastal ecosystems may also be affected by the discharge of hydrocarbons.

Seismic reflection can have considerable consequences if we refer to the studies conducted on the subject. Thus, the propagation of sonic shockwaves in water causes sound pollution, which is harmful to the aquatic fauna, over more than a hundred kilometres. The consequences vary depending on the proximity of the source of the shockwave and the size of the animal. Within a radius of approximately ten metres

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[117] FEFRED Relief Wildlife, oil discovery in the Albertine rift zone. *Défis, enjeux et perspectives économico-environnementales*, by Musumba Teso Philippe, September 2011.

[118] Meier, S., Andersen, E.T., Hasselberg, L., Kjesbu. O.S., Klugsøyr, J., and Svardal, A., 2002. Hormonal effects of C4-C7 Alkyphenols on cod (*Gadus morphua*). Report to the Norwegian Oil Industry Association, Norwegian Institute of Marine Science, 68 pp. Available on: http://www.imr.no/

around the prospection zone, the damage caused can be haemorrhaging, paralysis and loss of vision. Furthermore, noise seems to have a considerable impact on species during the initial stages of life (egg, larva, fingerling).

According to some scientists, the technique of prospecting using sound waves can affect the distribution of fish, over a radius of around ten kilometres. In Norway, observations point to a 70% reduction in fish catches in the firing zone and 50% for the entire zone studied[119].

Mammals and crocodiles are sensitive to the vibrations produced by seismic prospecting and by the heavy machinery and drilling operations. The noise produced by oil activities can have consequences on the modes of reproduction of the fauna. The clearing of vegetation during infrastructure development reduces the available habitat for the fauna, destroys the habitats of certain animals and can block wildlife corridors. Oil spillage and pollution caused by other chemical products used in oil development can contaminate sources of water for the fauna and affect the water serving as habitat for certain birds and fish.

Birds are not spared precisely because their habitats can be destroyed and they can be affected by air pollution and waste waters from oil and gas activities.

Plants are generally affected by the clearances carried out to develop the oil sites, oil spills and pollution. For example, in Muanda, western DRC, certain plants, such as the cashew tree and mangroves, are drying out. One of the possible causes could be the potential pollution of the atmosphere[120].

We know that marshes are very sensitive to pollution, given their difficulty in recovering when they are affected by oil spills. This situation affects the production areas and habitats of birds, fish, amphibians and certain mammals. It also apparently affects the upper part of the water table. Papyrus and swamp forests are the most sensitive.

The risks of water pollution should be the subject of particular attention. Given that in the Albert Graben, some of the prospecting and exploration activities will take place in the lakes and their basins, and the two northern lakes (Albert, Edward) and two of the southern ones (Kivu and Tanganyika), are actually connected. This makes the water sources in the Graben particularly vulnerable to contamination. Underground waters, the shallowest parts of the water table, are the most vulnerable.

The oil business comprises a high potential for contamination of the soil, air and water. The hydrocarbon pollutants in the soil can take the form of used solvents or dissolved metals with the potential to corrupt the chemical composition of the soil.

The elimination of solid and liquid waste is therefore a crucial question. Oil and gas activities produce waste that can be eliminated in the swamps since they cover the plains. The elimination of waste has potential negative impacts on wetlands, for it leads to changes in the quality of the water and the range of biodiversity. Liquid waste pollutes the water of swamps and so has a negative impact on aquatic life. Pollutants such as heavy metals accumulate in aquatic organisms and are transferred through the food chain, and therefore have an incidence on the health of primary and secondary consumers.

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[119] Kelle, L., Semelin, J., *Prospections pétrolières offshore, la législation française accuse 50 ans de retard*, Courrier de la Nature no 221, July-August 2005.
[120] Migashanga Kwete, A., *Impact de l'exploitation sur la santé des populations des populations sur l'environnement à Muanda. Cas de la firme Perenco*, Antwerp, July 2009.

4.2.1. Biodiversity weakened in Uganda

In Uganda, the region of the Albertine rift has one of the richest biodiversities in the country. The region possesses 14% of all the reptile species in Africa (175 species), 19% of the amphibian species of Africa (119 species), 35% of African butterfly species (1300 species), 52% of all the species of birds (1,061 species), 39% of all the mammal species (402 species), 14% of the plant species (5,800 species) and more than 400 species of fish. The groups of reptiles and amphibians are also represented in the rift. Among these, 35 species of mammals are considered to be threatened with extinction (in critical danger, in danger or vulnerable according to IUCN classification criteria), 25 species of birds, 16 species of amphibians and 40 species of plants are considered severely threatened. Until now, 34 endemic mammals, many of which are small mammals, 41 species of birds, 16 species of reptiles, 34 species of amphibians and 117 endemic species of butterfly have been identified in the region.

This is reflected by the numerous protected areas located there. The Ugandan oil region comprises Queen Elizabeth, Rwenzori Mountain, Kibaale, Semliki, Murchison Falls, Bwindi Impenetrable Forest and Mgahinga national parks.

The mountain gorilla, the red antelope of Rwenzori and the golden monkey are examples of endemic species of mammals. In Bwindi impenetrable forest and Kibale national parks, scientists have counted 173 species of polyporus fungi, which constitute 16% of the known species North America, tropical Africa and Europe. In addition, the mountains and forests of this region are important catchment areas for a steady supply of clean water for the local communities and even more distant ones.

In Uganda, oil exploration and development are therefore taking place in a setting with unique biodiversity. Today it is known that seismic prospection in a national park comprises many risks for both aquatic and land creatures and generally for the ecosystem, in particular waterways, swamps and forests.

Since oil prospecting began in the district of Buliisa, the companies continue to accumulate waste without processing it. This waste comprises waste mud and cuttings from drilling, which is left on the ground and covered in plastic, while the liquid oil waste is conserved in open ditches and covered with concrete. On the oil sites located in the district of Nwoya, the waste is stored in containers.

However, since 2012, the environmental authority NEMA has given the oil companies clear directives obliging them to process the waste generated by their activities. Until April 2013, none of the companies had a contract with a hydrocarbons waste manager, when this is compulsory. At the beginning of April 2013, Tullow announced that it was seeking to hire Ugandan companies with the capacity to provide waste management services to support the development of its activities in block 2[121].

This situation is emblematic of the complexity of the question and raises the problem of the capacity of the public and private actors to play their role in enforcing the required environmental standards.

4.2.2. Threats to Virunga National Park in DRC

In the Democratic Republic of Congo, although in general oil development raises questions and environmental concerns throughout the Congolese rift valley, it is

[121] http://www.redpepper.co.ug/oil-waste-accumulates-as-firms-mess-up-treatment-and-disposal/, 16 April 2013.

particularly block V that catalyses the most attention. Granting this block to British oil firm Soco in 2010 raised much concern and controversy, for block V occupies 85% of Virunga National Park, home to 200 species of mammals including mountain gorillas and okapis that are to be found nowhere else in the world than in this region[122].

The controversy crystallised around the desirability of granting an exploration licence in Virunga Park and on the methods to be used, and likely to keep the negative impact on the environment to a minimum. At different stages, several players were involved while Soco tried to respond to the concerns raised.

After obtaining the exploration agreement, Soco stated that "during the initial exploration period of 5 years, the activities of block V would consist in acquiring 300km of seismic data and the drilling of two exploration wells"[123]. An environmental assessment report was submitted to the Congolese government on March 2011, and the final report in May 2011[124]. Following the award of the exploration license on 26 October 2011, Soco announced plans to conduct magnetometric and gravimetric aerial data acquisition at the beginning of 2012, and a seismic survey in Lake Edward[125]. The magnetometric survey had initially been scheduled for 2011.

In March 2012, Soco announced that it had been given authorisation to conduct an aerial survey including flights over Lake Edward in the following months. The results obtained made the company decide to seek authorisation to conduct a seismic campaign with compressed air in Lake Edward. This method had been recommended by the contractual partner, for it allegedly did not endanger the aquatic fauna, especially because a similar activity had already been carried out by another operator. The following activities had to be submitted for approval of the DRC authorities and be the subject of an agreement between the stakeholders. Soco therefore envisaged conducting no direct exploration activity in Virunga National Park for at least six months.

The decisions taken by the Congolese authorities, by the contradictions and ambiguities they contained, created a fault line allowing Soco to carry out exploration activities which at the outset had been prohibited. Thus, while the license granted by the minister of the environment, dated 1st September 2011, authorised only "the acquisition of aerogravimetric and aeromagnetic data" and specified that the license would be "withdrawn in the event of non-respect of the environmental and social commitments", the license issued almost two months later by the minister of hydrocarbons, removes this constraint.

On 26 October 2011, the minister of hydrocarbons authorised Soco to "carry out the minimal programme of reconnaissance and exploration work allowed for in Article 8 of the production sharing agreement". This defines a prospecting and exploration programme in five stages comprising geological studies, preliminary aerial surveys and seismic acquisitions, seismic and environmental surveys for the preparation of the successive drilling of two exploration wells. The realisation of each stage was to depend on the success of the previous one.

These licenses with different contents, granted by two different ministries, created much ambiguity, because a permit with a very broad framework was granted after a more

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[122] Congo: call to protect Virunga Park from oil exploration, http://www.rtbf.be/info/monde/detail_rdc-investir-dans-le-parc-des-virunga-plutot-que-d-y-chercher-du-petrole?id=8059496.
[123] Soco International, Half Year Report for the Six Months Ended 30 June 2010, 26 August 2010.
[124] Soco International, Interim Management Statement, 16 May 2011.
[125] Soco International, Interim Management Statement, 1 November 2011

restrictive permit, allowing the company to bypass the restrictions imposed previously.

The decisions of the Congolese authorities raised the hackles of several players, including Belgium, UNESCO and the WWF organisation. In the Belgian parliament, the Belgian Minister of Foreign Affairs Didier Reynders affirmed that the authorisation granted by the Congolese authorities infringed Congolese legislation and DRC's international commitments[126].

International NGOs entered the arena by declaring that the Congolese government had authorised not only aerial surveys but also seismic prospecting in the park, and that Soco was planning to establish a base in the fishing community of Nyakakoma in the heart of the park[127]. As proof of these allegations, Global Witness produced a copy of the original production sharing agreement of 5 December 2007, which came into force with the presidential decree of 2010, and the licenses issued by the ministries of hydrocarbons and the environment[128].

In parallel, the WWF launched a global campaign to protect the park. In this framework, on 7 October 2013, the organisation lodged a complaint against British oil company Soco with the Organisation for Economic Cooperation and Development (OECD) for "violation of international standards of corporate citizenship" asserting that "Soco's oil exploration activities in and around Virunga National Park violate OECD directives concerning the environment and human rights[129]".

Also, UNESCO's world heritage committee launched an appeal to the authorities in Kinshasa, requesting the annulment of the oil exploration licenses granted. It also requested that the concession beneficiary companies –Total SA and British company Soco International PLC – refrain from undertaking exploration in the park. French Total and Italy's ENI undertook to respect the current limits of the park.

Faced with different protests and opposition, Soco attempted to appease the concerns. By way of a response to Global Witness, Soco declared that it adheres to all of the DRC's environmental conservation regulations, which include the continuous use of environmental impact studies at each stage of its activities. It also states that it is working closely with the Congolese Institute for Nature Conservation ('ICCN'). The company emphasised that it is at the preliminary phase of exploration for possible hydrocarbons and, even if successful, it is several years away from concluding its scientific research. And added that at this stage, no drilling has been planned.

According to the company, block V is not located close to the Mikeno sector, which is home to the famous mountain gorillas, a subject that has been the target of much inaccurate media speculation. Furthermore, SOCO has stated it will never seek to have operations in the mountain gorilla habitat, the Virunga Volcanoes or the Virunga

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126 "RDC: la Belgique contre la reprise de la prospection pétrolière au Virunga", AFP, 8 March 2012.

127 Global Witness: "UK oil company announces workplan to explore in Congo's UNESCO World Heritage Site after pressure from Global Witness" , 16 March 2012.

128 The PSA of 2007: http://mines-rdc.cd/fr/documents/Hydro/contrat_rdc_dominion_soco_cohydro.pdf
The Oil Ministry Permit:
http://www.globalwitness.org/sites/default/files/library/Ministere%20Hydrocarbures%20Arr%C3%AAt%C3%A9%20d%27exploration.PDF
The Environment Ministry Permit:
http://www.globalwitness.org/sites/default/files/library/Ministere%20Environnement%20Arr%C3%AAt%C3%A9%20d%27exploration.pdf

129 http://www.lemonde.fr/planete/article/2013/10/07/pour-sauver-le-parc-congolais-des-virunga-wwf-porte-plainte-contre-le-petrolier-soco_3490974_3244.html

equatorial rainforest. The initial exploration phase includes an aerial survey which would then be followed by a survey on Lake Edward, both commissioned by the DRC Government. To conclude, Soco does not expect any animals or fish to be harmed as a direct result of its activities.[130]".

In a subsequent statement, Soco provided more information: "The preparations are continuing for aerial data acquisition, which will include a helicopter flight over Lake Edward and the surrounding savannah. The mountain gorillas' habitat is not located along the flight path of the helicopter and it will not touch down in Virunga National Park. Basic environmental studies including the inventory of hippopotami, fish and molluscs are planned on Lake Edward, depending on the security situation on the ground"[131]. In addition, the company stated that "if the DRC Government decides that our involvement in Block V is no longer legal then we will of course stop all activities.[132]"

As far as security is concerned, the M23 uprising began in parts of block V. However, the work Soco was planning in the block was located outside the zone controlled by M23, but there were other armed groups active in the area. This situation led to delays and finally to the stoppage of Soco's activities, due to the deterioration of the security situation in North-Kivu. Aerial acquisition has therefore not yet commenced. The company also stated that its logistic base and helipad were displaced from Ishasha in DRC to Kihihi in Uganda, in September 2012, and that the personnel were temporarily withdrawn when Goma fell under rebel control[133].

In the course of 2013, the situation did not change much, and Soco continued to do preparatory work only. "Preparation is underway for the environmental studies to commence shortly, first with a lake bathymetry survey on Lake Edward which is planned to start within the next couple of weeks."[134].

In the meantime, environmental activists stepped up their campaigns against any exploration inside the park boundaries. There are contradictions between Soco's statements and its actions on the ground. Whereas the company alleged it was working with ICCN, relations between Soco and the local conservationists seemed to be increasingly tense. On 20 September 2013, a leading member of the ICCN team, Rodrigue Katembe Mugaruka, was arrested by a group of 25 FARDC soldiers, and his colleague had to hide[135]. It was reported that this arrest and that of other members of ICCN staff at Kanyanbayonga was a reaction to the fact that Katembe had prevented Soco from erecting a telephone pylon at Nyakakoma without ICCN's authorisation[136].

On 4 October 2013, Congolese journalist Gaius Vagheni Kowene, working for Radio Netherlands, was attacked in his home in Goma by armed men who beat him and confiscated his equipment, computer and passport, because he had conducted a survey on Soco's activities in Virunga Park[137]. Prior to this, the journalist had mentioned on Twitter his difficulties in researching Soco's activities, stating: "*I have never worked on a*

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[130] Soco International, Statement on inaccuracies on conservation group websites re SOCO's activities, 28 June 2012.
[131] Soco International, Interim Management Statement, 6 November 2012.
[132] Soco International, Soco response to WWF web article, 30 October 2012
[133] Soco International, Soco response to WWF web article, 30 October 2012
[134] Soco International, Interim Results, 29 August 2013
[135] Personal communication, 21 September 2013
[136] Radio Okapi, "Le conservateur principal du parc des Virunga aux arrêts à Goma", 24 September 2013; "Parc des Virunga : Soco accusée d'avoir commandité l'arrestation d'un conservateur de l'ICCN", 28 September 2013
[137] Journalistes En Danger (JED-Afrique), press statement, 9 October 2013

file as sensitive as the affair of Soco in Virunga Park. When you are preparing to make a field visit, you are warned that you are throwing yourself into the lion's den! You want to interview a conservationist, and he tells you his manager has instructed him to say nothing about the case. You turn to the provincial Minister... then try and understand what follows![138] "

After WWF's complaint to OECD, Soco boasted of the social progress it had made in the park, stating that the erection of a telephone pylon in August meant that the population was no longer forced to walk 20 km over "hostile, uncertain terrain" to access the network. The inventory of fish was underway, and the hippopotamus census was scheduled for November 2013[139].

On 11 June 2014, Soco and WWF announced that they had reached an agreement to stop any further exploration area within the park. According to Soco: "In relation to Virunga National Park we will complete our existing operational programme of work in Virunga which we anticipate will conclude within approximately 30 days of the date of this statement. The company commits not to undertake or commission any exploratory or other drilling within Virunga National Park unless UNESCO and the DRC government agree that such activities are not incompatible with its World Heritage status.[140]"

4.2.3. Risks of explosion related to the exploitation of gas in Lake Kivu

Unlike the other lakes in the Albertine rift which are characterised by a rich biodiversity, that of Lake Kivu is slightly limited. The environmental issues here mainly concern the local population. The impact that the exploitation of the gas of Lake Kivu could have on nature and the structure of the lake, as well as on the environment in general are the subject of particular attention.

Like the other lakes in the East African Rift valley, Lake Kivu is stratified in three layers: epilimnion (0-50m), metalimnion (50 - 75m) and hypolimnion (75m -)[141]. The metalimnion is composed of mineral salts, but the hypolimnion is composed of gases such as carbon dioxide CO_2 (75%), methane CH_4 (15%) and 10% other gases. The quantity of CO_2 is estimated to 256 km^3, the CH_4 at 54 km^3 and the volume of water in the Lake is 560 km^3 for a surface area of 2,055 Km^2. The two predominant gases are intimately bound and are physically dissolved in the hypolimnion.

Hypotheses have been formulated about the possibility of four types of explosion of gases in the Lake. These explosions could be a major catastrophe because of the location of the cities Goma (DRC) and Gisenyi (Rwanda) at the northern end of the Lake, Bukavu (DRC) and Cyagungu (Rwanda) at the southern end, and several villages on its margins. More than two million people could be affected.

In Lake Kivu, the possibility of a CO_2 gas explosion as in Lake Nyos in 1986 is currently very small, for the dissolved carbon dioxide and methane have not reached saturation points in the hypolimnion. In addition, this is precluded by the temperature profile from the bottom to the depth of 60 m as the temperature descends quite rapidly, and this increases the solubility as depth decreases.

Another factor that could destabilise the balance of the Lake is volcanic activity, as the

[138] Tweets from @gkowene, 25 September 2013
[139] Interim Management Statement, 19 November 2013
[140] Soco International, Statement 11 June 2014
[141] D.M. Wafula et al.

Lake is located alongside the still active Nyiragongo volcano. The most cataclysmic explosion might occur if a very fast lava flow entered the lake, which could break the metalimnion natural barrier or the hot lava could disturb the lake stability by generating lake-water convection. Other possibilities for gas explosions could be the result of a volcanic eruption of the Nyiragongo in the Lake near the shore or a major earthquake could trigger a tsunami. In the past, Nyiragongo has erupted into Kivu and on the shoreline (Mountain Goma)[142]. However, there are no reports available on these past eruptions.

The eruption of the Nyiragongo on 17 January 2002 did not breach the natural barrier. This could be explained by the fact that the lava flowed slowly and the temperature descended along the 5 km of the route. The lava crossing Goma city transported a lot of materials which decreased its speed and temperature, so that the impact on the water of the lake was attenuated. The location of Goma on a plateau contributed much to reducing the speed of the lava before it reached the lake.

Nor can the possibility of an extrusion of lava directly under the Lake be excluded, for as the entire region experienced in 2002, fissures can be reactivated[143]. This lava could come from small dormant volcanoes at the bottom of the Lake which have been identified in the bathymetric surveys.

There is also the risk of an explosion due to human activity. This risk can result from unregulated, large-scale exploitation of the CH_4 without close scientific monitoring, perhaps even by satellite, as some suggest. This type of risk has been the subject of debates where the arguments for both sides were presented by the experts. While some experts recommend the necessity of reinjecting the degassed waters in depth, to maintain the stability of the lake[144], others assert that this is not necessary[145].

Given the danger posed by the billions of cubic metres of gas dissolved in the deep waters, the extraction and exploitation of this gas mixture should be strictly controlled. Thus the exploitation of the gas would present a twin advantage: produce energy and reduce the risks of explosion.

A safe exploitation respectful of the standards is indispensable to protect the balance in the lake during the slow modification of its stratification[146]. Three separate exploitation options have been studied: alternative shores (the exploitation system on both sides of the shore), an alternative semi- off-shore (the extraction system on a barge with treatment on-shore) and an alternative off-shore. Different new techniques, for handling this mixture of gases, should be developed to maximise the quantity of methane in the gas extracted by reducing its loss during exploitation.

One of the major errors would consist for example in degassing the waters on a large scale and returning the untreated degassed waters to the lake, or lowering the level of the lake if the waters were run off to another destination. In addition, it is absolutely necessary to avoid any changes in pressure, turbulence or resonance ratios.

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142 D.M. Wafula et al., op.cit.

143 HALBWACHS,M. Dr. K TIETZE, Dr. A LARKE, Dr. MUDAHERANYWA, Investigations in lake Kivu (East Central Africa) after the Nyiragongo eruption of January 2002. Specific study of the impact of the sub-water lava in flow on the lake stability, March 2002, p.2.

144 Michel HALBWACHS, How to tackle the regulation ruling the methane gas exploitation at Lake Kivu, 17 Nov. 2011, p.5.

145 Mark HALPER, Converting danger into energy: Rwanda to divert lake's lethal gases to power plant, Feb. 14, 2012.

146 Tietze, op.cit.

For economic and feasibility reasons, the degassed water should be returned to the lake in the immediate vicinity of the treatment plants. In this context, a safe extraction method should be applied, founded on a ratio between the volumes extracted and the volumes returned. This is the reason why the exploitation of methane in the lake should be subject to scientific control and supervision encompassing conscientious management and monitoring of the operations of the whole process.

From the point of view of the risks, the stability of the Lake will increase as the extraction of the methane progresses, given that the principal layer will decrease with the extraction waters. When the extraction is complete, all the gas will have been removed from the lake and there will no longer be a risk of explosion. Consequently, the flora and fauna will thrive, once they are rid of this handicap of the gas.

The probable risks must be taken into consideration before and during the exploitation of the gas. This is the reason why environmental impact studies must be compulsory before any small or large scale exploitation to make sure that for each possible impact, the mitigating measures proposed are appropriate, with special attention accorded to the scale of the exploitation, the discharge of degassed waters and CO_2 and the assurance of the stability of the stratification of the Lake.

These demands conform to Rwandan and Congolese environmental legislation. In Rwanda, article 67 of the institutional act on the protection and conservation of the environment No. 08/2005 of 14/07/2005 stipulates that all projects must be subject to an environmental impact study prior to the granting of authorisation to implement. The same applies to programmes, plans and policies likely to affect the environment. For the DR Congo, decree No. 003/2008 of 15/08/2008 of the Environment Minister stipulates the list of projects concerned by the obligation to carry out a prior environmental study. The extraction of gas from Lake Kivu is among them.

4.3. What is at stake economically: a development asset?

4.3.1. Reducing dependence and the energy deficit

The African Great Lakes region has a population of slightly over 142 million[147] and consumes up to 150,000 barrels of oil per day (bpd). This consumption is increasing at a rate of 5% per annum. Until now, no east African country has produced oil. They are all obliged to import, with landlocked countries being penalised most. The share devoted to importation of fuel is therefore very high, especially since the countries are exposed to a high rate of price volatility. To illustrate this strong dependence, the case of Burundi is emblematic, as it devotes more than 90% of its export revenue to the importation of fuel[148].

The energy dependence is aggravated by price volatility. Over a period of ten years, since 2003, the price of a barrel of oil has quadrupled. It was 26 dollars in 2003, then peaked at 140 dollars in 2008, then fell back and has been oscillating around 110 dollars since 2011[149].

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147 http://www.worldometers.info/fr/population-mondiale/#countries (Tanzania: 49,253,126, Kenya: 44,353,691, Uganda: 37,578,876, Rwanda: 11,776,522 and Burundi: 10,162,532). To this should be added almost 20 million inhabitants in Eastern DRC.

148 Republic of Burundi, CSLP II, p.84.

149 http://prixdubaril.com/

The growing demand and acute shortage of electricity in the region offers an opportunity to use a good part of the gas and oil resources discovered and produced in the region. In this respect, Rwanda has already launched its methane production programme which will gradually resorb the energy deficit confronting this country and its neighbours, by directly using the gas as fuel and transforming it into electricity.

Within this framework is the Kibuye Power 1 project. Today, the Kibuye Power 1 facility generates around 2MW for an installed capacity of 5MW. The gas extracted will be treated to produce electricity. The methane gas produced will initially be used to fuel a set of three generators, "Gas Extraction Facilities" (IEG), which will produce approximately 25 MW electricity for the Rwandan network in phase 1.

ContourGlobal, an American company, was initially supposed to complete this first phase of a project for 100MW, produced from methane, in the second half of 2013. Phase 2 will produce an additional 75 MW electricity, using another nine IEGs to expand KivuWatt to a little over 100 MW. This project will allow Rwanda to double its energy production and even export electricity[150].

Another project is being arranged by the REC which obtained a gas concession to generate, in addition to the 5MW, 50MW of electricity, with the option of increasing production to 100 MW.

The situation with oil is more complicated: to use it locally, refineries would be needed and the producing countries may well earn more by exporting. The idea of building a refinery based in Uganda and shared by four countries- Uganda, Kenya, Rwanda and South Sudan - has already been launched. The planned refinery will have a capacity of 60,000 barrels per day and the building should be completed in 2017. It is the result of a public-private partnership, in which the States will own 40% of the capital[151].

Currently, the region is serviced with oil products through two principal ports: Mombasa and Dar-es-Salaam. According to different sources, Kenya imported approximately 4.5 million tonnes of oil in 2013, the equivalent of 100,000 barrels/day, through the port of Mombasa. Uganda, Rwanda, Burundi, South Sudan and part of Tanzania have imported a similar amount through the same port. The demand of all these countries is growing fast and is expected to increase by slightly more than 30% between 2013 and 2015, according to the official estimations[152].

Uganda, which is already positioned to be the next oil producer in the region by 2017, has a sizeable potential market mainly constituted by the countries in the region. This market could even extend to other COMESA countries, of which Uganda is a member and most of which do not yet produce oil. Neighbouring South Sudan, a major oil producer, also hopes to serve the East-African market on condition that it reduce its dependence on Sudan for hydrocarbon exports.

4.3.2. Development of infrastructure

Even before any oil is produced in Uganda, Kenya or Tanzania, some countries have already planned ahead to develop together a series of road and railway infrastructure and pipelines.

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150 Benjamin Augé and Rose Nakayi, A new oil and gas frontier, June 2013.
151 Towards a common refinery for Uganda, Rwanda, Kenya and South Sudan, http://www.agenceecofin.com/hydrocarbures/1809-13672-vers-une-raffinerie-de-petrole-commune-a-l-ouganda-au-rwanda-au-kenya-et-au-soudan-du-sud, 18 September 2013.
152 "Kenya fuel imports to grow a third over next two years – oil executive", Reuters, 28 November 2013

Within this framework the Kenyan President, Uhuru Kenyatta**,** officially launched the construction of the Mombasa-Malaba railway line, on 28 November 2013. This trunk road is the king pin of the future major east-African railway that will connect Mombasa to Kigali via Nairobi and Kampala. The total cost of this railway is estimated at US$ 13.8 billion. At the inauguration ceremony of the work, the Kenyan President affirmed that *"the railway will further the development not only of Kenya, but beyond, of the whole region*[153]*"*.

The Kenyan government has also expanded the port of Mombasa by building a new dock (No. 19), to increase the capacity of the port. It is 240 metres long and has an annual capacity for loading and unloading of 200,000 standard size containers, which represents a doubling of the current capacity of the port of Mombasa.

The Rwandan and Ugandan presidents attended the inauguration of this new dock on 28 August 2013. The development of the facility is highly appreciated and described as a decisive factor for regional integration[154]. The Ugandan President mentioned the connection between this development and the necessity of connecting the producers of goods and services in the region to be able to access local and international markets. For the Kenyan President, this dock being operational is intimately linked to the development of the railways and a road network. He promised that his country was ready to undertake the construction of a railway linking Kenya to the other countries in the region[155].

To face the needs inherent to the production and transport of hydrocarbons in the region, certain countries have agreed to make joint investments in infrastructure. On this subject, on 25 June 2013, the three heads of state from Kenya, Uganda, and Rwanda met in Kampala. They decided to build two oil pipelines starting from the one that already connects Mombasa and Eldoret. It only has to be extended to Rwanda. Another pipeline is planned to connect Uganda, more precisely Hoima, South Sudan and Kenya to the port of Lamu. This town in Uganda was chosen because a refinery is currently being built there. The three countries have also agreed to cooperate in building an oil industry in Uganda[156].

The Ugandan government is assessing the possibility and feasibility of transporting some of its crude oil to the coast through the planned Juba-Lamu pipeline, which is the result of a joint-venture between the governments of Kenya and South Sudan. The two governments have hired a Japanese firm, Toyota Tsusho Company, to lay 2,000 kilometres of pipeline for the transport of crude oil from South Sudan to the Kenyan coast where a new port is being built near Lamu. The "Lamu Port – South Sudan – Ethiopia Transport Corridor" (LAPSSET), with investments of over $25bn earmarked, is one of the most ambitious regional integration projects in Africa and should open up the entire Horn of Africa to Kenya's transport infrastructure, which would make Kenya the lynchpin of trade in the whole region[157].

The Japanese company has already made a proposal to the Ugandan government for the construction of a section joining Uganda to Lamu via the Lokichar basin in the region of

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[153] http://www.financialafrik.com/2013/11/29/kenya-le-grand-chemin-de-fer-est-africain-definitivement-sur-les-rails/

[154] Leaders open dock in Mombasa, Daily Monitor, 29 August 2013

[155] Kagame, Museveni laud Kenya on Mobasa port, http://www.newtimes.co.rw/news/index.php?i=15464&a=69942, 29 August 2013.

[156] A railway to connect Kenya, Rwanda and Uuganda, http://orinfor.gov.rw/printmedia/topstory.php?id=6381, 26 June 2013.

[157] See LAPSSET presentation in "Kenya Vision 2030", http://www.vision2030.go.ke/index.php/pillars/project/macro_enablers/181

Turkana, on the border of South Sudan

The future oil production of Uganda and Kenya therefore opens up perspectives for the development of communication and transport infrastructure in the region, which could serve the population and the entire regional economy.

4.3.3 Reducing deforestation in Rwanda and Eastern DRC

In Kivu and Ituri, a forecast for 2014 based on the data of the 1986 SOGREAH-TECHNIP study, reveals that household energy requirements (excluding brick works and tea plants) of 13,475.000 tonnes of wood and 148,000 T of charcoal, or 6,729,750 cubic metres of wood[158].

In Rwanda, a study carried out in 2002 showed that 96.2% of the population used wood for power and 31.4% for lighting. More than 60% of the urban population used charcoal as an energy source[159]. For that year, the deficit in wood compared to the population's needs was 6,719,000 m^3. In 2013, the percentage of Rwandans using wood as a source of energy was 85%[160]. Despite this decline, the needs remain enormous and meeting them has harmful effects on the environment, through the deforestation it entails.

The exploitation and use of gas could change the situation in the Kivus and Rwanda and help reverse the trend of deforestation in the region. The Rwandan government has already taken up this position.

4.3.4 Increase in agricultural production and promotion of a petrochemicals industry

In the region around Lake Kivu, more than 80% of the population is rural, and lives mainly from agriculture. Certain areas are overpopulated and the soil is increasingly overexploited, depleted and saturated. To counteract this increasing depletion of the soil, the population makes use of natural and chemical fertilizers. But these are scarce or expensive. There is therefore a necessity for farmers to be able to access good quality fertilizers at a lesser cost to cover the food requirements of a population that is undergoing steep demographic growth.

This is where the methane in Lake Kivu could intervene, for among its possible uses is the manufacture of urea (nitrogen fertilizer). This perspective drew the attention of the ECGLC which, in its programmes, had planned the production of phosphate fertilizers, by attacking the phosphates of Matongo (BURUNDI) with the aid of nitric acid and ammonium nitrate, a derivative of methane.

Oil and gas production could also stimulate the emergence and development of a petrochemicals industry. Apart from the use of gas as a combustible for cooking, and transforming CH_4 into ammoniac, then into urea, the methanol produced from CH_4 could

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158 SOGREAH-BRGM-S.E.D.E.S-TECHNIP, Mise ne valeur du gaz méthane du lac KIVU-Etude de faisabilité, compte CEPGL, May 1986, Vol.3, p.64.

159 Mukuralinda, A. et al., Impact de la consommation de bois énergie sur l'environnement au Rwanda, IRST, 2002.

160 Namukunzi Chantal, Biogaz un bon exemple de développement de l'énergie au Rwanda, http://www.orinfor.gov.rw/printmedia/news.php?type=fr&volumeid=1173&cat=8&storyid=24589, 25 October 2013.

be used to manufacture a wide range of derivatives[161].

Inspiration could be drawn from the best practices which, if the truth be told, are few and far between in this domain. In Indonesia, for example, the resources generated by oil served to support agriculture by funding research, enabling high yield rice strains to be produced that are disease-resistant. In addition, the revenue from oil enabled the development of natural gas for domestic use and export and also for the production of cheap intrants for agriculture[162].

4.3.5. The fishermen of the Great Lakes, victims of oil?

In addition to the direct consequences of oil and gas exploration and exploitation on the health of the people living in the areas concerned, induced negative impacts are to be feared on the socioeconomic conditions of the population.

The people most likely to be affected are the fishermen. Despite a fall in fish catches, Lakes Albert, Edward, Tanganyika and, to a lesser extent, Lake Kivu have important fishing resources which represent the livelihoods of thousands of people. These lakes are facing serious threats, especially as some of the endogenous living species have been pinpointed as being in danger of extinction. The greatest threats identified are pollution, sedimentation, overfishing and, above all, fishing with destructive tackle[163].

The results of a recent study on Lakes Edward and Albert show that the fishing industry employs almost 27,000 fishermen. Annual production is around 22,000 tonnes, 15,000 of which come from Lake Edward. If we take as a basis an average market value of US$ 2 per kilogramme, this industry brings in US$ 30 million. According to a forecast produced by the WWF for Lake Edward, the potential future value of fisheries could reach US$ 90 million per annum, if we consider an average market value of US$ 2 per kilogramme and an annual average production of 45,000 tonnes. The industry would create more than 28,000 jobs related to fishing and related activities, such as smoking, drying, transport and the retail sale of the fish[164].

This also applies to Lake Tanganyika, where fishing constitutes an important source of revenue and jobs for several categories of the population, from locals to fishmongers. According to an FAO report, the annual fisheries production of Lake Tanganyika is approximately 15,000 tonnes[165]. The value of the catches for production is in the order of 30 million dollars and an added value of approximately 8 million dollars. The sector provides a livelihood for 45,000 fishermen, 200,000 economic operators, including 80,000 women[166].

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161 Sogreah-Brgm-s.e.d.e.s-technip, *op.-cit., May 1986.*

162 Alan Gelb and Sina Grasmann "*Déjouer la malédiction pétrolière*/Confronting the oil curse", Afrique contemporaine 1/2009 (No 229), pp. 87-135, **http://www.cairn.info/revue-afrique-contemporaine-2009-1-page-87.htm**

163 Project on the biodiversity of Lake Tanganyika, results and obsezrvations from the UNDP conservation initiative /Gef (raf/92/g32) in Burundi, Democratic Republic of Congo, Tanzania and Zambia, report prepared by Kelly West, 28 February 2001.

164 Pole Institute., The desire to maintain and need to survive: the case of the land area of Rutshuru hunting and Virunga National Park, April 2013, quoted in WWF's 2013 report entitled The Economic Value of Virunga National Park. http://www.wwf.be/

165 FAO/Peace-building Fund, Building peace through the socio-economic reintegration of people affected by conflict, Bujumbura, 2012.

166 Interviews with the people in charge of the Federation of fishermen in Burundi, Bujumbura, October 2013.

Lake Kivu is reputed to have less fish. Nonetheless, it is home to some 29 species of fish, 15 of which are endemic. Recent statistics on fishing in this Lake are difficult to find. According to an FAO report, artisanal fishing in Lake Kivu employs 6,536 fishermen, added to which are 3,340 women in the sector of the commercialisation and distribution of fish. If we count the families of these employees, the total number of people who rely on fishing in Lake Kivu is 57,000[167].

When we take into account fishing alone, we can see that economic and social stakes are extremely high, should the activities of hydrocarbon prospecting and exploitation comprise high risks for the people who live around these lakes.

[167] Hanek George et al., Socio Economic Investigations of Lake Kivu Fisheries, 1991, http://www.fao.org/docrep/005/ac761e/ac761e00.htm

Chapter 5: Cross-border issues around hydrocarbons: conflict or cooperation?

In the Albertine rift, the majority of the potential oil/gas reserves straddle the border zones and areas under dispute, or characterised by long unresolved conflicts. Two examples can be mentioned here. The recent case of Lake Albert, where clashes between DR Congo and Uganda led to the deaths of several people. The background to this tension was prospection on the Lake and the announcement that oil had been found. The second case is the Ruzizi delta, in the 1980s, where the boots of the Burundi and Zaire (Congolese) armies were to be heard marching in the foothills of the plainwhile AMOCO was prospecting in the basin of the Tanganyika and rumours were already circulating about the presence of black gold. We can see that the common denominator is the possibility of finding oil in a cross-border zone, which triggers tension.

5.1. The borders between DRC and its neighbours: uncertainties and conflicts

Of the nine borders DRC shares with neighbours, none seem to have definitive boundaries marked. All suffer from vagueness, latent or already open conflict. To settle these questions, a permanent Congolese commission has been set up. It acts through joint commissions set up with the neighbours in question. It originates from recommendations of the Conference of African Ministers in charge of border issues, which was held in Addis Ababa, in Ethiopia, from 4 - 7 June 2007. This conference highlighted the necessity for each nation to take care to delineate and mark/materialise its borders with neighbouring countries, in order to settle the thorny border question, which is today threatening the peace, security and stability of African countries and which certainly merits continuous and rigorous attention. This commission was set up by Presidential Ordinance No. 07/064, of 24 August 2007, which placed it under the responsibility of the Minister of the Interior and Security and defines its missions and organisation.

The commission's remit is to reconstitute the borders as they were inherited from colonisation, determine the extent of the national territory, specify the external limits of natural resources and the population of DRC and thereby facilitate governance. Its roles include: negotiation and physical realisation of the delineation of the borders within the framework of the Joint Technical Commissions of Experts, in addition to the execution of certain agreements signed by the Head of State with his peers (for example, with Uganda: Ngourdoto agreement in 2007).

In view of the commission's 2012 report, all the DRC's borders are fraught with imprecisions, likely to cause or already the subject of conflicts. Here, the presentation will focus on the four eastern borders in the African Rift Valley, through the prism of the Congolese permanent border commission (CPF), by country.

5.1.1. The DRC–Uganda border

The border with Uganda is governed by the 1915 Arrangement between Belgium and Great Britain. The length of the border is 817 Km, 631 of which are on land and 186 Km on water (lakes and rivers). The land border was mapped out during the colonial period by placing milestones, but some of these have been destroyed in Aru territory. The water border has never been physically marked out.

The situation is complicated by the changes in the beds of certain rivers, the Semliki in particular, before it flows into Lake Albert. Hence the current problem of the Rukwanzi peninsula. The change in the Semliki river bed has posed problems since the colonial period, but no long-term solution has been found. The CPF specifies that the race to exploit the oil deposits in the Lake constitutes an aggravation factor, to which is added the status of the island and that of the inhabitants of Rukwanzi.

To settle this problem, the Ngourdoto agreement was signed by the Heads of State of the two countries, in Tanzania, in 2007. However, this agreement has never been implemented.

5.1.2. The DRC-Rwanda border

This border is governed by the 1910 Arrangement between Belgium and Germany. It stretches for 213 Km, 102 Km of which are on land, and 111 Km on water (Lake Kivu and Ruzizi River). The land border was defined in colonial times by placing milestones, but these are transitory, in the form of piles of stones. Regarding the border on Lake Kivu, the aforementioned arrangement distributed the islands of the Lake, but the rest of the border has never been delineated or materialised.

A joint permanent commission has been set up by the two countries. It has already met to fix, mark and delineate the land and water borders, using the appropriate techniques, and divide up the islands between the two countries[168].

5.1.3. The DRC-Burundi border

This is defined by the same 1910 Arrangement between Belgium and Germany and is 220 Km long, all on water (Ruzizi river and Lake Tanganyika). It has never been delineated or materialised. The CPF points out that this creates confusion in the plain of Katumba (Ruzizi). The problem consists in identifying the main branch of a delta of the Ruzizi at its mouth in Lake Tanganyika which, according to aforementioned arrangement, serves as a border between DRC and Burundi. The CPF insists on the special climate surrounding this border as a result of the fact that there are large numbers of people from Burundi on the right bank of the Ruzizi, in the plain of Katumba.

Three sessions of the Joint Technical Commission were held in April and October 2011, and in April 2012. They made it possible to agree on the applicable legislation for settling this dispute, and the Arrangement of 1910 was chosen. Field visits were planned but postponed due to the lack of availability of maps in Belgium, and a delegation was to be sent to Germany, for the purpose.

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[168] The 5th session of the Commission held in Kigali on 18 and 19 May 2012 recommended the reconstruction of the milestones marking the common border on dry land and the marking of the water border. DRC committed to calling an ad hoc meeting of the sub-commission at a date to be communicated through diplomatic channels, before the end of December 2012. We have no information about whether or not this meeting took place.

5.1.4. The DRC–Tanzania border

This border is also governed by the 1910 Arrangement between Belgium and Germany. It is 498 Km long; exclusively aquatic (Lake Tanganyika), it is constituted by the median line of the Lake, but has never been physically marked, which has given rise to periodic incidents. It is therefore a question of determining the median of Lake Tanganyika, with the use of the appropriate techniques.

Two sessions have already taken place, in June and December 2011, respectively in Dar-es-Salaam and Lubumbashi, to resolve this issue. The methodology for tracing the median has been agreed. The practicalities will be determined in a quadripartite framework by delegations from the 4 countries concerned by the median of Lake Tanganyika (DRC, Zambia, Tanzania and Burundi).

5.2. DRC and its oil-related border conflicts, from the Atlantic Ocean to Lake Albert

Due to a lack of capacity to explore and develop its own oil and gas reserves, the Democratic Republic of the Congo has repeatedly opted for a tactic of confrontation: claiming ownership of the resources being developed by neighbouring countries. This is true both for the methane gas in Lake Kivu and for the oil in Lake Albert. The long-term conflict with Angola is emblematic in this respect. The two countries are in conflict over their maritime borders in the Atlantic Ocean.

The dispute revolves around the fact that the territorial waters of DRC only cover a small triangle of the Atlantic Ocean with a limit of 15 km, while those of Angola extend much further. The reason is the convergence between the waters of Angola and those of the Angolan enclave of Cabinda, between which the waters of the DRC are located. Due to this fact, DRC does not reach the deep waters of the ocean under which the main part of the Angolan oil reserves are located.

On 30 June 2007, the Foreign ministers of the two countries signed an agreement in Luanda creating a “Maritime Zone of Common Interest” of 10 km by 375km, extending far enough into the deep waters, inside of which the oil reserves would be shared fairly[169]. As several of Angola's oil fields are inside this zone, this agreement multiplied DRC's oil production by ten, according to the Congolese Minister of hydrocarbons, Lambert Mende. Other sources mention a multiplication factor of five[170]. The Congolese parliament ratified the agreement on 22 September 2007, and it was signed by the President, on 16 November 2007[171]. However, this agreement was heavily criticised by the Congolese National Assembly. It was noted that territorial limits and the oil reserves of the “Zone” had not been made public, that DRC's compensation to Angola for its exploration costs were not stipulated, that the maritime border between the two countries had not been defined and that the joint use of the fishing and other resources in the “zone” had not been settled[172].

Almost at the same time, armed confrontation broke out between DRC and Uganda over

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[169] "*DRC-Angola: signature d'accords de coopération sur le pétrole et les mines*", Congo Actualités, 2 August 2007

[170] Ibid and "*Le pétrole congolais à l'ordre du jour*", Ressources Naturelles magazine, August 2008

[171] Law no 07/004 dated 16 November 2007, published in Journal Officiel, 30 November 2007

[172] See Babi Kundu and Jacques di Mapianda Bakulu, "*Le Pétrole de Moanda au Bas-Congo: Qui en Bénéficie*?", Sarwatch Report, November 2008, pp. 66-68

Lake Albert. On 28 July 2007, Congolese troops occupied the island of Rukwanzi[173] under Ugandan control and took four members of a Ugandan maritime unit prisoner[174]. A few days later, some Congolese soldiers opened fire on a barge belonging to Heritage Oil on Lake Albert, killing a member of the oil company's seismic prospecting team[175]. There followed an exchange of fire between Congolese and Ugandan soldiers resulting in one death on the Congolese side[176]. Congolese troops supposedly made incursions into Uganda and some Ugandan ministers threatened to fight back with aerial raids and to invade DRC[177].

According to several analysts, the principal cause of this conflict was DRC's fear that the oil companies active in Uganda extend their activities to the Congolese oil reserves. The escalation between the two countries was interpreted as a Congolese strategy aimed at slowing down the development of the oil fields in Lake Albert[178]. In Kinshasa, the progress of Uganda was perceived as a confirmation of the motivations of the wars of aggression against DR Congo, the aim of which was nothing other than to grab these resources. On this subject, Le Potentiel newspaper affirmed that Heritage Oil, a company established in Uganda for over ten years, tried to extend its tentacles to exploit the oil on the Congolese side, given that the Congolese government is not yet organised in this domain"[179]

Following this armed confrontation, the Congolese government started to push out the oil companies based in Uganda, which it had nonetheless invited to Ituri, in 2006. On 18 August 2007, the DRC government announced that it was cancelling the contract with Tullow Oil for block I[180]. At the same time, it stated that it was seeking to sign an agreement with Uganda, similar to the one signed with Angola. In this framework, on 8 September 2007, the Congolese and Ugandan presidents signed the famous “Ngurdoto agreement” for the joint exploration of cross-border oil fields on the basis of an existing 1990 agreement[181]. Subsequently, on 25 January 2008, the two governments signed an agreement to amend the 1990 one.[182]

The Ngurdoto agreement was a short truce between the Democratic Republic of Congo (DRC) and Uganda. The two countries agreed to send oil experts to their respective embassies to observe the exploration activities conducted on the other side of the border, within three months of the signing of the agreement. DRC undertook to commence oil exploration in the Albertine basin to allow the parties to identify and assess the cross-border oil fields.

In addition, it was agreed to conduct joint oil operations, facilitated by the fact that the

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[173] Rukwanzi island, around which prospection operations were underway, is in Ugandan territory but was mainly inhabited by Congolese fishermen.
[174] "Congo army arrests 4 UPDF", New Vision, 31 July 2007
[175] "Congo army 'attacks Uganda barge'", BBC News, 3 August 2007; "Heritage Oil Reports Incident in Uganda", company press release, 3 August 2007
[176] "Congo Deploys at Lake Albert", New Vision, 4 August 2007
[177] "Congo gunmen raid Kanungu", New Vision, 10 August 2007; "Congo Troops Occupy Country's Territory", Daily Monitor, 11 August 2007; "Air Force to patrol against Congo attacks", Sunday Vision, 12 August 2007; "UPDF to re-enter Congo if talks fail", Daily Monitor, 13 August 2007, "Museveni meets High Command over Congo", Daily Monitor, 14 August 2007
[178] Angelo Izama, "The Coming War", published as "*Im Herzen Afrikas droht ein Ölkrieg*", Die Tageszeitung, 10 August 2007
[179] "*Le pétrole après l'or oppose l'Ouganda à la DRC dans le Lac Albert*", Le Potentiel, 9 August 2007
[180] "Congo revokes one Tullow Oil exploration licence", Reuters, 18 August 2007
[181] Text of the "Ngurdoto Agreement" published in Le Potentiel, 10 September 2007
[182] "Hydrocarbures: La RDC et l'Ouganda s'accordent sur la révisitation de l'accord de coopération de 1990", Forum des As, 5 February 2008

same companies owned all of the major concessions on both sides of the border: Heritage Oil and Tullow Oil. In terms of security, each country undertook to track, neutralise, disarm and demobilise the armed groups operating on its territory to prevent them from harming their neighbours, within 90 days and in a visible and verifiable way in each country. Joint military operations were agreed with the collaboration of the United Nations mission in the Congo (MONUC). The two countries agreed not to provide sanctuary to those opposed to disarmament. The two presidents also agreed to reinforce the joint verification mechanisms by opening liaison offices in Kampala, Kanungu, Kisoro, Arua, and Fort Portal and in the Congolese towns of Aba, Beni, Bunia and Kinshasa.

The two parties also agreed to immediately withdraw the troops from the disputed island of Rukwanzi, and to re-mark, where necessary, the international border. Within a month, a joint team of experts from the two countries and members from other countries were to mark out the agreed border. The parties agreed that once the international border was traced out, the joint committee would give priority to the island of Rukwanzi and Mahagi territory, in particular the zones of Uriwo, Anzida/Panzuru, Angiero, Pagira and Pamitu, and Aru territory on the border of Vura. Mahagi was also to be demilitarised.

At the time of signing, President Kabila of DRC expressed regret over the Rukwanzi incident in which a Canadian working for Heritage Oil had been killed by Congolese forces on Lake Albert. One week previously, the Congolese army had captured four Ugandan soldiers in the same place, accusing them of entering Congolese waters. The agreement stipulates that DRC's administration of Rukwanzi should remain for a period of one month to raise the awareness of the islanders to the agreement. Immediately after this period, Uganda was to name a co-administrator of the island, to second the Congolese administrator, and deploy an equal number of police officers on the island as DRC to keep the peace.

Also, it was agreed that the refugees would be settled at least 150 km from the border, as required by the international instruments. This followed on from a complaint lodged by DRC that certain Congolese militia groups recruited inside the refugee camps located in Uganda. The two leaders agreed to the return home of the refugees, with an improvement in the conditions in their home country.

A high level follow up meeting on the Ngurdoto agreement was held at Beni in DRC, from 28 - 30 January 2008, but it was essentially devoted to the questions of security and defence between the two countries.

After a few months, the Ngurdoto agreement was repealed, following the displacement of a customs post by Congolese officials to approximately 350 metres inside the Ugandan border, with a signpost saying “Welcome to the Congo”. Three days later, the Congo withdrew from the joint borders commission, and a few days after than, the Congo withdrew from the joint exploration activities that were underway on Lake Albert, thereby cancelling the two points that were the heart of the Ngurdoto agreement. In parallel, the Congolese government brought in new investors to Ituri to replace Tullow Oil and Heritage Oil. Since then, the Ngurdoto agreement has become obsolete.

It should be noted that the agreement between DRC and Angola creating a “Common Interest Zone” never had the force of law, for want of ratification by the two countries. No joint oil operation therefore took place.

5.3. Experiences of regional cooperation over cross-border resources

5.3.1. Cooperation over Lake Kivu: from the ECGLC to ABAKIR

Rwanda and DRC are both members of several regional organisations, in particular the ECGLC and CIRGL, where the question of cross-border resources comes up.

One of the ECGLC's objectives is to address the energy deficit of the three member countries, by developing the hydroelectric power stations on the Ruzizi River, called RUZIZI II. In addition to this project on the Ruzizi, there is the possibility of a joint project of 200MW with the exploitation of the methane gas in Lake Kivu. An authority in charge of the regulation and exploitation of these resources has even been set up. It is in the transition phase.

In 1976, Rwanda, DRC and Burundi created the ECGLC, with the mission of "ensuring the safety of the member states and their population in a narrow way, in the following domains: social, economic, technical, commercial, scientific, cultural, political, military, financial, touristic, judiciary, customs, health, energy, transport and telecommunications".

These good intentions have not prevented the relations between the countries from repeatedly crossing periods of turbulence right from the beginning of the 1990s. However, even at the height of the crises between the three countries, the activities of the regional hydroelectric authority never ceased. Electricity production and distribution continued, even when two or three of the partners were waging fully-fledged war. This fact is today recognised as an example to be followed in promoting cross-border cooperation - "a window of opportunity", that can serve as a model of cooperation for the development of oil resources in the Albert Graben. With this recurring tension between Rwanda and DRC, the ECGLC, was at one point put on the back burner, but initiatives are underway to revitalise it, in particular with the support of Belgium, the European Union and others.

As the CH_4 deposits in Lake Kivu are the joint property of DRC and Rwanda, their exploitation was naturally envisaged as a community project within the ECGLC.

The cooperation agreement between DRC and Rwanda, signed in Bukavu on 3 May 1975, stipulates that the exploitation of methane should be conducted jointly. In 1977, the 3 Heads of State of the ECGLC met in Bujumbura and decided to create SOCIGAZ to manage the exploitation, transport and commercialisation of the gas. The draft agreement creating SOCIGAZ has not been ratified and it is not known whether it has been abandoned. However, the conclusions of the 1975 agreement were reaffirmed at a bilateral summit in Gisenyi from 26 - 28 March 2007, to which international experts were invited. In July 2009, an agreement was signed by Rwanda and DRC for the exploitation of the methane in Lake Kivu. This agreement allows for a common project of 200MW.

Presidents Joseph Kabila and Paul Kagame mentioned this project at the Goma summit on 6 August 2009. The Energy Ministers from Rwanda, DRC and Burundi met on 15 and 16 August at Rubavu (Rwanda) to set up a Steering Committee in charge of producing a pre-feasibility report. The ECGLC is associated with this project through the EGL.

It is only logical that the possible initiatives for the management of oil and gas are conducted through the ECGLC. In this framework, the three member countries recently agreed to set up the Trilateral Lake Kivu and Ruzizi River Basin Authority - ABAKIR. Its principal mission is to ensure sustainable management of Lake Kivu basin resources. ABAKIR's activities commenced on 12 December 2012. A transition secretariat has

already been set up.

With a view to enabling the development of methane in compliance with the safety standards, a process was initiated by Rwanda and DRC, which led to the joint signature of a manual of management rules for methane gas exploitation. These rules are based on three principles: guarantee public safety, protect the environment, and optimise social advantages[183]. In parallel, a Memorandum of Understanding (MOU) is being prepared by a team of consultants and will be presented for signature to the two countries, and concerns the joint production of 200MW of electricity.

Rwanda has begun small scale exploitation of the gas resources of Lake Kivu on its own, with no impact on the renewable quantities currently[184]. A Lake stability surveillance programme has been implemented and capacity building is ongoing. Problems in the future could occur if there is no coordinated, joint exploitation by the two countries. For despite the fact that the estimations show that the methane is equally shared between the two countries, it will be impossible to repress the suspicions that the pumping of gas is not restricted to the Rwandan side.

5.3.2. Cooperation and development dynamics around Lake Tanganyika: LTA

The four countries who share Lake Tanganyika felt the necessity and importance of setting up a common resource management system. The first meetings were held in the 1990s and the first draft agreement was drawn up in 1998. However, it was ten years later, in December 2008, with the encouragement and support of the international partners, that the "**Lake Tanganyika Authority (LTA)"** was created**.** Its main mission is the protection and conservation of biological diversity and the sustainable use of the natural resources of Lake Tanganyika and its environment based on integrated management and cooperation between the contracting countries. It is a management structure for institutions comprising Conference of Ministers, management committee and secretariat. It coordinates the implementation of the Convention on the sustainable management of Lake Tanganyika which was signed on 12 June 2003 by the bordering countries.

The Convention's overall goal is to ensure the protection and conservation of diversity and the sustainable use of the natural resources of Lake Tanganyika and its basin. In this respect, a Programme of Strategic Action (PSA) has been adopted by the bordering countries. This programme relates essentially to improving common infrastructure, treating waste waters, building stakeholder capacity in terms of fishing resource management, reducing pollution and the discharge of sediment and establishing a surveillance system at regional level. Questions related to hydrocarbons, their exploration and development are not handled by the PSA.

According to article 4 of the agreement, the contracting countries undertake to cooperate in good faith in the management of Lake Tanganyika and the environment of the Lake and take all possible measures to achieve the goal of the agreement. This cooperation consists, among other things, in planning and managing the activities under the jurisdiction or control of a contracting country, which have an impact or are likely to have

[183] Document entitled "Mangement Prescriptions for the development of Lake Kivu Gas resources", Final Version for General Release, 17 June 2010. Signed by the Minsister of Infrastructure of Rwanda and the Minister of Hydrocarbons of DRC.
[184] Schmidt et al, 2012.

an impact that is detrimental to the Lake and its environment (article 4, 2a.).

They also undertake to exchange information concerning the state of the environment of the Lake, the results of the surveillance of activities in the Lake basin which could affect the Lake environment, and their experience of the protection, sustainable use and management of Lake Tanganyika (article 4, 2d). Each country undertakes to keep the other countries informed about the projects and activities which have or are likely to have an impact detrimental to the Lake and its environment (article 4, 2e)[185].

According to the provisions of this convention, an initiative launched by one of the parties on Lake Tanganyika, and likely to have a detrimental effect on Lake Tanganyika should be brought to the knowledge of the other contracting parties and to the secretariat of the Lake Authority.

According to information received, apart from Burundi, the other countries which conducted hydrocarbon exploration activities have not provided the relevant information. Tanzania did not reply to the calls of the LTA secretariat to submit reports concerning its activities in relation to hydrocarbon prospecting on Lake Tanganyika. The same goes for Zambia and DR Congo[186].

Despite this fine framework, in terms of hydrocarbon exploration, each country is doing its own thing as if the convention on sustainable resource management did not exist. Although this could be because the question of oil is not mentioned in the convention, except regarding the potential impacts of the activities related to oil exploration and exploitation, on the environment. This reference could serve as a leitmotiv for organising a discussion framework and a possible extension of the oil resource management convention. In 2008, Tanzania and DR Congo signed an agreement to explore Lake Tanganyika together.

The convention on the sustainable management of Lake Tanganyika contains provisions on environmental risk management. It stipulates, in particular, that the contracting State(s) under whose jurisdiction a proposed activity is envisaged should make sure they cause no detrimental cross-border effects. In addition, after conducting the environmental impact study, the contracting State will consult the other contracting States and the management committee on the measures for preventing, reducing or eliminating cross-border impacts, in particular any post-project analyses and surveillance that may be required.

Annex II classifies the exploration and development of hydrocarbons as a dangerous activity. Part B specifies the constraints of the contents of an EIA. In addition to the necessity to describe the activity concerned, its risks, the mitigation measures listed, with different alternatives, there is the requirement to present the results of the public consultations. The public should be composed of the people interested or affected, the communities and organisations, the governmental agencies in charge of assessing the environmental impacts. Joint management also implies that an EIA should not only be submitted to the national authority in charge of the environment but also to the Lake Tanganyika management committee, and, where relevant, the other lakeside states.

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[185] The convention on the sustainable management of lake Tanganyika, http://lta.iwlearn.org/documents/the-convention-on-the-sustainable-management-of-lake-tanganyika-eng.pdf/view.
[186] Interviews, Bujumbura, October 2013.

6. Conclusions and Outlook

Over the past ten years, East Africa has become a new frontier for the exploration and in the near future the production of hydrocarbons. There has been an acceleration since large reserves were discovered in the Ugandan part of Lake Albert, in 2006. The shock wave of this event has had repercussions in the region on several levels. Firstly, based on assumed geological similarities between Lake Albert and the other parts of the rift valley situated to the South, the governments have stepped up the pace of exploration, granting permits to several oil firms, some of which have only doubtful capacities.

Secondly, confirmation of the presence of black gold in a cross-border zone, Lake Albert, triggered a crisis between DR Congo and Uganda, a prelude to the impact such events may have on the stability of the region. The reaction of DRC was interpreted as a desire to block their neighbour, for fear that progress would be a new phase in the spoliation of these contiguous resources. The crisis caused by this differential progress caused tension, skirmishes and many fatalities. It was only appeased by the signing of the Ngurdoto agreement between the two countries, but this was a short-lived truce. For the agreement was never implemented. The tension between the two countries has entered a new latent phase, but could be revived at any time, if Uganda advances, as it has announced, with its oil development project. Suspicions of siphoning from the Congolese reserves are aroused repeatedly. For, on this Eastern side, DRC has only delineated the oil blocks so far, but no prospecting activity worthy of the name has really been carried out, whereas Uganda has announced exploitation to start by 2017.

This cross-border dimension is the common denominator of the identified or potential hydrocarbon resources in the Albertine rift valley. For this whole zone straddles the borders between DRC and its eastern neighbours, Uganda, Rwanda, Burundi and even Tanzania. The Congo's suspicions towards Uganda regarding oil are reproduced towards Rwanda regarding gas, and the same thing could happen in Lake Tanganyika if the exploration becomes promising. The delineation of the oil and gas blocks shows they are contiguous to the borders. In these places, the limits of the reservoirs do not necessarily espouse those of the countries, hence the possible existence of common zones – and the possibility of cross-border disputes.

The unequal progress in the oil sector development process, and more particularly DRC's lateness compared to its neighbours in the east, comprises a high potential for conflict. As we have seen, each time such a situation occurs, DRC tends to block the progress of its neighbour, for fear that they will pilfer its resources. To prevent foreseeable conflicts in this type of situation, it is important that the appropriate strategies be devised and implemented.

The individual countries are also advancing at different rates on the institutional and legislative level. In every domain, the legislation is lagging behind the reality. DRC, which, in the west, is the only country producing oil, is currently revising its law on hydrocarbons,

but there are still many grey areas and problems regarding the interests of the people. Uganda is the most advanced of all, it already has a hydrocarbons policy and a whole set of legislation governing the development of the oil sector, but we have to await the actual implementation to find out if the legislation is effective, to assess the way it addresses the problems that are posed in this sector. In Burundi, the law in force dates from 1976, and is behind in relation to the process underway, through which licences have already been granted to three companies. There is a gap between the Mining and Petroleum Code and the contracts signed. Paradoxically, Rwanda, which is usually ahead in other domains, is further behind in the legislative process. A bill is being prepared on hydrocarbons. Due to this, the contracts for oil exploration and methane development have no appropriate legal framework, which is problematic.

In the wake of the legislative process, there has been in-depth, sometimes very heated debate, especially in Uganda and DRC. Such debate, and fundamental analyses, have highlighted a certain number of gaps or weaknesses in the legislation already passed, or in the process of being passed. The experience of oil development in the Bas-Congo province of DRC has been examined closely, and shows many traps to be avoided in the future projects in eastern Congo, where the potential for conflict is higher. There are many problems related to the development of the oil, which is sometimes transported away without touching Congolese soil. The fluctuations in the revenue generated has raised questions about the real quantities produced, with some analysts even asserting that they have been under-declared. This underlines the lack of transparency which is generalised in all the countries. Everywhere, in all the contracts, even in the laws, there is a confidentiality clause in signed agreements which make them inaccessible to the public, which cannot therefore play its role as watchdog to avoid abuses, which are rather widespread in this sector.

In the ambiguous relations between private companies and political powers over hydrocarbons, the interests and points of view of the local population are neglected or simply ignored. From Bas-Congo in DRC to Bunyoro in Uganda, the population have the impression that the riches under their land are being stolen from them, and that they are being robbed of their entitlement to the resources located in their territories. As is often the case in the domain of natural resources, the question of revenue sharing and decision-making power comes to the fore in the debates on the organisation of the exploration for hydrocarbons.

Other crucial challenges are related to environmental protection. The Graben region, where prospecting is carried out, is also one of the regions with the richest biodiversity in the world. The lakes themselves, and the protected areas around them: Murchison Falls, Queen Elisabeth Park, Virunga National Park, Ruzizi Park, to mention but these. Oil exploration and development in these zones comprises huge risks both for the biodiversity and for the local population. This veritable heritage constitutes a source of revenue and a supply in fisheries resources and in water. Can the oil manna, which we know is generally a source of inequalities, compensate for the loss of income of these groups? If we weigh up all these factors, the negative effects could tip the scales, and orient the decision-maker towards alternative solutions.

All these questions inevitably lead to the fundamental issue of governance in the oil sector. This is decisive for the future scenarios in the producing countries. There is the negative option of inequalities, conflicts and autocracy, and the Dutch syndrome. On the other hand, as is the case in Norway, Botswana and Indonesia, the oil manna can be an

engine to drive the country's stability and sustainable development. To achieve this, certain conditions must be met, in particular transparency in the granting of licences and managing the oil windfall, rigorous management of environmental questions to keep the risks and damage already observed elsewhere to a minimum, the needs of the population have to be taken into account, through a broad, participatory consultation process, and investment measures initiated in domains that are more sustainable and stable than the oil sector.

From a geopolitical and geostrategic point of view, oil resources whet appetites. The experience in DRC and Burundi shows that in most cases, concessions are awarded to companies with no investment capacity to develop oil fields, leading to the conclusion that they are being positioned by speculators to later sell the rights obtained to the major oil firms. The multiple bonuses paid in the process to political decision-makers endowed with discretionary powers begin to eat into the windfall, upstream, long before the first drop of black gold has even flowed. In the countries, particularly in eastern DRC, a link has been established between the presence of armed groups and mineral and oil resources. The recent positioning of South African companies Caprikat and Foxwhelp, with no experience in the sector, represented respectively by the nephew and the lawyer of President Jacob Zuma, inclines some analysts to correlate South African military commitment to the obtaining of the exploration licences in eastern DRC. The same applies in Tanzania, which, in the process of prospecting in Lake Tanganyika, has already expressed an interest in extending exploration to Congolese waters. It could therefore be surmised that the sole ultimate goal of the military commitments of these two countries is not necessarily the restoring of peace in DRC.

The borders remain fragile. All DRC's borders are questionable. Either the limits are not clearly established, or the markers are made of transient materials, with piles of stone, or the natural border is a river bed that changes over time. The borders in water are determined by an almost “imaginary” median line requiring definition and marking using the appropriate technologies. Almost everything remains to be done. The borders, especially under the hypothesis of the existence or discovery of hydrocarbons, can become the subject of confrontations, given that the limits are not always clear and irrefutable.

As the main theme of this work is to be able to orient national and international decision-makers towards dynamics of cooperation, peace and sustainable development through concerted management of shared resources, a few guiding principles will be suggested. As we have seen, the risks are high. The development of cross-border resources could be the starting point for new confrontations in the region. How can we create a virtuous circle, and break the vicious circle of violence that has gripped the region for twenty years? In response, here are a few basic ideas for gravitating towards a sort of regional action plan for the development of cross-border resources.

6.1. Establish national hydrocarbon policies and legislation that respect standards and good practices

In this domain, the observation is that Uganda is the most advanced. Even in this case, there are gaps and weaknesses in terms of governance. DRC, Burundi and Rwanda are far behind, having no relevant national policies, and draft laws at different stages of the legislative process. The transformation of the curse often associated with the blessing of

the windfall of oil depends on the governance measures taken and implemented in each context. Those that appear to be the most important, that should therefore absolutely constitute the corner stone of the legislative arsenal, are sketched here.

- **Hold up the principle of transparency throughout the process**

The lack of transparency surrounding the development of the oil sector is a source of corruption. It is often related to discretionary powers. In these circumstances, accountability becomes a difficult, or even impossible exercise, with respect to the population and the stakeholders. As we saw in the case of Uganda, even parliamentary control is thwarted. Transparency is indispensable at all stages in the process, from the granting of the licences, where it is important that public calls for tender be launched, to promote competition and quality. In this domain, Tanzania provides examples of best practices. Here, the calls for tender are launched officially, published on the site of the national hydrocarbons company, the Tanzanian Petroleum Development Corporation (TPDC), and the contents of the analysis of the folders is also published.

Transparency is also crucial in the management of the contracts and the oil revenue, publicising the quantities produced, the type of contract signed and the income the government derives. In this respect, the recommendation is to incorporate the EITI norm into the legal and regulatory system.

The success of this process requires the involvement of civil society through the creation of antenna, relays or PWYP partner associations. In Uganda, the Advocates Coalition for Development and Environment (ACODE) has already embarked upon this course.

- **Consult the population and take their interests into account**

The experiences of the region and beyond show that the population are generally neither informed nor consulted about the oil sector development process. Without this necessary information and subsequent appropriation, the population may become hostile to the project, especially when its vital interests are at stake. The example of the fishermen working in lakes Edward, Albert and Tanganyika is the most eloquent. The legislation should incorporate this dimension, to give all stakeholders a voice. The consultation should aim to actively gather the concerns of the population in a participatory manner, in order to respond adequately. This consultation may lead, when the concerns are vital, to imagining alternatives, other than oil exploration and development. The consultation should also aim to understand the causes likely to create conflicts within the communities, and already plan the management mechanisms.

One recurring concern is the displacement of the population from the zones the oil development operations are being conducted in. Decent resettlement is indispensable, enabling the population to find conditions at least equal to where they were. The World Bank has carried out in-depth studies on the subject and proposes appropriate responses to each risk inherent in the forced displacement of people, according to the model of sociologist Michel Cernéa187. This inspired a directive that the World Bank uses in its projects. This is directive OP 4.12188. The application of its contents, or its inclusion in

[187] Michael M. Cernea, "The sociology of involuntary resettlements: a theoretical model", in Lassailly-Jacob V (ed.), Communautés déracinées dans les pays du Sud, Autrepart, 11-28, 1998.
[188] World Bank, Operational Policy 4.12, Involuntary resettlement, 2001.

the legislation, would certainly prevent a lot of conflicts related to involuntary resettlement.

- **Protect the environment at all costs**

The Albert rift region is endowed with an immensely rich and rare biodiversity. The oil projects under development represent huge pollution risks. The Nigeria delta is the worst example on this subject, but western DRC is also experiencing cases of severe pollution. Even in Uganda, the question of hydrocarbon waste is posed. These are not therefore assumptions, but real threats that are already evident.

The major weakness observed in all the situations is that the ESIA are threatened by the firms themselves, and the government bodies in charge of these questions are not well equipped to ensure proper control and monitoring. That is to say establish a reference situation, and monitor changes in the various parameters in the water, air, water table, etc. To counteract these inadequacies, the governments could have recourse to the expertise and support of the partners, in particular the World Bank, which has extensive experience in the domain. In Chad, for example, a monitoring-evaluation mechanism has been implemented with the support of the World Bank. Even if its application has hit some problems, it could constitute a model to be followed, perhaps with some adjustments.

The importance of the biodiversity and heritage at stake in the rift valley imposes the scrupulous respect of the status of the zones concerned and of the relevant international agreements. The incompatibility of international standards and the status of the zones concerned by exploration and development should make the decision-makers lean towards a strict application of the international norms and conventions, and envisage alternatives to oil. On this subject, the sustainable management study of Virunga National Park, drafted by WWF, constitutes a good reference[189].

6.2. Settle border disputes

All the borders around DRC are questionable. To defuse inevitable tension in the context of unequal development of oil resources, it is imperative that the border question be finally settled. The Congolese government has already set up a body, the permanent border commission (CPF), which should serve as a lynch pin for dispute settlements. Joint commissions have been set up with neighbouring countries, but the work is dragging on, due to lack of means; technology or commitment. To be able to progress, third parties are required, transnational organisations in particular, with a view to offering a mediation and assessment framework, including the local knowledge of the population living in the border zones. The African Union currently possesses a mechanism that could be invited to play this role. The financial partners could also be led to contribute to avoid the lack of funds already observed.

This delineation programme should be a pre-condition for DRC, before defining new oil blocks, for example, in Lake Tanganyika, and elsewhere where the borders are in dispute. The Ngurdoto agreement should be reactivated to settle the conflict with Uganda. Even if

[189] Refer to: http://www.wwf.be/_media/Valeur%20Economique%20du%20Parc%20National%20des%20Virunga_LR_380671.pdf

this agreement has not been applied, it constitutes a theoretical reference for settling identical problems, that is to say, in the case of adjacent or shared blocks. The sub-regional organisations, in particular the CIRGL, should weigh up this experience to develop frameworks for peaceful and fair resolution of other border problems which may yet flare up in the region. The experience in border conflict resolution between Sudan and South Sudan can also be taken as an example.

6.3. Promote the joint development of adjacent blocks

The majority of the blocks in the Albertine rift are adjacent. This poses several problems. The first, already mentioned, is the unequal progress of the different parties in the process. DRC is behind in this process, while the other countries are at least in the exploration stage. There is no lack of models since the signature, on 10 May 1976, of a **unitisation** agreement[190] between the United Kingdom and Norway, for the development of shared oil fields in the North Sea (FRIGG Treaty). This example has since spread and some African countries have signed it, in particular Nigeria and Equatorial Guinea, on 3 April 2002, and more recently Angola and Congo Brazzaville, on 20 March 2012.

The difficulty that remains resides in the unequal progress. To tackle this, the countries could agree to entrust the development of these fields to the same companies, which would facilitate the situation enormously, due to their knowledge of the terrain. The oil firms are themselves, of course, very interested, as evidenced by the request formulated by the Australian firm, Beach Energy. Carrying out exploration in the Tanzanian part of Lake Tanganyika, it expressed an interest in continuing its activity on the other side, to no avail. The same thing could have been done between Uganda and DRC where initially the companies already operating in Uganda had obtained concessions in DRC; but DRC abandoned this experience, which makes joint cross-border operations problematic.

6.4. Capitalise on experience: incorporate best practices, avoid traps

Generally, the positive experiences, based on best practices, and the traps to be avoided at all costs, are both well known. This is the choice to be made of whether black gold is a curse or a blessing for a country. It is essential that a framework be organised at the level of each country to capitalise on experience elsewhere, the aim being to incorporate such experience into the legislation and practices. For example, in economic and budgetary terms, everything should be done to avoid creating the conditions of the Dutch syndrome, by anticipating the imbalances resulting from oil revenue. But this exercise should extend to all the related domains: the environment, the prevention of conflicts and inequalities, investment in more sustainable sectors, the opening of funds for future generations, etc. These exchanges of experience should also be achieved through sub-regional organisations such as the CIRGL pact on natural resources.

6.5. Promote cross-border cooperation projects

Building stability and integrated development in the region will be achieved by promoting joint projects. Already, in the wake of the future Ugandan oil, transport and communication infrastructure projects are being envisaged among several countries. In

[190] "A unitisation agreement is an agreement between parties about the joint development of several concessions from the same reservoir", Madeleine Moureau and Gérald Brace, Dictionary of petroleum and other energy sources (Paris, 2008), quoted by ICG, op.cit.

the region, even if the choice of models is not vast, there is at least one. SINELAC is the most quoted and could inspire the realisation of joint projects, for example between Rwanda and DRC, around methane gas, for electricity production.

However, there are also cooperation frameworks in existence, for example around Lake Tanganyika, for sustainable resource management. These mechanisms can be revisited and adapted in response to new demands. For example, for cooperative projects in tourism, fishing or transport. Furthermore, for groups of countries, cooperation frameworks that could carry these projects exist and are even operational. We could mention the ECGLC (Burundi, Rwanda and DRC), EAC (Burundi, Rwanda, Uganda, Tanzania and Kenya) and the CIRGL, of which all four countries are members, as well as other neighbours of DRC.

In the end, the transparency requirement should help to minimise the risks of corruption and the temptations of the beneficiaries to keep hold of the oil windfall by staying in power as long as possible. To the detriment of the population. For the countries concerned, it is essential to engage, revisit and complete as quickly as possible the process of drafting and passing oil policies and legislation, in order to build a proper legal foundation for the good governance of the sector. This should be based on best practices which have already demonstrated their effectiveness elsewhere. In this way hydrocarbons could effectively contribute to sustainable development in each country and promote cooperation, stability and integrated development in the region. Thanks to sound, fair and transparent management of cross-border resources.

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Appendices: Illustrative maps

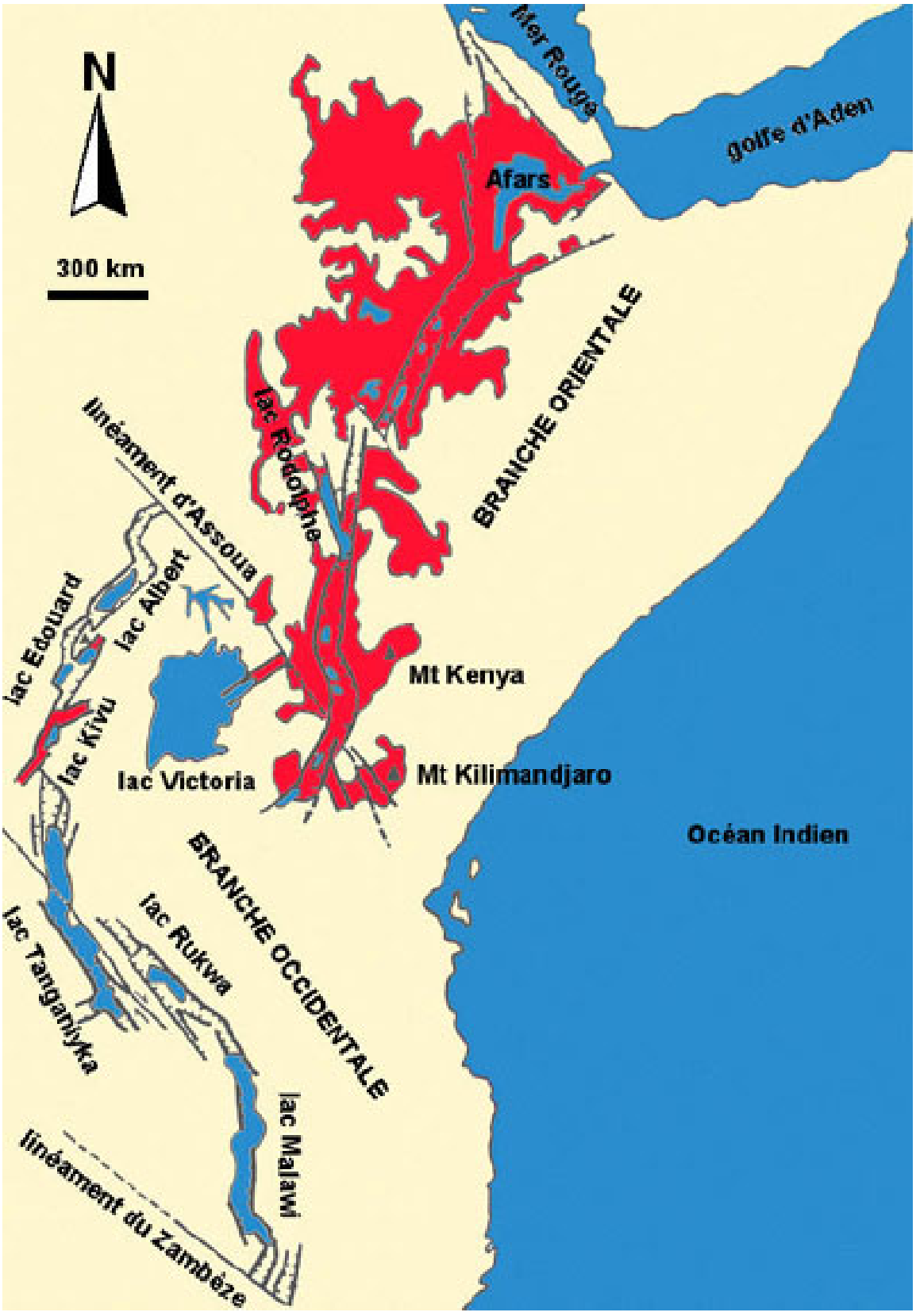

Figure 13: East African Rift System

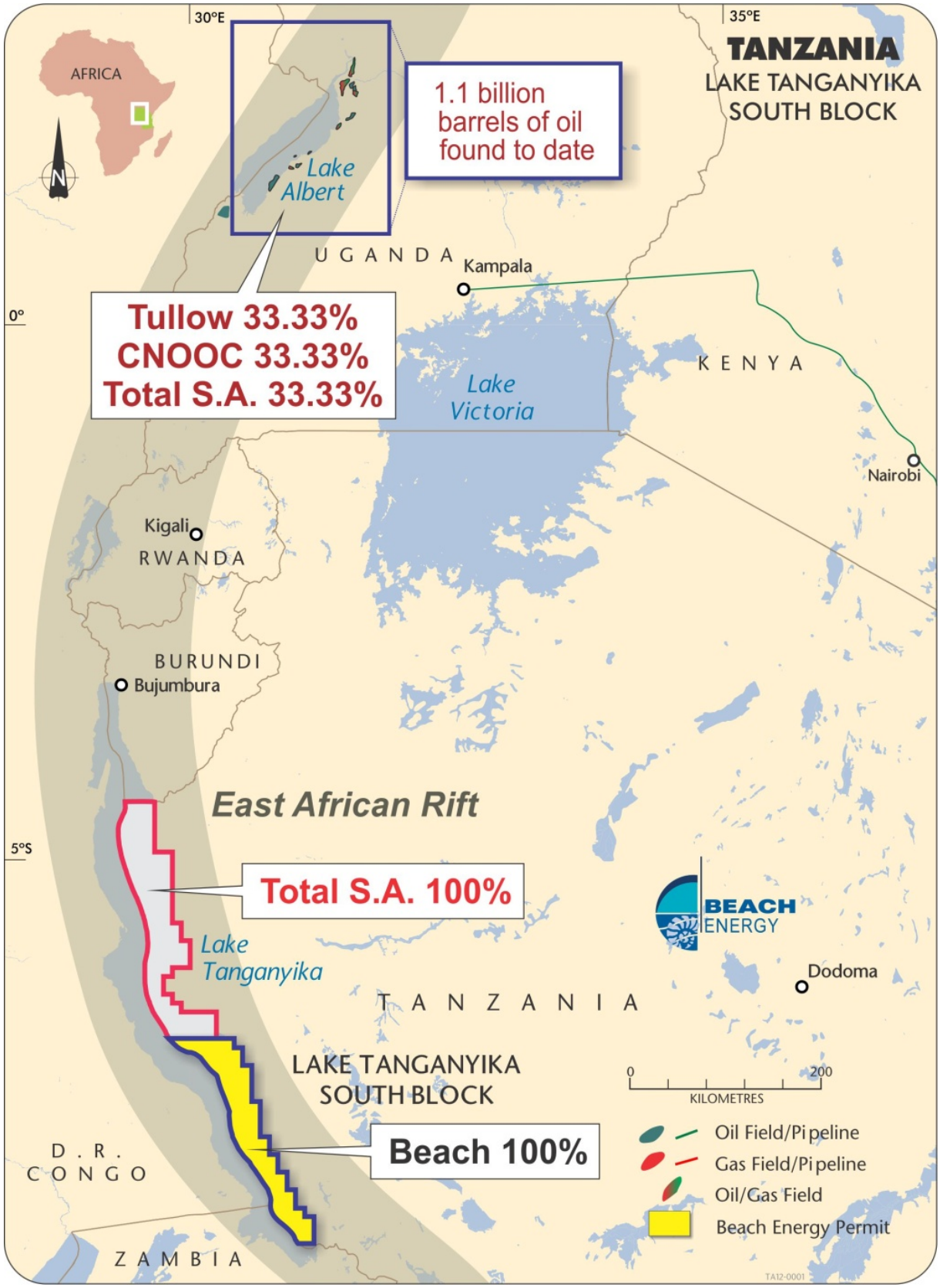

Figure 14: Known reserves in Uganda and companies involved

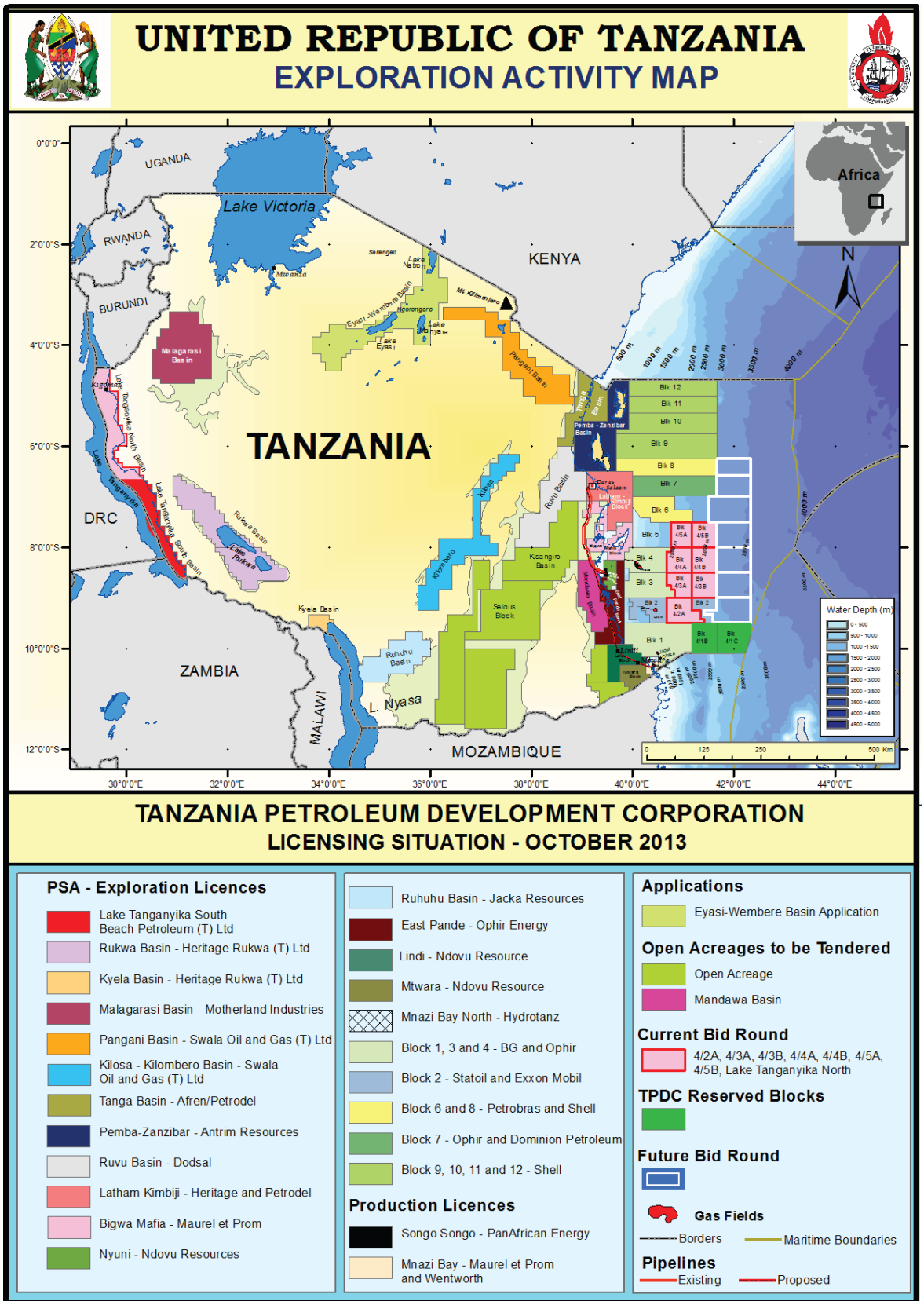

Figure 15: Exploration and Oil blocks in Tanzania

Source: http://www.tpdc-tz.com/Activity_Map_2012.pdf

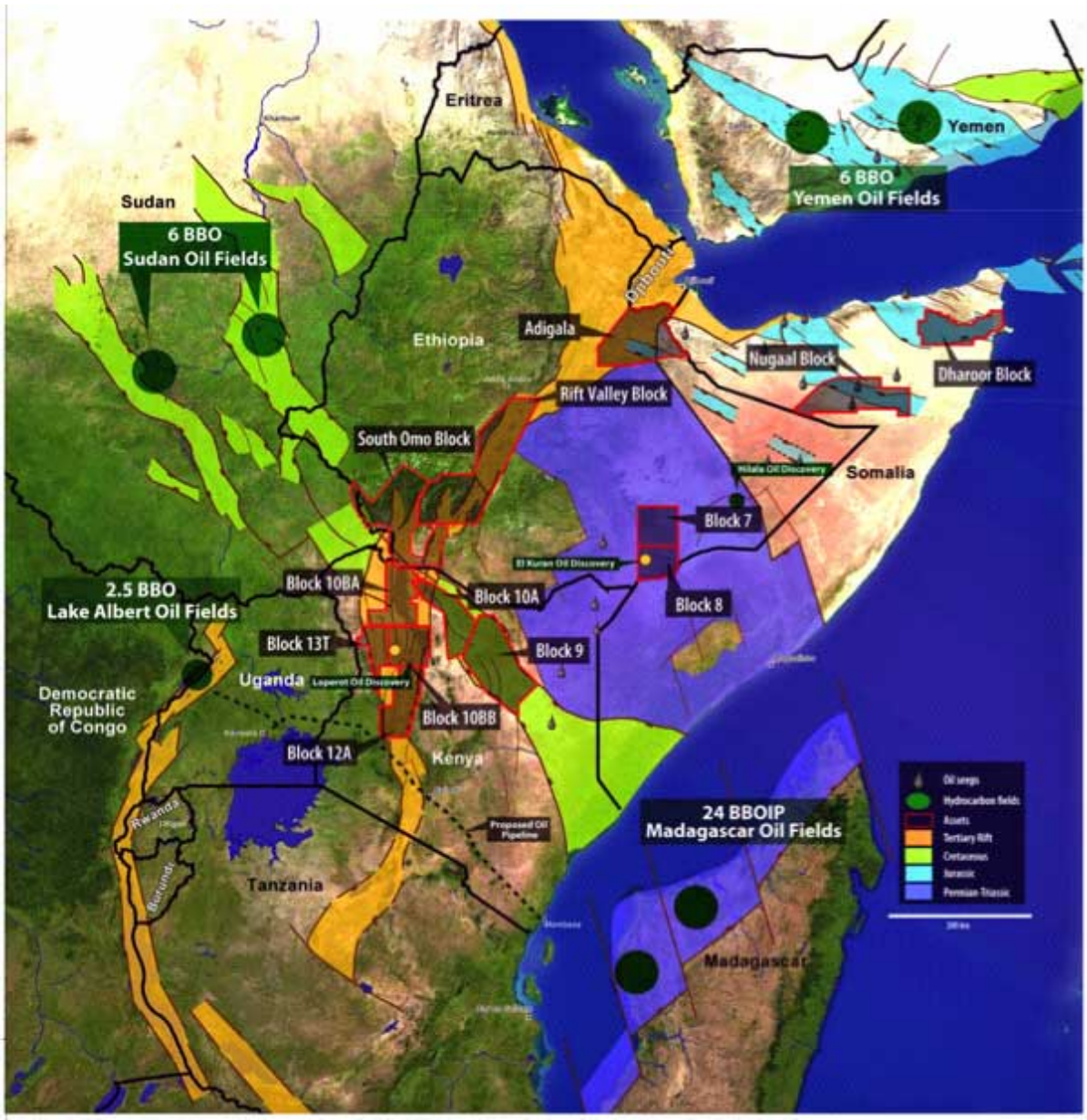

Figure 16: Oil blocks in East Africa – Some known reserves

Source: http://crossedcrocodiles.files.wordpress.com/2012/04/eaoil1-4rifts.jpg