

OIL & GAS DEVELOPMENTS IN THE WESTERN INDIAN OCEAN/COASTAL EAST AFRICA REGION

Discussion Paper on the Environmental and Social
challenges of recent oil and gas discoveries.

03 October 2012

Jon Hobbs (International Network Co-ordinator (Extractives Sector) (jhobbs@wwfnet.org)).

PURPOSE

Recent finds of oil and gas in the Western Indian Ocean (WIO)/ Coastal East Africa (CEA) regions have heralded a new energy 'scramble for Africa'. Multi-national oil and gas companies are flocking to the region spurred on by these discoveries. Although not a totally new feature, sporadic exploration having taken place for several decades, the recent developments have been made possible by advances in drilling technology and made more urgent by rising oil prices and problems of accessing traditional sources of supply due to current conflicts in the Middle East.

The WIO/ CEA region is diverse; it includes some of the poorest and most aid dependent countries in the world (eg Tanzania which is the most aid dependent economy in Africa) and some middle income countries (eg Seychelles and Mauritius). Some of the countries in the region face chronic domestic energy poverty that hampers development progress and forces the vulnerable and the poor into dependency upon energy derived from charcoal and other environmentally damaging fuel sources.

The recent oil and gas discoveries represent a significant opportunity to escalate development and attainment of the Millennium Development Goals and natural gas may be regarded as a relatively clean source of energy with which to drive this development and provide a bridge to more sustainable energy sources in the longer term.

Globally the need for a fundamental shift to more sustainable energy sources is WWF's goal. A commitment to work towards carbon free economies and 100% reliance on renewable energy sources by 2050 is contained in WWF's Energy Report 2012. This recognizes, however, that

individual countries will move at different speeds towards this goal and will use different paths in the transition.

The region is world renowned for its biological diversity. From coastal forests to coral reefs it has more than 18,000 known plant and animal species many of which are endemic to the region. Off-shore it has an estimated 11,000 marine species including hump back whales, dugongs, dolphins, whale sharks and five species of sea turtles. It also supports the world's largest wild prawn fishery and a major tuna industry as well as a significant tourist industry. About 20 million people live in the region's coastal zone and this number is expected to double by 2030. Many are directly dependent upon the natural resources in the region for their survival and livelihoods. The ecosystems, the services they provide and the resources within them are already under significant pressure and being destroyed or degraded.

A failure to adequately manage oil and gas developments will further exacerbate these pressures. WWF have identified Coastal East Africa as a priority marine/landscape on which to focus resources and attention, on a par with other regions under threat such as the Amazon or the Green Heart of Africa (the Congo River basin).

Both public and private policy makers face many difficult challenges presented by the recent oil and gas finds. Chief amongst these is how to balance the potential high economic and development returns from successful exploitation of oil and gas projects against the high financial and environmental risks - not to mention managing price volatility, macro-economic instability, technical and logistical complexity, high capital and operating costs, increased potential for corruption and civil and community conflicts. These risks are compounded by the current threat of piracy and regional geopolitical tensions. The biggest overall challenge is to ensure that the opportunities presented by the oil and gas discoveries are exploited in a responsible way that includes good governance, appropriate environmental and social standards and public oversight so that a positive developmental and environmental legacy that benefits all the people of the region, current and future, results.

This policy brief presents recommendations to help ensure that the exploitation of oil and gas discoveries underwrite the sustainable development of the region and do not, in the long term, undermine it. Too often in other regions this latter outcome has been the result. Bad governance has resulted in civil conflict, political instability, corruption, environmental degradation and has exacerbated poverty.

This outcome is not inevitable and development and environmental objectives can be achieved in a mutually reinforcing way. This brief provides recommendations that will help countries to reduce the risks associated with oil and gas developments while protecting sensitive ecosystems and landscapes without impairing the development opportunities. The Natural

Resources Charter provides a guiding framework for the good governance of oil and gas exploitation in the region (Recommendation 1).

A STRATEGIC APPROACH

The first critical decision will always be whether to exploit the resource or not? This should be based on a comprehensive, participative and rigorous policy development and assessment process analysing whether the potential positive results will outweigh the negative, whether cross sector compatibility can be achieved and deciding what path will lead to the most sustainable outcomes. To facilitate this process investors must be made aware of sacrosanct areas that are off-limits to oil and gas exploration (*Recommendation 2*).

Strategic Environmental Assessment (SEA) provides the framework to help ensure that environmental factors are given due consideration alongside economic, social and political concerns in oil and gas development planning. WWF, in partnership with the World Bank and others, is helping to advocate for and build capacity in SEA in the region.

The up-take of SEA as a policy and planning tool and a contribution to good governance is gaining momentum and much of the newer legislation requires an SEA process for policies, plans and programmes including in Mauritius and Tanzania while Kenya has produced comprehensive SEA Guidelines and Madagascar refers to the need for 'EIA' (sic) for new policies, plans and programmes. (ref Development Bank of southern Africa, 2012). (*Recommendation 3 and 13*).

Project planning must not be done in isolation, but rather projects, plans and programmes must be assessed in the context of likely consequences for other sectors' policies and priorities, potential accumulative or synergistic impacts of numerous projects and trans frontier implications.

Having done this, and concluded that oil and gas exploitation provides net benefits and is compatible with environmental and developmental goals, there are few developing country leaders that will reject the opportunity presented by oil and gas resources to escalate development. If the right decisions are made, exploitation will help drive economic growth, pull millions of people out of poverty and enhance sustainable development. Criticisms of developing countries for developing their fossil fuel resources by those in more developed regions of the world, whose economic and industrial development has been dependent upon fossil fuel driven economies for centuries, will be quickly rejected as hypocritical.

CONTEXTS

❖ International context

Controversy clouds the concept of 'peak oil' and the extent of crude oil reserves remaining to be commercially exploited in the world. As a finite resource it is inevitable that the developed world's dependency upon oil as a source of energy will diminish, but projections of when this is likely to happen vary wildly.

From environmental perspectives there are diverse views about fossil fuel exploitation; some oppose, in principle, further extraction, others accept that oil and gas will be part of the future energy mix for the foreseeable future. This latter view is invariably held on the condition that oil and gas developments are carried out according to existing 'best practice' environmental and social standards - as the transition to renewable energy sources is escalated.

For the time being, it is inevitable that oil and gas will continue to drive global economies, including the growing demands of significant emerging economies such as China, India and Brazil, which recent studies suggest are expected to increase global energy demand by 25% by 2025. It is also inevitable that oil and gas developments in the region will be a part of the energy equation for the foreseeable future.

New 'alternative' energy sources are being developed in the region alongside oil and gas. These include geothermal, wind and bioenergy. Some of these are also controversial because of associated negative environmental, rights, land speculation and social issues. These will ensure a diverse energy mix.

For example, Kenya is pioneering geothermal power under its 'Vision 2030' strategy. In August 2012 the World Bank, European Investment Bank etc announced that they will fund the 280 MW Ol-Karia scheme near Naivasha to lessen Kenya's current reliance on hydro-electric power (with all the consequences this has for a country short on water resources) by 40%. The project will be engineered by a consortium of Japan, China, Korea and Indian companies. In October 2012 Tanzania announced that the UK government had 20 British companies alone wishing to invest in about 80 solar, wind and geothermal energy projects. Tanzania currently has a 50% dependency on hydro schemes utilising scarce water resources.

But fossil fuel energy sources dominate the regions energy agenda. The search for new sources of fossil fuel energy continues. The region remains under explored. Exploration is penetrating into ever more remote, pristine and fragile environments, with concomitant environmental and social concerns. WWF monitors these developments engaging in cautious, constructive dialogue with the main players attempting to exert influence over the need for high standards but also opposing any irresponsible practices or ill-considered decisions when necessary.

Regional context

Geographically the region is well placed to be one of the world's major new suppliers of oil and liquefied natural gas (LNG) to energy importing countries especially in Asia. This will require

significant associated infrastructure developments including several LNG plants to convert the gas into liquid form for transport by marine tankers.

Significant reserves of off-shore natural gas have been found off the coasts of Mozambique and Tanzania, (which may eventually include Madagascar). Furthermore, there are indications that the existing oil fields in Uganda and South Sudan extend into the Turkana and Marsabit regions of Kenya and southern Ethiopia and commercially viable off-shore oil prospects have improved with some recent oil exploration results.

These discoveries could be “game changers” for the region’s economies and development. This puts eastern Africa on the threshold of a resource driven ‘bonanza’ period, which will require comprehensive preparations to ensure both sustainable economic benefits and environmental protection.

❖ **Current status**

Intermittent drilling for oil and gas has taken place in the region for many decades. Kenya and Tanzania started in the 1950s, Mozambique’s explorations date back even further to the 1940’s but was interrupted by civil war. Petroleum exploration in Madagascar dates back many decades and appears to be on the verge of a new round of onshore and offshore exploration drilling. Today announcements of new oil and gas discoveries have become a regular event throughout the region.

Mozambique

By mid-2012 international exploration companies had made major discoveries of off-shore natural gas in Mozambique waters (the main operators are USA’s Anadarko, Petronas of Malaysia, and Italy’s ENI (formerly known as AGIP) while Sasol (South Africa) are already producing). Recently Anadarko (partnering with, amongst others, Mitsui, Bharat Petroleum and Cove in Area 1’s Golfinho, Atum and Orca fields) and ENI (Mamba field) have announced significant gas discoveries off northern Mozambique.

Overall Mozambique has discovered an estimated 130 trillion cubic feet with a further 150 trillion cubic feet considered likely (S. Nazeralli pers comm 2012) which is comparable to the discovered natural gas resources in Kuwait

An estimated 60 trillion cubic feet of natural gas reserves are being developed to supply a Liquefied Natural Gas (LNG) plant that is being developed on-shore in Cabo Delgado province (an \$8-\$10 billion investment) to process and export the gas.

The Mozambique government are currently developing a Natural Gas Master Plan to help shape future management of the exploitation of these resources.

Tanzania.

By mid-2012 discoveries had been made off the Tanzanian coast (main companies operating in Tanzanian waters are Norway's Statoil, USA's Exxon Mobil and UK's BG, Royal Dutch Shell). BG has indicated that it will invest up to \$20 billion in Tanzania's gas sector in the second half of this decade. The Tanzanian Petroleum Development Corporation is the largest local investor.

About 20 smaller gas exploration companies are engaged in Tanzania including: Pan African, Ndovu/Aminex, Dominion, Petrodel, Antrim, Ophir, RAK, Maurel and Prom (France), Aminex (with Thai and Chinese investments), Solo oil etc – General oil and gas company interests are represented by the Oil and Gas Association of Tanzania (OGAT).

It is estimated that Tanzania will confirm 60 trillion cubic feet of natural gas reserves in the next 5 years (30 trillion feet have been confirmed from Songo Songo, Mtwara, Mnazi Bay, Ntoria, Mikindani, Nyuni and Mkuranga alone which has been valued at \$400 million (Tanzanian Minister of Energy and Minerals Professor Sospeter Muhongo quoted in East African 'Business Week' 05-08-2012). To put this in to perspective it is estimated that 10 trillion cubic feet alone could meet the annual consumption of France, Germany, UK and Italy combined.

BG are undertaking LNG planning and site surveys in Tanzania in accordance with an LNG Implementation Agreement and Production Sharing Agreement (PSA) following the discovery (with Ophir) of significant natural gas reserves in Jodar-I well in block 1).

So far, most of the natural gas discoveries are off northern Mozambique and southern Tanzania in the blocks roughly due west of the Rovuma-Rufiji region, but further exploration for both oil and gas is also under way off the coasts of Kenya and Madagascar.

Although current commercial prospects off Mozambique and Tanzania have been limited to natural gas, commercially viable oil discoveries remain a strong possibility. Oil shows have been reported in Mandawa Basin, Songo Songo, Mafia, Makarawe, Pemba and in land at Lake Tanganyika. Royal Dutch Shell (Netherlands) is engaged in oil and gas exploration activities off the coasts of Zanzibar. These have so far been proven economically unviable. Controversial exploration work on-shore and within the Selous Game Reserve World Heritage Site has ended for the time being with most of the attention off-shore.

Virtually the entire East African coastline has been divided into exploration blocks, including areas currently having protected status, wildlife migration corridors, areas demarcated for tourism development and areas that support fish/ prawn breeding and nurseries - mangroves, coral reefs, sea grass beds, lagoons etc .

In 2012 Tanzania is developing a new Gas Policy / Gas Revenue Management Bill which, inter alia, will stipulate that all gas processing plants (excluding LNG Plants) must be built off-shore to “ease monitoring of gas production figures” (‘East African Business Week’ 05-08-2012.).

Madagascar.

Madagascar is a proven petroleum province with onshore discoveries of controversial bituminous (tar) sands and subsurface heavy oil deposits. Indeed, with estimated combined resources of 20 billion barrels of oil, the yet-undeveloped Bemolanga bituminous (tar) sand and Tsimiroro heavy oil deposits are the best known hydrocarbon accumulations in the region. However, no conventional oil accumulations of commercial interest have been discovered so far. Several companies have confirmed their interest in further exploration in the area by establishing production sharing agreements (PSAs) with the government. Sixteen PSAs have been signed since 2000, and there were 14 licenses in Madagascar at the end of 2008, operated by Sterling Energy, ExxonMobil (and partners) , Afren, Ophir, Tullow Oil, Essar energy, Amicoh, Niko resources, Sapetro, Copper Range / Petromad, Madagascar Oil SA, Varun Energy, and Sunpec/Sinopec.

Additional large prospective zones are located along the island’s west coast within the Ambilobe, Majunga and Morondava basins, all extending into the deepwater Mozambique Channel. The offshore Morondava basin is considered to be related to the same petroleum system that produced the onshore accumulations but extending into a deeper geologic setting that will yield lighter oil discoveries.

Iles Eparses (French territory)

It is estimated that Juan de Nova, 150 kms off the west coast of Madagascar, one of France’s “Iles Eparses (scattered islands)” may contain significant hydrocarbon deposits. The oil and gas potential in this deep water area is reinforced by its position between the Bemolanga and Tsimiroro fields in the east, and the presence of significant natural gas fields in the west. In December 2008, two oil blocks referred to respectively as "Juan de Nova East - JDNE" and "Juan de Nova Deep Marine - JDNMP" were the subject of licenses granted by the French Government for exclusive offshore exploration and production.

Kenya.

The most recent oil finds in the region have been made on-shore in Kenya which has 16 open oil and gas exploration blocks. These were made by Tullow Oil in the Ngamia-1 well being drilled in Block 1 in Turkana County and represent significant commercially viable finds of crude oil. Exploration is now expanding to Marsabit County (PaiPai-1) and Lake Victoria and also in to Ethiopia in the belief that the Kenyan, Ugandan and Ethiopian finds are linked. Afren, Apache and Anadarko are among the firms planning exploratory drilling off-shore near

Lamu archipelago. Interestingly, Turkana is also the region where Kenya is planning the largest wind power project in sub Saharan Africa to date..

To help ensure that host countries receive a fair share of the benefits from oil and gas developments, revenues are managed in a prudent and transparent fashion and an equitable distribution of the benefits reach the citizens of each country, signing up to and implementing the Extractive Industries Transparency Initiative (EITI) is imperative (Recommendation 4).

WWF, with support from the Norwegian Oil 4 Development initiative. are helping build regional civil societies' capacity to monitor and hold governments to account for the good governance of the upcoming revenue windfalls and responsible environmental performance standards. Tanzania and Mozambique have signed up to the EITI and are in the process of accession to full membership status. Madagascar and Kenya have yet to join.

To enable citizens to engage meaningfully in the strategic decisions associated with oil and gas developments there is also a need for greater transparency in contract negotiations (Recommendation 5). If the first time CSOs learn about such developments is when they are announced as *fait accompli* in the media conflicts and adversarial campaigns become more likely.

President Kikwete of Tanzania has recently promoted the prospect of a special fund to be set up separate from the Treasury to ring fence gas revenues. (The Guardian 4 August 2012). It is important that a significant proportion of these funds are earmarked for sustainable development programmes. (Recommendation 6). For example, the possibility of natural gas fuelled transportation is still latent with only an estimated 50 vehicles running on locally produced natural gas in Tanzania. Plans however exist for more gas filling stations which should be supported from gas revenues. Ultimately these funds should be used to build greener, carbon free economies. (Recommendation 7) that will be driven by intra- and inter-generational equity. (Recommendation 8).

Other influences:

Although not part of the current geographic focus, other oil producing neighbouring countries impact the coastal zone of the region indirectly by their need for infrastructure facilities.

Significant oil reserves are already being exploited in **South Sudan** - the largest regional producer and an OPEC observer. Investments in South Sudan oil are dominated by China National Petroleum Company (CNPC), Petronas of Malaysia, and ONGC of India- reflecting the caution of other nations in this politically volatile region. New discoveries of oil in **Uganda** in 2006 in the Albertine drift region (with a potential of a billion barrels of recoverable oil (CIA World Fact Book) although more recent discoveries may double that estimate) have ushered in a new chapter in Uganda's development (led by Tullow Oil an Anglo

Irish company, China National Offshore Oil Corp (CNOOC) and Total (France)) and include plans for a new oil refinery.

❖ **Associated Infrastructure Developments.**

These recent developments unleash a new era of industrialisation. The need for associated infrastructure for transport and export escalates when the oil discoveries of land-locked South Sudan, Uganda, as well as the mineral wealth of the region, are also taken into account alongside off shore gas discoveries needs.

The efficiencies possible through regional international collaboration are likely to make good business as well as environmental sense and exploring opportunities for this are encouraged. (Recommendation 14) including in establishing joint research and capacity development facilities (Recommendation 15).

Mozambique

Construction of an LNG facility on the northern coast of the Cabo Delgado Province is under development. The plant will collect, transport, process, and export natural gas in a remote coastal location near Pemba. This process will begin off-shore where natural gas will be extracted from hydrocarbon reservoirs below the seafloor via sub-sea wells. The gas will be collected and transported to the on-shore facility through specifically designed pipelines. Once on shore, the gas will be processed, converted to liquid, and stored in large, specially designed tanks.

The liquid gas will then be transported through refrigerated pipelines to a near-by export jetty where it will be loaded into purpose-built LNG vessels. These specially designed ships maintain the LNG in a liquid state for sea voyages of several thousand kilometres. The liquid gas will then be shipped to markets around the world, primarily Asia.

The first LNG plant comprises a two train process (with potential expansion to four trains) each with a capacity of 5 million tonnes per annum. This will help supply Asia with LNG and is due on stream in 2018. Anadarko senior management have indicated that a further 7 LNG plants could be needed in Mozambique alone. Already, with just the Cabo Delgado developments, Mozambique will become the third largest LNG exporter in the world after Australia and Dubai in terms of LNG capacity.

A 900 km pipeline already exists supplying amongst other areas the Zambezi corridor and South Africa. The prospect of further natural gas imports to South Africa could significantly reduce that country's dependence on coal fired power stations.

Tanzania

In Tanzania a 300 MW power plant is utilising gas from Mnazi Bay suppliers with a major pipeline (532 kms and capacity potential of 105 million cubic feet of gas per day) supplying Dar es Salaam.

Wentworth Resources, Canada – formerly known as Artumas- was the first foreign investor in Mnazi Bay and is now supplying gas to support Tanzania's domestic power needs. Exploitation of gas reserves in the Songo Songo and Mnazi Bay fields of the Rovuma Basin are being transported to Dar es Salaam by pipeline to the Ubongo power plant for electricity generation, local industries etc.. This is helping alleviate the current 90% dependency on traditional biomass sources by Tanzania's poor.

The draft Gas Revenue Management Bill (2012) of Tanzania is expected to make it obligatory that all gas processing will take place off shore- with the exception of LNG plants to facilitate monitoring of production.

Kenya

Kenya's ambitious **Lamu-Southern Sudan-Ethiopia Transport (LAPSET)** corridor project (estimated cost \$15 billion), plans to connect southern Sudan (1,250 kms), Ethiopia (460 kms) Uganda (500 kms) and Nairobi (270 kms) to a new 32 berth cargo port to be constructed at Manda Bay near the World Heritage Site of Lamu. There are also plans to upgrade the existing port facilities at Mombasa. The LAPSET project is planned to include 4 to 6 lane highways, railways, pipelines, oil refinery (at Lamu) and fibre optic cables linking to south Sudan and Ethiopia. The project also plans to include an airport, a new city and tourism developments, convention centre, cruise terminal facility, fisherman's wharf and has been described as one of the largest current infrastructure investments on the African continent. The Lamu port itself will be the region's largest oil exporting facility.

South Sudan is one of the world's poorest countries and is reliant on oil for 98% of its revenues. A 2,000 km crude oil pipeline will link the Lamu port to the oil fields of South Sudan. This will lessen its current dependency on north Sudan for transit of its exports and thus is being rushed through given the deteriorating political situation between the two countries.

The project is expected to accelerate population growth of the Lamu region is estimated to rise from 100,000 more than 10 fold by 2050, which will increase demands for potable water, waste disposal facilities, electricity etc. If just half of these proposals outlined in a Japanese funded feasibility study reach fruition, the region will be totally transformed with considerable environmental and social consequences.

The project received Presidential approval in 2011 and an official ceremony took place in 2012 to launch the 3- berth first phase of the port facility project. The ceremony was attended by the

Presidents of Kenya and South Sudan and the Prime Minister of Ethiopia. Land preparation for the port area is now under construction with water, sanitation, power facilities and roads soon to be developed.

To date the full scope of the LAPSET plan and its component projects have not been subject to an SEA or adequate project environmental impact assessments (EIA) and current developments are not being framed by publically available management plans in their implementation. WWF has undertaken a pilot SEA of the Tana Lamu region to advocate for a comprehensive and integrated strategy for the development of the region.

❖ **Institutional context**

The establishment of policies, laws and institutions are the critical foundation needed for a country to make the most of its natural resources. Updated policies to guide the governance and management of the upstream oil and gas sector and effective legal and regulatory framework should provide a framework investment climate which protects other interests. State of the art EIAs, risk assessment, contingency and emergency response plans are also necessary if environmental and social risks are to be appropriately assessed, avoided and managed where unavoidable – in the context of the ‘mitigation hierarchy (avoidance, mitigate, ameliorate, (restoration/ rehabilitate), off-set). This will be dependent upon a comprehensive and scientifically credible understanding of the state of the coastal zone (Recommendations 9 and 15). Continuous improvement could be encouraged by a periodic peer review mechanisms across the region which would also help to share experiences and lessons learned. (Recommendation 17)

Although Kenya, Mozambique, Tanzania and Madagascar are putting in place national instruments such as natural gas policies, natural gas master plans, gas and petroleum revenue management bills, acts and other legislation, the countries of the region generally lack experience in formulating and effectively implementing such instruments.

Multi stakeholder engagement in these processes is also lacking and organisations such as WWF are endeavouring to ensure environmental factors are included in them.. Relevant government institutions have limited technical capacity, experience and skills for managing complex oil and gas developments or developments of the scale and complexity of these mega projects. Strengthening the governance, institutions, laws and regulatory policies of the countries’ of the region is critical (Recommendation 1).

Managing the environmental aspects of oil and gas developments is particularly poor both in routine planning and emergency preparedness and contingency planning. Regional cooperation will provide economies and efficiencies in both areas, (Recommendation 16).

The prospects of a vibrant oil and gas sector ‘crowding out’ other sectors could result in further environmental, social and economic problems caused by pressures in those sectors reducing environmental priorities and standards.

In addition, the threat of the ineffective use of revenues for sustainable outcomes is compounded by the prevailing levels of corruption, as shown by recent reports of Transparency International for Tanzania and Mozambique. Corruption has been identified as one of the major challenges facing companies in dealing with the governments in the region.

The need is not only for frameworks that safeguard security of contracts and transparency of tax regimes but also to define clear rules on bidding processes, environmental protection and management and provisions for adequate compensation for losses in land and resource access.

Multinational companies operating in the region all claim to operate according to business principles that, on environmental matters, purport to go beyond local compliance requirements. Nothing short of best practice in environmental and social standards is required in the region (Recommendation 10).

Those listed in OECD countries are subject to The OECD’s Guidance for Multinational Enterprises. The International Finance Corporations environmental and social safeguards provide the benchmark to be adhered to WWF is advising the Chinese government in the development of environmental guidance for Chinese extractives sector investors and has developed Investment Guidance for inward investors in the extractives sector in Tanzania to encourage preference to be given to responsible investors with good environmental track records.

As the LAPSET corridor development illustrates, the “footprint”, real or potential, of oil and gas is not necessarily nationally bound. Oil spill contingency planning, transport and trade etc are trans-boundary and require an adequate regional governance system.

At present, the only regional governance framework dealing specifically with issues related to oil and gas, is the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (signed in 1985, effective 1996 and amended 2010). It provides a mechanism for regional cooperation, coordination and collaborative actions in the eastern and southern African region and has specific clauses related to information sharing, consultation and environmental assessment between countries relating to potential trans-boundary impacts. The Convention, furthermore, has a specific Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency, which includes the risks of oil spills. (Recommendation 12).

The region is entering into the first phase of a \$ 1.3 billion physical power integration system, funded by the World Bank, but regional harmonisation of national policies, instruments, data

sharing etc, to ensure consistency and economies of scale, seem a long way off (Recommendation 11). There is no regional energy development strategy that helps plan a diverse energy mix. Regional harmonisation may be complicated by different countries in the region having allegiances to different regional alliances such as the East African Community and Southern African Development Community.

CHALLENGES AND RISKS

Oil and gas projects can have significant positive and/or negative economic, environmental and social effects through-out their project life cycles which must be identified, assessed, managed mitigated, ameliorated, compensated and rehabilitated at all stages.

Although there is no shortage of Guidance on best practice in managing oil and gas projects, the recent experience of the Deepwater Horizon oil spill in the Gulf of Mexico remind us that the risks remain and there is no substitute for constant due diligence and the highest level of oil and gas performance standards.

As mentioned earlier, the countries of the region are recognised to contain amongst the most unique and spectacular bio-diversity in the world. In the marine domain the region is not only important for its *in situ* diversity but also because of its important provision of corridors for migratory species that pass through it during different stages of their life cycles. This underscores the need to manage the eco-region as a whole.

This natural resource wealth supports a growing and internationally renowned tourism industry in which the attractions of iconic natural features are enriched by cultural diversity and history. It also provides the eco-system services that sustain the population, particularly the poor.

The rich fisheries, including major prawn fisheries and a regional tuna belt, are exploited not only by domestic fishing industries but also by foreign fishing fleets - not always to the benefit of the countries of the region. Near shore fish stocks support a centuries old artisanal fishing industry.

Few of the resources being exploited in the region are currently managed in a way that will ensure their sustainability. The coastal zone is already under pressure from urbanization, siltation, sand and limestone quarrying, agriculture, raw sewage/waste disposal and other poorly planned developments. Potential climate change impacts will exacerbate the situation. Adaptation to these effects will be as important for planning developments of the oil and gas sector as any other.

Risks and challenges related to oil and gas development in the WIO/CEA region:

Governance:

1. Potentially disruptive macro-economic and cross sector impacts.
2. Increased risks of corruption due to scale of revenues.
3. Lack of comprehensive and integrated strategic planning.

Project Related:

4. Seismic surveys
5. Drilling activities and associated pollution
6. Oil spill prevention and response
7. Cable and pipeline laying
8. Land fall terminals and LNG plants.
9. Other infrastructure needs
10. Waste management
11. Water management
12. Health impacts
13. Community relations

There are mounting calls for oil and gas resources to be better managed than the existing standards being applied to other natural resources. Contracts, agreements, concessions and the collection of revenues, royalties and taxes need to be transparent and the fair distribution of benefits to all the people of the region.

Well-resourced multi-national companies adopting the highest standards of environmental performance can help improve the overall standard of environmental planning and management in the region - introducing new benchmarks for smaller industries to aspire to. Through corporate responsibility programmes they can be significant forces in development. (Recommendation 1)

Investors must develop programmes that achieve social, economic and environmental co-existence between oil and gas developments and communities and ecosystem viability through protection, mitigation, rehabilitation, habitat enhancement, measuring, monitoring, education etc Such measures are particularly important where local populations depend on the environment for their survival. (Recommendation 7).

The sector's activities in the region are currently mostly off-shore so they do not face the same degree of community engagement needs as an on-shore operator. However, they still need to engage and invest in the communities in proximity to their operations and who may be impacted both directly and indirectly by their activities. This is of course particularly true of communities dependent upon marine resources.

Environmental planning and management is required

throughout project life cycles from upstream activities (exploration and production, through transportation and distribution to processing and refining plants) to downstream activities (onward transportation and distribution to markets) and eventual decommissioning.

While fossil fuels may be their core business, the oil and gas sector is no exception to the need to reduce greenhouse gas emissions from their operations. They need to work with all stakeholders on efficiency improvements and the development of renewable energy technologies, reduction of gas flaring and exploiting the potentials for sequestration of carbon emissions etc.

Organisations like WWF are helping to build the capacity of local civil societies to effectively engage in public deliberations on oil and gas activities with support from the Norwegian 'Oil for Development' programme. It is incumbent on government and companies to facilitate open and constructive sharing of information and developing tri sector partnerships that will create greater trust and reduce conflicts.

The mood is up – beat in the region driven by the scale of the recent discoveries of natural gas. The challenge is to ensure this opportunity underwrites sustainable development.

RECOMMENDATIONS

In consideration of the above, WWF offer the following recommendations to policy makers in the Western Indian Ocean region:

National Level

Good Governance.

- Policies, Plans and Programmes.
1. Scale up programmes to build the capacity for the good governance and effective management of the extractives sector – adhering to and building on the best practice guidance of the Natural Resources Charter (2008).
 2. Establish 'No Go' areas for oil and gas investments based on rigorous scientific criteria and analysis
 3. Make greater use of available tools such as Strategic Environmental Assessment (SEA) to ensure policies, plans and programmes integrate environmental factors into oil and gas planning and development, drawing upon international best practice.

4. Sign up to and operationalize the Extractive Industries Transparency Initiative (EITI) and progress beyond revenue transparency to greater transparency in contract negotiations, within the bounds of commercial sensitivities.
5. Negotiate sound and fair contracts in a transparent fashion that ensure optimal rents to the country, which will ensure protection of the environment, ecosystems and biodiversity.
6. Establish a fund from the revenue windfalls of oil and gas production for re-investment into sustainable development initiatives eg renewable energy developments, fisheries protection etc.
7. Pursue pro poor policies, equitable distribution of benefits, economic diversification to avoid dependence upon the oil and gas sector.
8. After assessment of immediate development needs, consider establishment of a sovereign fund to ensure future generations benefit from resource extraction.
9. Engage in improving Land and Marine Use Planning. Clearly identify and demarcate, and step up the protection of critical habitats, high conservation value areas, ecosystems and the services they provide and cultural resources. Increase investment in appropriate marine and coastal zone protection through rigorous planning and management.
10. Ensure the implementation of international best practice, high quality standards. With commitment to project-specific tools such as...
 - Environmental and Social Impact Assessments (ES IAs) of extraction and processing activities and associated infrastructure development.
 - Compensation schemes – such as biodiversity off sets, when other options for site location no longer exist.
 - Environmental and Social Impact Management Plans (including Bio diversity Action Plans, Community Engagement Plans)
 - Corporate reporting according to internationally accepted standards.
 - Ensure technology development and transfer forms an integral part of oil and gas development strategies to help build local capacity.

Contribute to the general improvement in environmental awareness, capacity building in environmental management skills etc.

Regional Level

- Harmonisation, Integration and Co-operation
11. Promote regional integration in the planning and management of oil and gas exploration and development.
 12. Adhere to the conditions of the Nairobi Convention.

13. Promote regional cooperation on planning (eg by undertaking trans boundary SEAs/ land and marine planning etc) for all developments including the oil and gas sector and its associated infrastructure.
14. Promote regional efficiencies and economies of scale through joint infrastructure development, including downstream beneficiation (LNG plants, petro chemical industries etc). Establish a fund for cooperation and investment in cross border sustainable development initiatives for the region.
15. Establish a Research and Development (R&D) partnership between key research institutions in Science, Technology and Innovation (STI) to understand and fully utilize the potential of oil and gas developments and support capacity building, information and knowledge sharing between scientists and institutions at national, regional and international level- including on conservation of bio diversity and protected areas.
16. Develop a regional contingency master plan and an insurance fund for potential disasters related to oil and gas production and transport.
17. Undertake periodic peer reviews of good governance of the oil and gas sector in respective countries as an extension to NEPAD peer reviews.

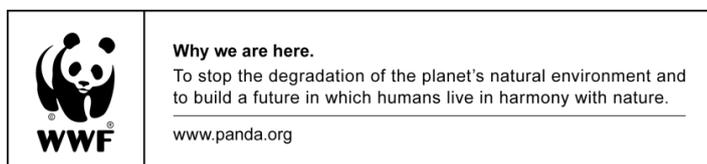
For further information please contact:

Jon Hobbs, International Network Advisor – Extractives Sector/ Senior Policy Advisor - Trade & Investment, WWF Coastal East Africa Initiative, Phone +255 22 2775346, Mobile +255 756494610, E-mail: jhobbs@wwfesarpo.org

Acknowledgements:

The assistance of colleagues in the WWF Coastal East Africa Initiative, under the leadership of Peter Scheren, The Eastern and Southern Africa Programme Office (ESARP) under the leadership of Niall O'Connor and the Norwegian Oil for Development programme led in the region by Stefan Norris was greatly appreciated in the preparation of this Briefing Paper as were comments from Cosmas Ochieng of the IUCN, Pretoria, South Africa.

WWF is one of the world's largest and most respected independent conservation organizations, with over 5 million supporters and a global network active in over 100 countries. WWF's mission is to stop the degradation of the earth's natural environment and to build a future in which humans live in harmony



with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

Annex 1 Potential Impacts of Oil & Gas Development:

Seismic Surveys are usually the first significant impact of off shore oil and gas developments. The generation of loud and low frequency sound waves can disorient cetaceans and impact their behaviours and movement. Fish are also affected negatively with reduced fish catches having been observed in areas of seismic survey activity. Guidance on when, where and how seismic surveys are undertaken need to be developed to limit negative impacts?

Off-shore production establishment includes exploratory drilling which may lead to production, rig placing and cable and pipe laying on the sea floor. During oil and gas exploration drilling and extraction of large quantities of rock cuttings coated with residual amounts of lubricating agents (drilling mud) can be produced. Elimination or containment for safe disposal of such toxic wastes should be the goal in sensitive areas. Noise, vibration, increased marine traffic, structures and the possibility of introduction of alien species may upset existing balances. This is likely to include significant sea bottom disturbances impacting benthic organisms and sub-surface geomorphology. Measures can be taken to reduce the number of wells drilled and materials consumed through directional drilling techniques

Prevention of oil spills and other marine accidents is of critical importance in the region. Although currently mostly gas is being exploited in East Africa, this will still require an increase in shipping with the risks that this poses. Avoidance of these risks must take the highest priority. When accidents happen, comprehensive and well-rehearsed contingency plans and containment are essential to mitigate and minimize the risks and impacts,

'Produced' water which coexists with oil and gas in hydrocarbon reservoirs, is brought to the surface during testing and production operations. This water can be a significant pollution source due to its high salinity, heavy metals and dissolved oils as well as toxic aromatic hydrocarbons and can be damaging to the environment if not treated and managed appropriately.

Gas flaring, natural gas is a relatively clean energy source, yet every year billions of dollars' worth of natural gas is wasted by flaring at oil fields across the world and producing some 400 million tons of greenhouse gas emissions. This is a safety requirement of all oil and gas operations. Preventing gas and fumes from escaping into the atmosphere (eg from venting and flaring) must be a key objective at all stages. Minimizing gas and CO₂ emissions should be a key objective at all stages.

Seeking positive opportunities. Access to potable water is a critical concern throughout the region. Drilling for oil and gas often uncovers information on resources that could benefit local communities eg about untapped ground water resources as well. Where the opportunity exists

and economics allow, suitably treated water can present opportunities to help communities, reduce the vulnerability of the poor and for agricultural irrigation as well as to create or replenish wetland habitats..

Petro chemical industries can also support agriculture through fertilizer production while other wastes can become opportunities for fish farming etc in industrial symbiosis programmes.