POLICY BRIEF

Gap Analysis of Ghana's National Oil Spill Contingency Plan (NOSCP)

December, 2018

1.0 Introduction

Ghana has a National Oil Spill Contingency Plan (NOSCP) with a long history. Ghana was pioneering with the first predecessor of the current NOSCP in the 1980s and improved that in later versions, most recently in 2015, but hasn't kept up with globally changing views on the matter and the major impact that spills such as that from the Deepwater Horizon (2010) had on the environment and society. Therefore we feel that the plan suffers from the "*Law of the handicap of a head start*".

We are of the opinion that the Environmental Protection Agency should take the lead by transforming this current NOSCP into a true and comprehensive **"Oil Spill Prevention and Contingency Plan"**, and by providing guidance to the Oil & Gas companies and other agencies for the development of their OSCPs, rather than relying on the industry. The industry OSCPs such as that of Tullow Ghana Ltd (TGL) (Tullow Oil 2012) are purely technical documents which do not take into account any of the issues discussed in this policy brief. Thus, the plans to date fail to meet their required standard.

This Policy Brief seeks to provide a gap analysis and recommendations on Ghana's National Oil Spill Contingency Plan. It was prepared by Friends of the Nation as part of the 'Improving petroleum governance through an informed and engaged civil society in Ghana' project supported by Oxfam and the Norwegian Agency for Development Cooperation (NORAD).

2.0 The bottom line

Ghana's National Oil Spill Contingency Plan (NOSCP) is a very general, rudimentary guideline, and actually more of plan for industry and agencies to develop OSCPs in the future, not an actual spill prevention and response plan itself. The NOSCP does not meet in itself most of the nine "*Aims and Objectives of the Plan*", as given in Section 1.3 (page 12/13).

The most important issues which have not, or insufficiently, been treated in the NOSCP are respectively:

- Oil spill prevention
- Transparently organized *external* and *independent* review of all main parts of the NOSCP
- Wildlife response planning
- Sensitivity mapping and the environmental sensitivity atlas
- Dispersant use policy
- Border crossing impact of oil spills

- Natural Resource Damage Assessment
- Oil spill liability
- Citizens' Advisory Council.

These issues are discussed in detail in this policy brief and recommendations are made to improve the quality of the present NOSCP

3.0 Detailed discussion on the gaps in the NOSCP and corresponding recommendations

3.1 Oil Spill Prevention

Prevention is better than cure. The NOSCP talks much about cure, but little about prevention. In order to make the NOSCP a true *Prevention and Contingency Plan*, all aspects of oil spill prevention, both on land and at sea, should be systematically analysed, prioritized and budgeted. This should not be limited to upstream, but also include midstream which involves the transportation (by pipeline, rail, barge, oil tanker or truck), storage, and wholesale marketing of crude or refined petroleum products.

3.1.1 Recommendation

It is very important that the government focus resources on oil spill ***prevention,*** *as that is a critical risk reduction measure. The allocation of resources should be based on a thorough analysis and prioritization of oil spill risks and the measures necessary to reduce these risks in order to prevent spills, on land and at sea, upstream and midstream.*

3.2 Wildlife Response Planning

According to Oil Spill Response Ltd (a private company working with all major O&G companies and the EPA), a response without a pre-spill agreed wildlife plan in place will have a large potential for delays and inefficiency. This would also lead to a number of unnecessary impacts to wildlife. Therefore the best guarantee for a fast and effective wildlife response mobilisation is provided by a pre-spill developed wildlife response plan, implemented through training exercises

With respect to pre-planning and preparedness regarding possible wildlife casualties during an oil spill, the three main issues are:

1. Which are the most sensitive sea areas under Ghana jurisdiction (*know your area*) and which species occur (see next paragraph on sensitivity mapping)
2. Who are the trained experts that should be involved in the response (*know your experts*)
3. What facilities / material can be made available (prepare or select facilities beforehand).

3.2.1 Recommendation

The Handbook on Oil Impact Assessment (Camphuysen et al. 2007) and the Wildlife Response Preparedness (IPIECA/OGP 2014) are essential baseline documents which recommendations should be used for the situation in Ghana. We invite the EPA to contact key experts in the Royal Netherlands Institute for Sea Research, Texel, The Netherlands (Dr C.J. (Kees) Camphuysen) and at Sea Alarm, Brussels, Belgium (Hugo Nijkamp, MSc) to help developing a wildlife response plan.

3.3 Sensitivity mapping and the environmental sensitivity atlas

There is currently a major problem: there is virtually no systematically collected information on marine wildlife (in particular of seabirds) in the EEZ of Ghana. This is a significant gap, making it difficult -if not impossible- to plan an oil spill response. Information that is available are observations from platforms of opportunity, such as the Nansen surveys and the data provided by O&G companies, provided that these data have indeed been submitted to EPA on a monthly basis, according to the respective clauses in the environmental permits.

What we would need is spatially and temporally structured quantitative information on densities of birds and other wildlife, such as cetaceans (not simply a list of species), in the entire EEZ of Ghana, but at least on the continental shelf and shelf break areas including the areas which can be impacted by current and future O&G installations. The seasonal variability of these wildlife occurrences must be identified as well. Good examples on what needs to be done can be found in the North Sea area where both spatial and temporal information on seabird abundance is *available and actively used* for wildlife response planning purposes (Oil & Gas UK 2016).

Secondly, for all species occurring in Ghana's marine waters a Seabird Oil Sensitivity Index needs to be developed. As species occurring in Ghana are only partially the same as those occurring in the North Sea, this needs additional study. There is expertise in this field abroad and the EPA is strongly advised to imply these experts to come forward with the best possible index.

The EPA (2004) published a Coastal Environmental Sensitivity Atlas. Although this is a valuable document, it is currently out dated, because it is incomplete for sandy beaches which are systematically considered as low in biodiversity, while e.g. 3.5% of the East-Atlantic Flyway of Sanderlings *Calidris alba* (a shorebird) are found on a single stretch of sandy beach of less than 20 km on either side of Esiama between the Amansuri and Ankobra estuaries (Ntiamoa-Baidu *et al.* 2014, Grond *et al.* 2015) where they mainly feed on *Donax pulchellus*. This area has no conservation status and is entirely unprotected. Also, despite the fact that EPA currently does not consider coastal erosion as a factor which can enhance the coastal sensitivity to oil spills (Larry Kotoe, EPA, *Pers. Comm*.) we feel that this view is in need of reassessment as e.g. the sensitivity of the Pra estuary has clearly increased because the protective coastal bar has disappeared by the combined impact of human activity and coastal erosion. There are certainly other examples along the coast. This phenomenon may become particularly pronounced with rising sea levels and increased storm frequency and severity due to climate change.

The most important gap, however, in the NOSCP is the total lack of biological information from environmentally sensitive areas at sea. Apart from the IEZ, no marine protected areas exist in Ghana. Ghana is significantly lagging behind other coastal countries in establishing Marine Protected Areas (MPAs). This gap alone highlights the insufficiency of the current planning process. The Convention on Biological Diversity (CBD), of which Ghana is a member country, is calling for the world to protect 10 per cent of its coastal and marine areas by 2020. That goal is part of the Aichi Biodiversity Targets. This same percentage is also mentioned in SDG 14.5: "*By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information*".

3.3.1 Recommendation

It is crucially important that systematic temporal and spatial distribution data on megafauna and benthic communities be collected on the continental shelf and across the shelf break including those areas which potentially may be affected by (major) spills. This information should form the core of a Marine Spatial Plan and lead to the establishment of marine protected areas (MPA's) totalling 10% of the EEZ by 2020, or next year, in order to comply with both CBD and SDG 14.

3.4 Dispersant use policy

The Ghana Dispersant Use Policy (DUP; EPA 2009) dates from 2008/2009 and has not been updated since. This was BEFORE the Deepwater Horizon spill in 2010. The Ghana DUP relies heavily on the dispersants Corexit 9500 and 9527 (Annex A). The choice of dispersants is related to the characteristics of the oil. Although approved by the EPA (both USA and Ghana), formulations of Corexit 9500 and 9527 were banned from use in Sweden and in the United Kingdom, the latter in 1998, because laboratory tests found them harmful to marine life that inhabits rocky shores. *Their use is controversial everywhere* (Prof. Dr R. Steiner, *Pers. Comm*.).

Although mechanical recovery of spilled oil is considered by the OSCP as the main strategy, and the use of dispersants is subject to prior EPA authorization, we have to be realistic. The TGL OSCP states that under conditions of a CALM SEA not more than 20-30% of the oil can be contained and recovered. It has to be feared that O&G companies, neither wanting that any oil will hit the coast, nor that much negative publicity will be made by visible spills at sea, will rapidly try to convince the authorities in Ghana that the use of dispersants is inevitable. The EPA of Ghana does neither have the capacity or expertise to contradict the company's pressure nor has an international independent panel of experts to ask for advice.

Contrary to containment, which needs a calm sea, dispersants need an agitated sea (e.g., wind at 15-25 knots) to work. These very same conditions are also naturally dispersing oil, without the use of any chemicals. Therefore "doing nothing" might be the best strategy if the risk for coastal contamination is unlikely. This option does not figure in the NOSCP and should be examined and included.

The same Corexit 9500 and 9527 which figure prominently in Ghana's DUP were massively used after the Deepwater Horizon spill. The research that followed has shown major impacts on:

1. Human health
2. Benthic Communities
3. Fish
4. Penetration of PAHs in the sediment
5. Enhanced toxicity of hydrocarbons
6. Reduced degradation of hydrocarbons

Many studies followed the Deepwater Horizon spill, and just a few will be highlighted here. According to Zuidgeest and Huettel (2012) the addition of dispersants permits crude oil components to penetrate faster and deeper into permeable saturated sands, where anaerobic conditions may slow degradation of these compounds, thus extending the persistence of potentially harmful PAHs in the marine environment".

Ainsworth *et al*. (2018) found that biomass of large reef fish decreased by 25% to 50% in areas most affected by the spill, and biomass of large demersal fish decreased even more, by 40% to

70%. Impacts on the food web translated effects of the spill far away from the oiled area. Recovery of high-turnover populations generally is predicted to occur within 10 years, but some slower-growing populations may take 30+ years to fully recover.

The presence of excreted Extracellular Polymeric Substances (EPS or “marine snow”) in water with a high sediment load (e.g. sand or clay) and (dispersed) oil droplets, facilitates formation of negatively buoyant aggregates and subsequent sedimentation: MOSSFA (Marine Oil Snow Sedimentation & Flocculent Accumulation). In the aggregates, additional oil droplets and planktonic organisms (phytoplankton, zooplankton, eggs, larvae, etc.) can be caught and brought down to the sediment. This is exactly what happened after the Deepwater Horizon spill (van Eenenaam *et al* 2017, Murk & Foekema 2017).

Another study found that exposure of coral larvae to oil spill related contaminants, particularly the dispersant Corexit 9500, has the potential to negatively impact coral settlement and survival, thereby affecting the resilience and recovery of coral reefs following exposure to oil and dispersants (Goodbody-Gringley *et al*. 2013). The only live coral reef that has to date been found in Ghana is close to the Jubilee field. The main reef building coral was *Lophelia pertusa* with contribution from *Madrepora oculata*, *Solenosmilia variabilis,* and occasional occurrences of *Dendrophyllia* cf. *alternata* (Buhl-Mortensen et al. 2017). However, older reports suggest that other reefs may be present off Cape Three Points or between Cape Three Points and Busua.

In summary, many studies show severe impacts of the use of dispersants. Particularly critical situations might arise from the use of dispersants in upwelling areas during periods of algal blooms and close to coral reefs. Ghana is both situated in an upwelling area and has a coral reef in the vicinity of the Jubilee field.

There are new developments of alternative ways to treat oil spills, e.g. by the use of reusable absorbents.

3.4.1 Recommendation

The EPA should take the lead in having the Oil and Gas industry to explore and test more extensively the alternative ways to treat or not (major) oil spills and gradually phase out the use of dispersants starting by an immediate ban on their use during periods of algal blooms, as these conditions might aggravate the impact of the oil significantly and is likely to have strongly adverse impacts on the benthic ecosystems and demersal fish.

3.5 Border crossing impact of oil spills

Memoranda of Understandings (MoUs) for cross-border spill arrangements are essential, but **have yet to be developed**. This is extremely relevant as there are major concession areas on the border with Côte d’Ivoire which are currently developed on the Ghanaian side. We were informed by a representative of EPA that initial contacts with Togo and Côte d’Ivoire were held, but that these brought differences in the views on the use of dispersants to light which did not permit to agree on MoUs.

3.5.1 Recommendation

We invite the EPA to reopen as soon as possible negotiations with their neighbour countries to resolve the apparent incompatibility problems related to the use or choice of dispersants and to establish MoUs for cross-border spill arrangements. It is unacceptable that for such an important issue an MoU cannot be developed and signed, increasing the risks for the potential impact of spills.

3.6 Natural Resource Damage Assessment

There is need for a pre-spill Natural Resource Damage Assessment (NRDA) protocol, with arrangements between agencies, pre-spill baseline environmental assessments, an NRDA plan, etc. The NOSCP does not mention this. Such a protocol also details the aftermath of a spill and the necessary actions to be taken for monitoring. *The total impact from a spill can take years to become fully visible.*

Note that Australia and New-Zealand have a joint Maritime Oil Spill Monitoring Handbook. Ghana's EPA could take inspiration from such major initiatives. The first document to consult is the IMO/UNEP Guidance Manual on the Assessment and Restoration of environmental damage following marine oil spills (Steiner 2004). Prof. Dr Richard Steiner is a world renowned expert for anything related to Oil Spills and OSCPs.

3.6.1 Recommendation

We highly advise the EPA to contact Prof. Dr Richard Steiner and invite him as an external and independent expert to help with a pre-spill Natural Resource Damage Assessment (NRDA) protocol review any future revisions of the NOSCP. Prof. Steiner has offered to be available helping the EPA on all of these issues.

3.7 Oil Spill Liability

Ghana's oil spill liability regime should be thoroughly reviewed and updated. Ghana is a member of some of the IOPC Funds (but not the largest Supplementary Fund) for tanker spills, but it is not a member of the Bunkers Convention (to cover spills of bunker fuel oil from all ships), or the HNS (Hazardous and Noxious Substances) Convention for chemical, LNG, LPG, condensate etc. spills.

There is no international convention to date that covers liability from spills from offshore drilling/ production facilities, so what does Ghana law provides for such cases?

3.7.1 Recommendation

It is highly recommended that Ghana establishes its own liability regime, providing no liability limitation for gross negligence, and a per barrel environmental damage (NRDA) fine (similar to the Oil Pollution Act of 1990 and other statutes in the US.), outside of the IMO regimes (which do not adequately cover environmental damage).

Here also there is a lack of transparency. The response, clean-up, monitoring and mitigation after a major oil spill will be extremely costly. Civil society needs to be informed with realistic examples how the costs related to such spills are intended to be covered. Therefore there is a need for a Citizen Advisory Council, see next paragraph.

3.8 Citizen Advisory Council

The OSCP does not provide for establishment of a Citizens' Advisory Council (CAC) (Steiner 2013) to provide stakeholder engagement and oversight of the offshore industry sector, in particular the development, review, and implementation of the Risk Assessments and OSCPs.

UNEP proposed that governments facilitate the establishment of Citizens' Advisory Councils (CACs), to provide non-binding, informed public advice, oversight, and engagement with natural resource development (Steiner 2013). These citizen councils should be funded either from government resource revenues or directly by industry, and should provide advice on all aspects of resource industry projects. Citizen councils should be comprised of all major stakeholder constituencies potentially affected by a resource industry – e.g., indigenous peoples, fishing, farming, conservation, tourism, women, youth, science, and local communities. Properly structured, these CACs will become the eyes, ears, and the voice for local citizens regarding large-scale resource development projects that may directly affect them.

UNEP further recommended that national governments and/or industry, with the technical assistance of UNEP and/or IUCN, host initial scoping meetings between representatives of resource industry (e.g., oil and gas, mining, forestry, agriculture, fisheries), government, and civil society organizations to discuss the Citizens' Advisory Council concept, and to explore opportunities to establish such councils in their regions. These scoping meetings should identify resource development projects and sectors, existing and proposed, that might benefit from the establishment of a Citizens' Advisory Council, stakeholder groups that should be represented, scope and responsibilities, and potential funding mechanisms.

The key scientist to contact about CACs is Prof. Rick Steiner (richard.g.steiner@gmail.com).

3.8.1 Recommendation

The EPA should facilitate the establishment of Citizens' Advisory Councils (CACs), to provide non-binding, informed public advice, oversight, and engagement with natural resource development. These citizen councils should be funded either from government resource revenues or directly by industry, and should provide advice on all aspects of resource industry projects.

4. References

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Annex A: Special Consideration Areas For Dispersant Pre-authorization Policy Summary:

Area/Situation:	Additional Condition:	Submitted by:
Dispersant types other than Corexit 9527 or 9500 (US),	Not pre-authorized (Other stockpiled dispersants must receive specific approval from the EPA before they may be pre- authorized).	Oil Spill Response Limilited
All pre-approval areas	Implementation of the 6-point Dispersant Monitoring Protocol, Bioassay protocol, and physiochemical data collection (temp, salinity, conductivity, pH) at each sampling location, etc.	
Areas where **whales are present and feeding**	Suspend dispersant application	
Known fishing grounds	Consultation with Fisheries Commission and EPA	