

Project-Level Impacts

# Environment





## Part 4.8

## ENVIRONMENT

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**A. National Context**

Myanmar has diverse coastal and marine habitats, including coral reefs, seagrass beds, mangroves, sandy beaches and mudflats. It also hosts abundant natural resources, including on-shore and off-shore oil and gas, timber, silver, lead, tin and gems as well as and fertile ecological zones which have traditionally provided extensive agricultural production. These resources have supported a large population over many centuries, and they continue to provide the bulk of Myanmar's economic output to this day.<sup>411</sup>

However, deforestation, large-scale mining, habitat and land degradation and diminishing water resources are all placing pressure on the environment.<sup>412</sup> The expansion of agriculture and industry, pollution, population growth, along with uncontrolled use and extraction of resources, are causing severe environmental and ecosystem degradation. Rubber plantations have almost doubled from 1990 to 2010 and together with large scale palm oil plantations are among the biggest threats to biodiversity.<sup>413</sup> These environmental pressures in turn, increase the vulnerability of several socio-economic sectors including agriculture, transport and energy sectors.<sup>414</sup> Although accurate updated estimates are difficult to obtain, illegal wildlife trade in Myanmar is considered to be widespread. Together with illegal hunting, it is causing a general decrease of wildlife population. Many Myanmar citizens, and local and international civil society organisations, fear Myanmar's rich biodiversity and natural habitats will be depleted and damaged by greater investment in the extraction of such resources.<sup>415</sup>

Myanmar's programme to adapt to climate change addresses the main environmental stresses affecting the country: climate related hazards/extreme weather events; deforestation; and diminishing water resources. The coastal areas, where offshore O&G production already comes on shore in Rakhine and Ayeyarwady, are exposed to long-term climatic impacts such as sea-level rise as well as an increase in cyclones and storm

<sup>411</sup> UNDP, "[Myanmar Programme](#)" (accessed 25 July 2014).

<sup>412</sup> "[Myanmar's National Adaptation Programme of Action](#)", p. 21.

<sup>413</sup> European Commission, "Myanmar Protected Areas: Context, Current Status and Challenges", (2011) p. 4. Available at: <http://www.banca-env.org/pdf/reports/ebook-lampi.pdf>

<sup>414</sup> Myanmar's National Adaptation Programme of Action, above, p. 3.

<sup>415</sup> See for example, Asian Scientist, "[Myanmar: A Biodiversity Hotspot Under Threat](#)" (Aug. 2013).

surge/flooding. The country more generally is exposed to both geological and meteorological hazards (e.g. earthquakes, floods, cyclones and tsunamis) as a result of the country's southwest location within the Bay of Bengal and low-lying coastal zone.<sup>416</sup> On a longer-term basis, Myanmar, like many developing countries faces the dilemma of developing the O&G resources that also contribute to the climate change impacts to which the country is particularly susceptible.<sup>417</sup>

## Water and Sanitation

There is a general lack of access to safe drinking water and basic sanitation is a crucial issue in Myanmar as infrastructure is already extremely limited. Access to safe drinking water varies significantly among different states and regions in Myanmar. A 2011 study indicated that just 68% of households had access to improved water sources, but only 17% of households had a safe way of extracting water from sources, thereby increasing the risk of contamination.<sup>418</sup> The Water Environment Partnership in Asia (WEPA) reports Myanmar's agricultural sector uses 90%, while industry and domestic use is only about 10% of the total water use. However, even with those high rates the total usage of the nation's water resources is only about 5% of the potential.<sup>419</sup> River and lake pollution from sewage, industrial waste and solid waste disposal in particular are serious problems in Myanmar, but the only control of water pollution in the country is through guidelines issued in June 1994 by the Myanmar Investment Commission (MIC), which require that new investment projects have waste-water treatment systems.<sup>420</sup>

## Air Quality and Pollution

There are at present no air quality standards in place in Myanmar, nor is there advanced technology (or capacity) for air quality measurement. Attention to date has focused mainly on the largest city, Yangon, where air quality is becoming a visible concern,<sup>421</sup> and pollution monitoring equipment is beginning to be installed in the city. This is despite the fact that many other areas around the country are also anticipating industrial development and increased activities by heavy footprint and high emissions industries.<sup>422</sup> Notably, the model Production Sharing Contracts (PSC) for onshore and offshore O&G projects permit the flaring of natural gas produced from the area, without any additional safeguards or other obligations to eliminate or manage these risks.

<sup>416</sup> Myanmar's National Adaptation Programme of Action, p. 23. Available at: [www.unfccc.int/resource/docs/napa/mmr01.pdf](http://www.unfccc.int/resource/docs/napa/mmr01.pdf)

<sup>417</sup> See Mary Robinson Foundation Climate Justice, "[Equity and Climate Justice](#)" (accessed 25 July 2014).

<sup>418</sup> UNICEF, "Situation Analysis of Children", (2012), pg. 55 and 57. Available at: [http://www.unicef.org/eapro/Myanmar\\_Situation\\_Analysis.pdf](http://www.unicef.org/eapro/Myanmar_Situation_Analysis.pdf)

<sup>419</sup> See WEPA, "[Myanmar](#)" (accessed 1 September 2014).

<sup>420</sup> Kyaw Thi Soe, Mon Mon Yin, "[Environmental Management in Myanmar](#)" *Yangon University of Distance Education Research Journal*, Vol. 1, No.1 (2009), pg. 264.

<sup>421</sup> See: Statement of the Myanmar Deputy Minister for Transport, "[Pollution Control and Air Quality Management in Myanmar](#)". For example, recent reports showed particulate matter levels in Yangon 60% above WHO recommended maximums. See eg, Myanmar Times, "[Our growing air pollution problem](#)" (2012).

<sup>422</sup> Mizzima, "[Air pollution monitors to be installed in Yangon](#)" (20 Feb. 2014).

## Forest Conservation and Land Degradation

Approximately half (49%) of the total land area of Myanmar is forested, well above the average for the rest of East Asia and the Pacific,<sup>423</sup> but the country is experiencing deforestation due to over-exploitation of natural resources and unsustainable land management practices.<sup>424</sup> Already in the period 1990-2010 Myanmar lost 7,445,000 hectares (19.0% of its forest cover).<sup>425</sup> Myanmar still remains one of the ten countries in the world with the largest annual net loss of forest area and among the five countries (Indonesia, Australia, Myanmar, Madagascar and Mozambique) with the largest net loss of mangrove area during the period 2000–2010.<sup>426</sup> Similarly, soil erosion is a serious concern in the upland areas on about 10% of the country's cultivated areas, with the Government's land rehabilitation schemes not keeping pace with new cultivation by upland farmers, sustained by high rates of population growth.<sup>427</sup>

There are currently 43 officially-recognised protected areas but so far the information on their status has been poor, scattered and not updated; these currently cover 7.3% of the country.<sup>428</sup> One of the nature reserves is supported by financial contributions from three O&G companies operating nearby.

## The Marine Environment

Information on Myanmar's marine habitats is extremely limited, as are effective conservation measures. Threats facing the marine areas include overfishing, coastal development, and the use of destructive fishing practices such as dynamite and cyanide. Despite the country's long coastline there are only four marine protected areas and there is little capacity to conserve and manage marine resources. The Myanmar Government has expressed its commitment, through international conventions, to put 10% of its marine areas under protection by 2020; however a range of factors including the lack of biological and socio-economic data and a lack of financial and technical resources severely constrain the ability of the Government and other actors to meet this target. Overfishing, including by foreign vessels, is contributing to the declining livelihoods of fishing villages.<sup>429</sup>

In the Bay of Bengal where several of the offshore blocks are located, Myanmar, together with seven neighbours, are collaborating through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project to better the lives of their coastal populations by improving regional management of the Bay of Bengal environment and its fisheries. As part of this project, a scientific survey is now underway on the fish resources, marine biodiversity and oceanography in Myanmar waters supported by Norad.<sup>430</sup>

<sup>423</sup> World Bank, "[Myanmar country data](#)" (accessed 25 July 2014).

<sup>424</sup> "[Myanmar's National Adaptation Programme of Action](#)", p. 23.

<sup>425</sup> Mongabay, "[Myanmar Forest Information and Data](#)", (accessed 25 July 2014).

<sup>426</sup> FAO, "[Global Forest Resource Assessment \(FRA\). Country Report Myanmar](#)" (2010).

<sup>427</sup> ADB "[Myanmar National Environmental Performance Assessment Report](#)" (2008).

<sup>428</sup> European Commission, "[Myanmar Protected Areas: Context, Current Status and Challenges](#)" (2011) p. 4.

<sup>429</sup> See for example, "[Norwegian supported survey](#)" of fish resources, marine biodiversity and oceanography in Myanmar waters.

<sup>430</sup> See for example "[The Bay of Bengal Large Marine Ecosystem Project](#)" (accessed 25 July 2014).

## Legal and Regulatory Framework

The 2008 Constitution confirms that the Government will protect and conserve Myanmar's natural environment,<sup>431</sup> however there is no right to a clean environment and instead citizens have a duty to assist the Union Government in environmental conservation.<sup>432</sup> Under the Constitution, the national Parliament can enact environmental and other protective laws.<sup>433</sup>

Myanmar is currently in the process of revising its policies and laws on environmental protection. The Environmental Conservation Law requires MOECF to put in place a comprehensive waste and pollutant monitoring scheme. MOECF has just adopted the Environmental Conservation Rules 2014 and is in the process of developing environmental quality, starting with effluent standards. UNDP is supporting the Government in the Development of National Environmental Management Framework and Action.

The updated 2012 Environmental Conservation Law and 2014 Rules, empowers MOECF to act as a "gate keeper" for business activities. It confers powers on MOECF to regulate and to establish a "prior permission scheme"<sup>434</sup> for a range of business activities that "may cause impact on environmental quality". Other Government departments authorised to approve business activities may do so only after the relevant permission from MOECF.<sup>435</sup> MIC Notification No. 1 sets out the list of economic activities that require an ESIA and approval by MOECF that includes the exploration, drilling and production of O&G, although the EIA Procedures under the Environmental Conservation Law will refine these. In addition, there are basic provisions in this law, as there are in the Foreign Direct Investment Law, that require basic pollution control.<sup>436</sup>

The Environmental Conservation Law is based on the "polluter pays principle", with compensation for environmental impacts to be paid to a fund to be set up by MOECF. In addition, the Law requires that any business that requires prior permission, (which includes O&G operations), must have insurance cover for impacts on the environment.<sup>437</sup> The Law provides for criminal penalties (although it is unclear if these apply to business entities) and payment of compensation for damages.

In addition to the framework Environmental Conservation Law, there are currently 44 existing laws with some form of obligations on operators in respect of pollution, disposal, and other harmful impacts on the environment and local society. The 2006 Conservation of Water Resources and Rivers Law provides a general prohibition on polluting water

<sup>431</sup> Myanmar Constitution, Article 45.

<sup>432</sup> Myanmar Constitution, Article 390(b).

<sup>433</sup> Myanmar Constitution, Schedule 1, Section 6(b)

<sup>434</sup> Article 26.

<sup>435</sup> Foreign Investment Law, Article 38.

<sup>436</sup> Article 15 states that: "The owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods." The Foreign Investment Law, Art. 17(h) states that the "foreign investor shall ....carrying out not to cause environmental pollution or damage in accord with existing laws in respect of investment business;" (sic).

<sup>437</sup> Chapter X.

courses or rivers.<sup>438</sup> The implementation of these laws needs to be factored into new and forthcoming rules to be developed under the 2012 Environmental Conservation Law.

## B. Key Human Rights Implications for the O&G Sector

- **Diverse environmental impacts:** As noted in [Part 4.2](#) on Communities, local rural and coastal populations are highly vulnerable to social and environmental impacts due to their overwhelming dependence on land-based subsistence agriculture and local fishing. O&G operations, both onshore and offshore, can have significant and diverse environmental impacts if not well-managed, including: physical damage from exploration and construction activities (such as to habitats and biodiversity from land clearing or seismic); various forms of pollution (such as of the air, marine and freshwater areas, land and noise pollution) and contamination (such as from disposal of toxic and other polluting substances, and oil leaks); and depletion of natural resources (such as water use, land clearances and biodiversity).<sup>439</sup> These potential impacts will arise at different times depending on the different phases of an O&G project, e.g. shooting seismic offshore can have temporary marine impacts at the very early stages of a project whereas managing waste water disposal during production will have ongoing risks that need to be managed throughout the years or decades the project is operating. Through such impacts, O&G operations can have impacts on the right to health, the right to life, the right to an adequate standard of living (including the right to food, water and housing), and on the right to take part in cultural life.
- **Due diligence:** Implementation of effective risk and impact assessment and management can play a significant role in preventing or mitigating and remediating impacts. As environmental impacts can change as operations change from exploration to production to decommissioning or as a result of any significant changes in the surrounding environment (for example the Myanmar coast is expected to be subjected to increasing storms which have the potential to change the environmental conditions in the coastal area), it will be important for operators to update the E(S)IA and associated E(S)MP as operations change significantly. The current PSC indicates that an E(S)IA must be completed within the first six months of signing a PSC; MOECAP has informally clarified that there will be a requirement for E(S)IAs at further stages in the project cycle. The specific requirements for updated or new IEEs/ESIAs for O&G operations will need to be clarified and should be specified in the PSC. (See further the [Annex to the Recommendations](#))
- **Sparse information:** Information on the current state of the environment onshore and offshore is sparse to non-existent. In some cases there may be numerous factors at play that result in declining productivity of soil or waters and in many cases, any nearby industrial or extractive operations will be the most obvious source of concern, rightly or wrongly.

<sup>438</sup> The [Conservation of Water Resources and Rivers Law](#), Article 34(b).

<sup>439</sup> UNEP & OGP, "[Environmental management in oil and gas exploration, and production - An overview of issues and management approaches](#)" (1997).

- **Business leadership:** Some operators may have in place their own global policies on environment, health, safety and social issues that they may apply in Myanmar, which may meet or even exceed good international practice. Companies can choose to play a leadership role both by demonstration and coaching and also in driving those requirements through their business relationships and into the O&G value chain. A commitment to applying its global standards or international standards in Myanmar could be made through an amendment or side letter to the PSC which ideally a company would publicly disclose together with its E(S)MP. A company could also make this commitment part of its social investment programme with the community; and involve the community in public monitoring reports on its operations.
- **Transparency:** Given the Government's commitment to the application of "high environmental and social standards" in extractive operations, the expectations of the home governments of many of the companies recently awarded blocs,<sup>440</sup> as well as the pent up expectations of the Myanmar population to see benefits from the sector, transparency around operator's environmental and social policies and their application to contractors will be important to build confidence in the sector.
- **Project assessment & monitoring information:** The draft EIA Procedure contains robust disclosure and consultation requirements with local communities. If implemented well, the Procedures could signal a turning point in practices in the country where communities previously often had little to no information or contact with operators. The field assessment findings indicated a desire for more information – in a form and language understandable to them. If communities have relevant information, they will be better able to understand potential and actual environmental impacts and take necessary actions to protect themselves and their surroundings from harmful substances and impacts. Communities should have a chance to comment on the company's plans and the company should consider these comments and provide answers back to the community about how it will address their concerns.
- **Emergency procedures:** Communities expressed particular concern about emergency situations, ranging from a request for basic information to further details on procedures in case of emergencies. It is another topic that would benefit from a single point of contact from operators, though emergencies will likely also require coordination with and intervention from local or regional authorities as well.
- **Gas Flaring:** The Model PSC permits the flaring of natural gas produced from Myanmar blocks without specific safeguards for the emissions. As noted in [Part 3](#) on Sector-Wide Impacts, many countries are working towards reduction or elimination of gas flaring.<sup>441</sup>

<sup>440</sup> US companies that are covered by the US Treasury Department's Office of Foreign Assets Control (OFAC) [General License 17](#) are required to report on their environmental policies to the US Department of State pursuant to the responsible investment reporting requirements. Chinese companies are expected to comply with the "[Guidelines on Environmental Protection in Foreign Investment and Cooperation](#)" (2013). See: IHRB Commentary, "['Going Out' in Search of Oil and Gas: How should Chinese companies investing abroad tackle human rights challenges?](#)" M. Aizawa (24 March 2014).

<sup>441</sup> See [Global Gas Flaring Reduction Partnership](#) (accessed 25 July 2014).



## Working with Sub-Contractors

- **Business partners:** Many O&G operators sub-contract different parts of their operations to business partners who can have an impact on the environment – from specialised services such as shooting seismic to more routine tasks such as constructing workers' camps. Equally, the size and capacity of sub-contractors may vary widely, from very large, specialised operators who are used to running international operations according to international standards, to smaller local companies who may be unfamiliar with updated environmental protection practices. As noted in [Part 4.2](#) on Communities, many of these sub-contractors are often the earliest “face” of forthcoming operations and can have a large footprint in the local community. Given the generality of Myanmar law and therefore lack of detailed regulation to guide sub-contractors, it will also be important for the O&G operators to impose environmental and social requirements in their sub-contractor arrangements that at a minimum require compliance with the requirements in the PSC and the E(S)MP agreed with MOECF and MIC, and the ability to monitor the respect of such requirements on the part of their business partners.
- **Focal point for communities:** Local communities will rarely distinguish between a sub-contractor and the main operator and will usually know the name of the main operator, or none at all. A key concern from communities is having a single point of contact with the main operator to address complaints (and many will predictably be about environmental issues) – whether they are linked to actions by contractors or the operator. Establishing an early, single point of contact between communities and various teams who may be in the field for different kinds of operations could be useful, constructive step in addressing environmental issues.

## Remedies for Environmental Damages

- **Limited avenues for remedies:** Current options for seeking remedies in Myanmar are very limited, slow and often unsatisfactory for local villagers who may be making claims for damages to their livelihoods. Prompt restoration where possible or monetary compensation for damage responds to the right to access to remedy and will be important dimension of responding to local impacts. Repairing or restoring environmental damage should not be portrayed as part of the social investment programme or any kind of local benefit but instead is part of restoring local communities to the baseline situation. As noted in a recent report, “[s]tate/region governments, local governments and communities could play a role in these [restoration] initiatives, perhaps via the newly-created state/region environmental conservation departments or by channeling some forms of compensation through subnational budgets as appropriate.”<sup>442</sup>
- **Baseline data:** It will be important for companies to collect detailed baseline information (although that will not always be possible) and to be constructive in addressing environmental damage, even where the damage is not wholly attributable to the company or its sub-contractors. There may be actions the company can support, perhaps with the local or regional government, such as providing relevant information that will better explain why and how environmental impacts are happening,

<sup>442</sup> Thet Aung Lynn and Mari Oye, “[Natural Resources and Subnational Governments in Myanmar: Key considerations for wealth sharing](#)” (June 2014), pg. 48.



to support actions that can help prevent or mitigate further environmental damage, or to provide support to appropriate research. Requiring local communities to provide baseline data (such as historical data on local fish catches) as a basis for a damage claim is unrealistic and counterproductive if this is used as a reason to deny what communities see as valid claims; helping the community to construct a survey and address its findings could be a far more useful approach to addressing grievances.

## C. Field Assessment Findings

**NOTE:** The field assessments focused on environmental impacts of the O&G sector in Myanmar to the extent that this affected the livelihoods of surrounding communities and their ability to maintain an adequate standard of living and health, rather than looking at broader environmental impacts, such as on biodiversity.

### Water & Sanitation

**Human Rights Implicated:** Right to an adequate standard of living, including the right to safe drinking water and sanitation; right to highest attainable standard of physical and mental health.

#### Field Assessment Findings

- **A number of cases were observed of failures to resolve and address damage to local community water supplies caused by construction or project activity.** Issues were left to linger for months unaddressed. This may have been because company did not view the minor infrastructure repairs needed to fix the problem as a priority, or it did not carry out quality repairs. These included:
  - **A pipeline at one site visited was built across a village's main water stream,** which was also used for hydropower, diminishing access to both safe drinking water and electricity. While the company involved sought to mitigate the problem once it was brought to its attention, the repairs were not satisfactory in delivering the quantity of water needed. An international NGO working in the area intervened on the community's behalf but was not able to persuade the company to provide a more appropriate solution.
  - **A hydropower station built for one O&G project had a clear impact on the quantity of community water supplies,** requiring farmers to switch to crops requiring less water (from paddy crops to maize) to continue producing.
  - One community water supply built as part of an O&G operation was found to have **used iron pipes, leading to water smelling of rust shortly after installation** (safe but poor quality). Villagers compared this to the plastic pipes used to supply the O&G project site itself, adding to feelings of resentment and mistrust by the community that they were not treated as equals to the project developers.
- **Cases were reported of waste and garbage disposed of in drinking water locations** within workers' housing areas, which in most cases are not built and supplied by operators (see the *Labour Issues Project-Level Impact Summary*).
- **Fears that naturally occurring mercury in gas will contaminate local water supplies** were reported to researchers.

## Community Health & Safety

**Human Rights Implicated:** Right to highest attainable standard of physical and mental health; right to information

### Field Assessment Findings

- **Communities lack information on environmental impacts of O&G operations** and the potential consequences for human health, food production and livelihoods. They perceive adverse effects on health of local communities arising from environmental impacts of industrial activities on food crops, including pipeline leaks and waste emissions from project sites.
- **Communities are generally fearful of pipeline leaks with little reported outreach or education to assuage fears.** Pipeline leaks reported to research teams were commonly associated with MOGE operated pipelines. In such cases, communities were not notified of health and safety procedures beforehand or upon reporting the leak. The lines were regarded as poorly maintained, with infrequent and irregular monitoring. Instead, the practice appears to be to wait for leaks to be reported by communities rather than systematically maintaining the lines. The nearest emergency response/maintenance team is located far outside of the pipeline area, meaning the quickest spill response requires at least a day.

## Soil & Air

**Human Rights Implicated:** Right to life; right to highest attainable standard of physical and mental health; right to an adequate standard of living

### Field Assessment Findings

- **Farmers reported leakage or seepage from drilling waste sumps/pits, impacting crop production.** At one onshore field, the monsoon would flood the area around the sumps/pits, and lead to pollution of local plantations. No compensation was provided for the damaged crops, and long-term measures to solve the problem were inadequate. Water treatment testing had to be done in Naypyitaw, due to inadequate local on-site facilities.
- **One severe case was reported of toxic waste being burned off the project site but near a local community.** The toxicity of the ash was so high that 19 cattle belonging to two local farmers that licked ground contaminated with the ash died within a matter of hours. Local authorities were involved but no information was given to community members on the occasion. When an investigation was conducted, community members were not given full information. Compensation remained disputed at the time of writing.
- Construction of the pipeline across one river at the Myanmar border had required sandbagging and pumping out the riverbed in two phases to permit construction. Sandbags were left in place following the completion of the construction which had led to **erosion** of the Myanmar bank and resulted in flooding of plantations and endangering of nearby houses.
- **Road dust from vehicle traffic accessing project sites was a common complaint** of many villages who frequently reported little action was taken to

suppress dust generated at worksites, on roads, some built by companies, and at other project installations. At one site, this was a cumulative impact attributable to a growth in road-users from multiple sources following construction of the road.

### Artisanal Extraction

**Human Rights Implicated:** Right to life; right to highest attainable standard of physical and mental health

#### Field Assessment Findings

Some artisanal extraction was observed in Rakhine region oil field areas, and referred to in Magway region; it is also practiced elsewhere in the country.

- Processes and methods observed were **extremely basic**, with no real capability to implement environmental safeguards.
- **No protective equipment** was worn by workers and health and safety procedures were absent.
- **Other safety issues are a concern**, with workers smoking in the immediate vicinity of extraction, resulting in burns and other accidents.

### Natural Habitat

**Human Rights Implicated:** Right to an adequate standard of living; right to information

#### Field Assessment Findings

- Several fishing communities complained about a **general decrease in fish** available to local fishermen in their traditional fishing grounds, that they associated with the arrival of O&G operations and associated infrastructure in the area. Neither the local communities nor (apparently) the companies operating in the area have any baseline data on fishing populations as a basis for verifying impacts. One company also noted an increase in complaints from the local fisheries department about the impact of operations.
- A local naturalist expressed concern that offshore seismic operations were being conducted **without the presence of Marine Mammal Observers** who are required under best practice guidelines<sup>443</sup>. This may have contributed to a stranding on Lampi Island, although the whale was destroyed and buried before an autopsy to determine the cause could be conducted.

#### Myanmar Good Practice Examples:

- Partners within one project contribute **substantial funding to a local nature reserve** through which their pipeline passes to mitigate impacts identified in their EIA, conserve the region's forestry and biodiversity, and potentially compensate for

<sup>443</sup> International Association of Geophysical Companies "[Recommended Mitigation Measures For Cetaceans during Geophysical Operations](#)" (June 2011) and Marine Mammal Observers Association, "[Position statement on Environmental Impact Assessments and Mitigation Plans](#)" (accessed 25 July 2014).



some residual impacts of the pipeline and possible indirect impacts of the service track (e.g. access for hunting and encroachment). They are also running a biodiversity conservation project at a pipeline centre with a local NGO.

- One company financially supported an environmental conservation programme focusing on **mangrove restoration and protection** in a township near its operations in order to improve local fisheries/hatchery and the livelihoods dependent on them, done through community plantation. The project currently covers 800 acres.

### Box 23: Relevant International Standards and Guidance on Environmental Issues, and Linked Initiatives in Myanmar

#### Relevant International Standards:

- IFC/WBG:
  - [Performance Standard 3 and Guidance Note – Resource Efficiency and Pollution Prevention](#)
  - [Performance Standard 6 and Guidance Note - Biodiversity Conservation and Sustainable Management of Living Natural Resources](#)
  - WBG [General Environmental, Health and Safety Guidelines](#)
  - WBG [Environmental, Health and Safety Guidelines for Offshore Oil and Gas Development](#)
  - WBG [Environmental, Health and Safety Guidelines for Onshore Oil and Gas Development](#)
- Regarding off-shore seismic activity and potential marine mammal impacts, see for example the New Zealand Department of Conservation, “[Code of conduct for minimising acoustic disturbance to marine mammals from seismic survey operations](#)” (Nov. 2013) Other codes from Australia, the North Sea and the Seychelles are also available.

#### Relevant Guidance:

- UNEP, “[Environmental Management in Oil and Gas](#)”
- UNEP FI, “[Oil and Gas](#)”
- IPIECA, “[Biodiversity and Ecosystem Services Good Practice Guidance](#)”

#### Myanmar Initiatives on Environment Linked to the O&G Sector:

- [Livelihoods and Food Security Trust \(LIFT\) Fund](#), MERN, Coastal livelihoods and environmental restoration project in Gwa Coastal region of Rakhine State
- [Istituto Oikos](#), Research and training programme on forest and marine resources management, and establishment of community forestry, nurseries and plantations activities in Gwa and Kyeintali township in Southern Rakhine State
- [Government of Norway](#), Exploring options in 2014 of including Myanmar in the Reducing Emissions for Deforestation and Degradation (REDD) Initiative