



# **Environmental and Social (E&S) Risk Management Sector-Specific Guidance Agriculture and Forestry**

## Preamble to All Sector Specific Guidance

While the guidance notes to the Principles provide high-level, all-sector guidance on the purpose and implementation of (and additional resources for) each Principle, some sectors represent higher environmental and social risk and require greater scrutiny. Therefore, we have provided sector-specific guidance notes, to assist with the implementation of the Principles in these high-risk sectors. These notes draw upon the IFC Environmental, Health and Safety Industry Sector Guidelines and the EBRD Subsectoral Environmental and Social Guidelines and have been adapted to reflect the Ghana-specific context.

# Index

**Agriculture and Forestry in Ghana 4**

**Summary of Key E&S Issues 5**

**Potential Costs Associated with Key E&S Issues 6**

**Analysis of Key E&S Issues 7**

**Key E&S Opportunities 21**

**Due Diligence Questions for Clients 22**

**Key Performance indicators 23**

**Sources of Additional Information 24**

# Agriculture and Forestry in Ghana

## Agriculture and Forestry in Ghana

Agriculture, for the purposes of this sector guidance note, comprise of “ all aspects of crop and livestock farming, fisheries, aquaculture and forestry<sup>1</sup>”. Forestry is defined as “land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use.<sup>2</sup>”. The agriculture and forestry sector in Ghana accounts for 20% of Gross Domestic Product (GDP) and 36.9% of employment of Ghana in 2016

Crop cultivation in Ghana is primarily through smallholder farming, but commercial scale cultivation also exists for some commodities, including mango, pineapple, maize and cashew. The main agricultural crops produced include cassava, yams, plantains and rice, as well as cash crops such as cocoa, cashew, coconut and oil palm. Ghana is the second largest cocoa producer worldwide. Cocoa is the top agricultural export of the country and contributed to 9.4% of GDP from agriculture in 2015. The raising of livestock contributed to 5.7% of GDP from agriculture in 2015 and is primarily made up of cattle, goat, sheep and poultry farming, typically an adjunct to crop farming.

Forestry plays an important role in sustaining local communities. 15% of Ghana’s population depends on forests for their livelihoods and fuelwood fulfils 70% of energy needs. The forestry sector is export-oriented and focuses on timber and wood products, both primary and processed. There are also issues with illegal logging and deforestation in Ghana, particularly in tropical forests. This can accelerate illegal deforestation.

## Regulation of the sector

The agriculture sector in Ghana is mostly regulated by the Ministry of Food and Agriculture (MoFA). The Ghana Cocoa Board (COCOBOD), operating under the Ministry of Finance, is responsible for the management of cocoa production and exportation. The Biosafety Act passed in 2011 regulates the transfer, handling and use of genetically modified organisms (GMOs). MoFA adopted a National Irrigation Policy in 2010 to promote sustainable growth and enhanced performance of irrigation for the agriculture sector. The Plants and Fertilizer Act, 2010 (Act 803) regulates matters related to plant protection, seeds and fertiliser control and the Pesticides Control and Management Act, Act 1994, Act 490 (Part II of Act 490) oversees pesticide manufacturing and use.

The Forestry Commission under the Ministry of Lands and Natural Resources (MLNR) is responsible for regulating the forestry sector. MLNR has developed a Forestry Development Master Plan for 2016 to 2036 that aims to develop a sustainable forestry sector and promote sustainable forestry livelihoods. Timber Resources (Legality Licensing) Regulations were adopted in 2012 for implementing the Timber Resources Management Act to control the illegal logging and trade of timber products. MLNR revised the Forest and Wildlife Policy in 2011 with the aim of halting and reversing deforestation and forest degradation. This followed on from the 2002 amendment of the Forest Protection Act which legislated for higher penalties for forest-related offences.

<sup>1</sup> <http://www.fao.org/3/a-i6602e.pdf>

<sup>2</sup> <http://www.fao.org/docrep/017/ap862e/ap862e00.pdf>

# Summary of Key E&S Issues

## ESG Risk category key

- Environment – Affects the natural environment
- ▲ Health and safety – Affects the health and safety of employees
- Labour – Affects workplace conditions and treatment of employees
- ◆ Community – Affects the health and safety, livelihoods and environment of the community and wider public

### Note:

Key risk ordering based on significance of the potential financial impact to the company in question

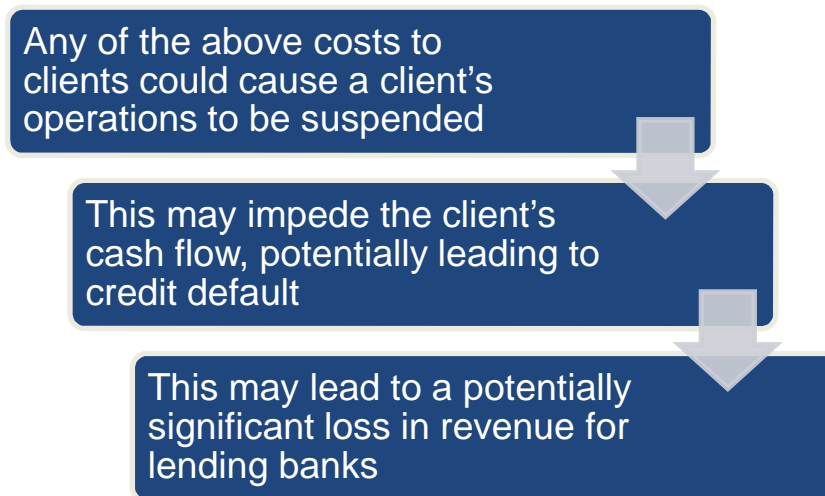
Key risks	Agriculture	Forestry
Biodiversity and ecosystems	<span style="color: green;">●</span> <span style="color: blue;">◆</span>	<span style="color: green;">●</span> <span style="color: blue;">◆</span>
Labour exploitation of children and migrants	<span style="color: red;">▲</span> <span style="color: orange;">■</span> <span style="color: blue;">◆</span>	<span style="color: red;">▲</span> <span style="color: orange;">■</span> <span style="color: blue;">◆</span>
Fire and explosion	<span style="color: green;">●</span> <span style="color: red;">▲</span> <span style="color: blue;">◆</span>	<span style="color: green;">●</span> <span style="color: red;">▲</span> <span style="color: blue;">◆</span>
Occupational health and safety	<span style="color: red;">▲</span>	<span style="color: red;">▲</span>
Water management and waste water	<span style="color: green;">●</span> <span style="color: red;">▲</span> <span style="color: blue;">◆</span>	<span style="color: green;">●</span> <span style="color: red;">▲</span> <span style="color: blue;">◆</span>
Chemical management	<span style="color: green;">●</span> <span style="color: red;">▲</span>	
Deforestation and climate change	<span style="color: green;">●</span> <span style="color: orange;">■</span> <span style="color: blue;">◆</span>	<span style="color: green;">●</span> <span style="color: orange;">■</span> <span style="color: blue;">◆</span>
Land tenure	<span style="color: green;">●</span> <span style="color: blue;">◆</span>	<span style="color: green;">●</span> <span style="color: blue;">◆</span>
Community engagement	<span style="color: blue;">◆</span>	<span style="color: blue;">◆</span>
Soil erosion and degradation	<span style="color: green;">●</span> <span style="color: blue;">◆</span>	<span style="color: green;">●</span> <span style="color: blue;">◆</span>
Air emissions	<span style="color: green;">●</span> <span style="color: blue;">◆</span>	<span style="color: green;">●</span> <span style="color: blue;">◆</span>
Waste management	<span style="color: green;">●</span> <span style="color: blue;">◆</span>	<span style="color: green;">●</span> <span style="color: blue;">◆</span>
Noise	<span style="color: red;">▲</span> <span style="color: orange;">■</span> <span style="color: blue;">◆</span>	<span style="color: red;">▲</span> <span style="color: orange;">■</span> <span style="color: blue;">◆</span>
Transportation	<span style="color: red;">▲</span> <span style="color: blue;">◆</span>	<span style="color: red;">▲</span> <span style="color: blue;">◆</span>

# Potential Costs Associated with Key E&S Issues

## Potential costs *to banks' clients* associated with key E&S issues



## Potential costs *to banks' credit portfolios* associated with key E&S issues



In order to protect themselves, banks should consider including, in loan documentation, environmental and social Conditions Precedent, Warranties, Covenants and Events of Default. Please see the Guidance Note associated with Principle 1 for further details.

# Analysis of Key E&S Issues

## Biodiversity and Ecosystems

Ghana's biodiversity and ecosystems provide numerous benefits to the people of Ghana including: food and nutrition, ecosystem services, aesthetics, and improved well-being. They also form an integral part of Ghana's tourism industry and the basis of traditional medicines. Records indicate that Ghana contains at least 3,600 plant species, 221 species of amphibians and reptiles, 728 species of birds and 225 mammalian species.

Agricultural and livestock production can impact biodiversity on farmed land through the planting of monocultures, use of pesticides, introduction of invasive species and degradation of soil quality. Furthermore, surrounding ecosystems can be harmed by noise pollution and pesticide overspill, as well as the clearance of natural habitats to grow crops, particularly through "slash and burn" practices. Additionally, livestock may reduce biodiversity through grazing and, if they have access to natural water bodies, by contaminating the water with animal waste.

Forestry practices can result in habitat fragmentation and can alter forests' age structures, both of which negatively impact biodiversity. There is also the potential for negative biodiversity impacts if naturally regenerating forest or non-forest ecosystems are converted to plantation forestry.

### Risk Management

Client companies should implement the following risk management practices:

- Before converting land for agricultural or livestock production, survey the area to identify habitat types and assess their biodiversity value. Avoid farming on areas of high ecological value, areas that comprise critical habitats for endangered species or areas that are important for wildlife breeding (agriculture). Ensure compliance with the Wildlife Conservation (Amendment) Regulation, 1983 (L.I. 1283).
- Plan for future site expansion (that will avoid areas of high ecological value) before selecting agricultural sites (agriculture).
- Be aware of the presence of endangered species in the areas already used for agricultural or livestock production and consider them during management processes (agriculture).
- Establish buffer zones to sensitive habitat areas, within which potentially harmful practices, such as pesticide spraying and grazing, are avoided (agriculture).
- Establish wildlife corridors in large agricultural sites, to mitigate habitat fragmentation. Maintain canopy closure over roads to keep habitat continuity (agriculture).
- Avoid the introduction of invasive species, either intentionally or accidentally. Some examples of invasive species that have caused issues in Ghana are Siam weed and fruit flies (agriculture).
- Observe internationally-recognised guidelines on land requirements for livestock production per hectare, such as those published by the FAO (agriculture).
- Schedule harvesting activities to avoid the breeding and nesting season for endangered wildlife species (forestry).
- Ensure sustainable rates of timber harvesting, based on scientific understanding of the regeneration success and growth rates of forests, reserving adequate numbers of trees for regeneration purposes (forestry).
- Avoid clearing the areas under forest canopies (forestry).

## Labour Exploitation of Children and Migrants

Agriculture and forestry operations may attract large numbers of short term workers, some or many of whom may be children who are vulnerable to exploitation. They may be hired directly or by sub-contractors.

In Ghana, child labour is defined as work that deprives minors aged between 5-17 years<sup>1</sup> of their livelihood and has the potential to affect their health both physical and mental development.

Ghana has ratified all 8 of the International Labour Organisation (ILO) Fundamental Conventions. Moreover, labour regulation in Ghana stems from the Labour Act 2003 (Act 651). The Act consolidated all laws relating to labour, employers, trade unions and industrial relations, as well as establishing a National Labour Commission.

Ghana introduced the Ghana Children Act 1998 (Act 560) which sets a minimum age for employment at 17. Furthermore, in 2000, Ghana ratified the ILO Worst Forms of Child Labour Convention. Ghana also recently introduced the Ghana National Action Plan on the Elimination of Child Labour 2017-2020.

Businesses can be directly or indirectly linked to labour exploitation. A company's own operations may involve using child or migrant labour or it may contribute labour exploitation through its value chains. Therefore, preventing labour exploitation (including child and migrant labour) requires a business to examine not only its own operations, but also its value chains and relationships.

Multinational companies are increasingly examining their supply chains for any child labour practices. If banks' agriculture and forestry sector clients are found to be exploiting or supporting exploitation of labour, those clients risk substantial financial losses from e.g. cancellation of large orders.

### Risk Management

Client companies should implement the following risk management practices:

- Ensure that they or their labour supply agencies, comply with the latest ILO requirements on working hours, pay, and overtime.
- Ensure compliance with the *Labour Act, 2003* including areas regarding:
  - Protection of employment
  - General conditions of employment
- Ensure they or their labour supply agencies include all of the latest ILO prohibitions on child labour into contracting agreements (for further details please refer to the Child Labour section of this document).
- Ensure compliance with international and Ghanaian rules and standards relating to child labour, including the national Children's Act, the *Labour Act 2003*, and the Human Trafficking Act.
- As needed, provide appropriate worker accommodation which meets, at a minimum, the basic needs of workers, and adheres to local Ghanaian law and international good practice.
- Provide a code of conduct in a language accessible by migrant workers and sub-contractors.
- Assess labour exploitation risks in operations, including checking workers' ages, identifying hazardous work.
- Prevent and mitigate labour exploitation according to the assessment. This includes stopping hiring children under the minimum age (under the Ghana Children Act 1998 (Act 560), the minimum age is 13 years for light work, 15 years for employment, and 18 years for hazardous work).
- Use leverage with companies throughout value chains and in business relationships to push them to prevent and mitigate labour exploitation. Leverage can be applied through commercial relationships, in collaboration with business peers, and through multi-stakeholder collaboration.
- Engage various non-business stakeholders in addressing labour exploitation. Communicate and cooperate with government bodies. Engage local communities to identify and address root causes of labour exploitation. Other stakeholders include employers' and workers' organisations, trade unions, and civil society organisations.



## Fires and Explosions

Wildfires are one of the major threats to forest integrity, and have also resulted in GDP losses due to loss of exportable timber. In natural forests, the opening of the forest canopy by selective logging usually results in the growth of ground level vegetation which has a higher risk of ignition. In some cases, prescribed burns may be used as a land management technique to reduce the presence of wood fuel (e.g. slash) and decrease wildfire risk.

Fire is also an integral part of land use and livelihood systems, with the majority of rural people using slash-and-burn techniques to prepare land for agriculture to meet food and energy needs. Traditional preparation of palm wine also uses smoke and some hunters use fire to smoke out game animals in forested areas.

Storage of dry agricultural products or inputs, such as grains, compost and fertilisers, may also create a fire and dust explosion hazard.

### Risk Management

Client companies should implement the following risk management practices:

- Develop a fire risk monitoring system and a formal fire management and response plan, including the necessary resources and training for workers.
- Store all chemical inputs in appropriate facilities, away from machinery, fuels or heat sources. Store fertilisers and pesticides separately (agriculture).
- Control risk of grain dust explosions by controlling dust and reducing sources of ignition. This may require implementation of a process of regular cleaning of work areas and maintenance of any equipment that generates grain dust (agriculture).
- Equip all forestry operations with adequate fire suppression equipment that meets internationally-recognised specifications (e.g. fire beaters, portable water pumps and knapsack sprayers) (forestry).
- Regularly remove high-hazard wood fuel accumulations (e.g. thinning and prescribed burns). Time these to avoid forest fire seasons (forestry).
- Establish a network of fire breaks of cleared land or areas of less flammable materials to slow the progress of wildfires and provide access for fire-fighters (forestry).

## Occupational Health and Safety

Physical operational hazards for agricultural employees include slips, trips and falls; ergonomic injuries due to manual handling or repetitive movements; use of sharp and moving objects; entrapment in restricted spaces; inhalation of dust which can cause respiratory problems and reduce visibility; and over-exposure to noise, vibration and extreme weather conditions. In crop production, common accidents include becoming wrapped around rotating shafts, falls from or being run over by vehicles or trailers and being hit by flying objects ejected from machines working the land. Forestry operations can expose workers to injury from falling trees or loose branches and chainsaws or machetes.

In livestock production, injury from the livestock animals (e.g. trampling, biting and kicking) can be severe, and workers may be exposed to disease-carrying insects, e.g. mosquitoes and ticks, from the live animals, organic fertiliser and animal carcasses.

Biological hazards can also be an issue in agriculture and forestry, and could take the form of contact with venomous animals, e.g. stinging insects, spiders and snakes, and contact with certain wild mammals e.g. wild pigs. Furthermore, threshing, handling, and storage of grain can generate dust, which may contain particles of fungi and bacteria.

Other occupational health and safety risks (covered in separate sections) are: fire and explosions; chemical hazards; and air emissions.

### Risk Management

Client companies should implement the following risk management practices:

- Provide employees with (and require them to use) appropriate personal protective clothing, such as a long-sleeved shirt, long trousers, hats, gloves, and safety boots.
- Ensure that all equipment is properly maintained and has the necessary safety devices.
- Provide on-site first aid equipment and provide designated employees with first aid training.
- Provide all employees with emergency evacuation procedures training.
- Install mechanical lifting aides where possible and have employees rotate work tasks to reduce repetitive activities.
- Store only dry grain (and dry, well-cured forages and hay) to reduce microorganism growth (agriculture).
- Implement dust exposure limits (e.g. a limit of 10 milligrams per cubic meter for inhalable particles without the need for Respiratory Protective Equipment) (agriculture).
- Implement measures to reduce dust generation, such as not overgrazing livestock on pastureland, and use local air extraction devices at dust-generating equipment (agriculture).
- Use observation and sighting records so workers know areas where there are dangerous animals (agriculture).
- Install fencing and other exclusion methods for larger animals and use armed guards/spotters to protect workers (agriculture).
- Design pens and gates such that livestock can move without the need for farm workers to enter pens (agriculture).
- Train employees in correct livestock care, to reduce the incidence of bites and kicks (agriculture).
- Provide personal protective equipment (PPE) to reduce contact with materials potentially containing pathogens (agriculture).

## Water Management and Waste Water

Agriculture and forestry activities need sufficient water and in turn exert impacts on nearby water supplies. As water resources have been depleted in Ghana, proper water management and wastewater treatment are needed to address water scarcity and sustain productivity of the agriculture and forestry sectors.

Crop cultivation requires an abundant water supply, and livestock rearing is also water-intensive. Currently the irrigation system in Ghana is not properly managed, which poses risks to crop yields, especially during dry seasons or in the face of extreme weather events. Water consumption for livestock can be in competition with community and industrial needs, which may even lead to water shortages at times. Furthermore, contamination of water from organic waste (such as organic fertiliser or animal waste) or improper use of pesticides and fertilisers can lead to problems such as eutrophication (excessive growth of plant life frequently due to run-off from the land) and negative impacts on the health of local communities.

Both upstream and downstream forestry activities exert impacts on water quality and quantity. Chemicals released during forest harvesting, such as lubricants and fuels, can contaminate water and pollute downstream aquatic ecosystems. Large-scale harvesting activities can also alter local and regional hydrological regimes both by drawing down on nearby water sources and by increasing potential for water and chemical run off. Wastewater generated from downstream activities, including board production and paper manufacturing, contains various hazardous chemicals. These impacts pose severe risks to the environment and local communities.

### Risk Management

Client companies should implement the following risk management practices:

- Prevent releases and leaching of chemicals to ground and surface waters. Avoid over-irrigation during crop cultivation, and contain log ponds and runoff from log yards with impermeable surfaces in forestry activities.
- Evaluate water supply and efficiency measures (e.g. recycling, reuse and storage) to reduce impacts on surrounding resources and community supplies.
- Install wastewater/effluent monitoring, collection and treatment facilities (agriculture).
- Develop an irrigation plan according to the requirements of crops and local water availability, and implement water conservation and 'rain harvesting' techniques for irrigation (agriculture).
- Use models to assess the impact of forest plantation and harvesting on hydrology and local climate, and modify forestry activities accordingly (forestry).
- Develop systems to collect and recycle waste water as well as discharges from process water spills, and monitor contaminant concentrations of discharge to ensure compliance with relevant regulations (forestry).
- Remove solids and chemicals in wastewater to ensure compliance with relevant regulations (forestry).

## Chemical Management (agriculture only)

In Ghana, traditional cultivation practices that exhaust soil nutrients are still widely used. Because of this, many crops in Ghana, including cocoa, the main export crop, have received little fertiliser and can be nutrient deficient.

Use of chemical fertilisers can improve soil and crop nutrients, however the use of such chemicals involves risks, especially if mishandled. Crop and livestock farming can involve the use of several types of chemicals such as pesticides and disinfectants. Over application of pesticides, herbicides and insecticides can lead to pest resistance, thereby increasing reliance on these pesticides and on the doses required. Moreover, toxic pesticides are potential pollutants that may cause harm to ecosystems and human health. Accidental exposure may result in burns, inflammation of the skin, allergic reactions or respiratory difficulties if inhaled. The misapplication of pesticides can damage neighbouring crops, habitats and residential areas through spray drift.

### Risk Management

Client companies should implement the following risk management practices:

- Practice techniques that maximise soil nutrients.
- Implement precautions to prevent spray drift, including using the right spray equipment and techniques.
- Record all hazardous chemical materials on site in an inventory with Materials Safety Data Sheets available.
- Maintain storage areas to ensure they are organised, secure and dry. Conduct regular inspections to ensure chemicals are being stored correctly and there are no leaks.
- Provide employees with (and require them to use) appropriate personal protective equipment (PPE).
- Ensure all chemical storage areas are secure to prevent misuse or damage by third parties.
- Implement pest control measures and nutrient management to prevent overuse of pesticides or fertilisers.
- Implement Integrated Pesticide Management and Integrated Nutrient Management techniques to reduce over-application.

## Deforestation and Climate Change

Total forest cover in Ghana has decreased from 32.7% of total land area in 1990 to 21.7% in 2010 (NDPC 2014). The majority of this has been caused by agricultural expansion (especially of cocoa), forestry and mining. More than 80% of agricultural expansion in Ghana between 1980 and 2000 contributed to deforestation or forest degradation. In recent years, illegal logging has also contributed to deforestation in Ghana - in 2002, there were 3.7 million cubic meters' worth of logs extracted which represents about four times the annual allowable harvest. Land conversion for the creation of cattle pastures is also an issue.

Deforestation causes a variety of issues including loss of biodiversity due to habitat destruction, disruption of the water cycle, soil erosion, and decreased absorption of greenhouse gases which contributes to climate change.

Climate change can also have substantial negative impacts on agriculture and forestry. These impacts are likely to be most detrimental to agriculture, including particularly to the cocoa industry. Farmers are likely to experience decreases in their yields due to excessive dry season temperatures and uncertain precipitation which can lead to seed mortality, drought and flooding stress and instances of pests and diseases.

### Risk Management

Client companies should implement the following risk management practices:

- Before converting forests for agricultural production, survey the area to identify habitat types and assess their biodiversity value (agriculture).
- If land conversion of forest is necessary, expand into a consolidated patch, rather than in a fragmentary pattern, as this reduces impacts on biodiversity and carbon (agriculture).
- Where possible, implement agricultural practices to increase the productivity of existing land, rather than engaging in conversion of forests (agriculture).
- Consider which elements of climate smart agriculture can be applied. These include increasing productivity of crops in less climate-vulnerable areas and developing techniques to protect vulnerable crops (such as planting shade trees in particularly hot areas or building barriers to flooding in low-lying areas) (agriculture).
- Adopt techniques used by farmers that operate in areas with particularly high temperatures (agriculture).
- Ensure sustainable rates of timber harvesting, based on scientific understanding of the regeneration success and growth rates of forests, reserving adequate numbers of trees for regeneration purposes (forestry).
- Develop a long-term harvest plan that ensures that forestry operations are restricted to as small an area as possible (forestry).

## Land Tenure

Although land rights in Ghana can be formally registered under the legal system, land administration tends to be weak and in practice most rights are undocumented. This means that insecure tenure, conflicts over land, and multiple allocations of the same piece of land to different parties by traditional authorities are common occurrences in Ghana.

In rural areas, issues related to insecure land tenure may reduce the level of commercial investment and also impact smallholder farmers' productivity and investment in their land. Farmers often will not invest in soil conservation measures when title to the land is not secure, because the benefits of the investment are not guaranteed to accrue to them. Insecurity can also deter farmers from leaving plots fallow to restore soil nutrients due to the risk of 'unused' plots being reallocated to other community members. Poor land tenure security therefore often acts as a barrier to sustainable practices. This also means that land cannot often be used as collateral for loans from banks.

### Risk Management

Client companies should implement the following risk management practices:

- Carry out a thorough due diligence process at the registration stage of land acquisition, in line with internationally recognised guidelines. Ensure that land acquisition proposals are registered with the relevant authority.
- Directly involve local stakeholders in the negotiation of all contracts and agreements.
- Hold "good faith" consultations with local stakeholders before initiating any project.
- Provide fair rates of compensation in any situations of change in land ownership. In the case that any stakeholders are resettled, ensure that a resettlement action plan (RAP) is put in place and adhered to.
- Take measures to protect the sustainable use of land, fisheries and forests and acknowledge that these have social, cultural, spiritual, economic, environmental and political value to indigenous peoples and other communities with customary tenure systems.
- Provide for and cooperate in non-judicial mechanisms to provide remedy to potential land tenure issues, including effective operational-level grievance mechanisms. In situations of conflict, ensure that tenure problems are addressed in ways that contribute to gender equality and support durable solutions for those affected.

## Community Engagement

Agriculture and forestry activities can have both positive and negative impacts on local communities. For example, these industries can bring jobs to more remote communities but they can also cause harm or inconvenience to local communities. More specifically, if not managed properly, practices in the agriculture and forestry sectors, such as burning of crops, weeds or trees and using pesticides and other chemicals can lead to negative health impacts for communities. Traffic can also lead to risk of road accidents in local areas. Furthermore, other practices such as the use of organic fertilisers or loud equipment, while not necessarily dangerous, can inconvenience and frustrate local communities. It is important that companies manage their relationships with local communities in order to avoid negative impacts on reputation.

### Risk Management

Client companies should implement the following risk management practices:

- Avoid application of pesticides in ways that will allow them to spread beyond the intended location (e.g. avoid application on windy or rainy days, avoid aerial application and application in areas close to water resources). Ensure that personnel are aware of and trained in these practices.
- Develop a system to warn local communities if they could be at risk of exposure to pesticides and chemicals.
- Ensure implementation of a grievance system in order to address community complaints.
- Develop an evacuation plan for local communities in the event that they become threatened by forest fires (forestry).

## Soil Erosion and Degradation

Soil erosion occurs naturally by wind and water processes. Agriculture and forestry may exacerbate this natural erosion by exposing soil. These impacts are particularly relevant to Ghana as, according to the Minister of Environment, Science, Technology and Innovation, 65% of the nation's land is prone to soil erosion.

Forest harvesting activities, agriculture and road construction can physically impact soil through compaction (from heavy machinery), rutting, displacement and erosion. Once built, road surfaces may allow water to flow without restriction. Soil may be chemically affected by changes in the pH level, salinity and nutrient balance through misuse or insufficient mineral fertilisers. Other causes include the failure to recycle nutrients contained in crop residues, excessive use of poor-quality water and over-use of nitrogen fertilisers. Soil may also be biologically affected by changes to nutrient cycling and micro flora and micro fauna populations. Overgrazing of livestock can also deplete soil nutrients and damage soil structure.

### Risk Management

Client companies should implement the following risk management practices:

- Time harvesting operations to avoid wet seasons.
- Use harvesting machinery that minimises soil disturbances.
- Avoid excessive mechanical site preparation prior to replanting/seeding as this removes soil moisture and the surface protective soil layer.
- Practise direct seeding and planting to minimise damage to soil structure, conserve soil organic matter and reduce erosion.
- Replenish soil organic matter by recycling crop residues, compost and organic fertilisers and incorporate nitrogen-fixing legume crop plants and cover crops in the cropping cycle (agriculture).
- Practise erosion control management in sloping areas (e.g. terracing, intercropping with trees and grass barriers) (agriculture).
- Grow crops that are suited to the local climate and soil conditions and adopt good agronomic practices to optimize crop productivity (agriculture).
- Assess soil pH periodically and correct levels as required. Also, carry out periodic soil analysis to detect changes in soil structure, chemistry, fertility and nutrients (agriculture).
- Use Integrated Pesticide Management and Integrated Nutrient Management techniques to reduce over-application (agriculture).
- Use rotational grazing systems based on seasonal and local ecosystem resilience (agriculture).
- Use livestock trails to minimise soil trampling and erosion of riparian areas (agriculture).
- Re-establish forest cover as soon as possible after clear felling, for example, temporary mulch or slash can be used to protect soils and provide nutrients and shelter for seedlings (forestry).
- Avoid clearing large forest blocks (over 50 hectares) to reduce the contiguous land area exposed to wind and rain (forestry).
- Maximise use of existing roads, rather than building new ones. If building new roads is necessary, plan for future road uses at the design stages, i.e. long-term use beyond forestry activities (forestry).
- Locate roads on soil with good drainage capability and construct drains (e.g. ditches and cross drains) at appropriate intervals to drain water away from the road surface (forestry).
- Design road networks in advance to minimise road length and density. Also, minimise road widths as much as possible (forestry).



## Air Emissions

Atmospheric emissions from agriculture are mostly from the combustion of by-products or the operation of mechanised equipment. The impacts of these pollutants depend on the local context, such as the proximity to communities, as well as on the type of emissions and their concentrations. Crop production produces a number of different greenhouse gases. Carbon dioxide (CO<sub>2</sub>) is released through land conversion to agricultural land and use of on-farm fuel. Nitrogen oxides (NO<sub>x</sub>) emissions result both from the production of fertiliser and its use.

In livestock farming, dust and particulate emissions can arise from processes such as livestock housing, milk drying, refrigeration and effluent treatment. When inhaled, such emissions can lead to respiratory difficulties and can also be a nuisance to local communities. Furthermore, cattle, goats and sheep (which account for approximately 62% of Ghana's domestic livestock production) produce methane which is a powerful greenhouse gas. Poultry production (which accounts for 21% of domestic livestock production) emits ammonia.

The forestry sector does not typically produce substantial point source air emissions. However, deforestation, which can be associated with the forestry sector, is a substantial contributor to climate change (for more details please see the Deforestation section of this document). Furthermore, the forestry sector can also contribute to air emissions through the operation of heavy mechanical equipment.

### Risk Management

Client companies should implement the following risk management practices:

- Avoid burning for waste disposal, land preparation, weed control or post-harvest treatments. Where burning is unavoidable, schedule it according to weather conditions to minimise impacts.
- Where feasible, use renewable energy to power equipment such as irrigation pumps.
- Monitor and minimize ammonia emissions resulting from use of nitrogen fertiliser and organic fertiliser, for example by incorporating fertiliser at planting and using abated nitrogen fertilisers (agriculture).
- In order to reduce airborne dust, establish cover crops where possible, retain residues and reduce tilling activities (agriculture).
- Establish natural wind barriers, e.g. hedgerows and shrubs, to intercept airborne particulate matter and droplets which may contain contaminants (agriculture).
- Locate facilities in areas that will avoid receptors that are sensitive to air emissions, e.g. away from schools, residents and hospitals (agriculture).
- Modify the diets of livestock to reduce their methane production and control the temperature and humidity of organic fertiliser storage (agriculture).
- Ensure sustainable rates of timber harvesting, based on scientific understanding of the regeneration success and growth rates of forests, reserving adequate numbers of trees for carbon sequestration purposes (forestry).

## Waste Management

The more dangerous wastes associated with agriculture and forestry tend to be those associated with pesticides or fuels used in heavy machinery and large vehicles. If these wastes are not disposed of appropriately, they can contaminate local land and water resources and have adverse health impacts on workers and local residents. Additionally, while decomposition of organic wastes can deliver benefits to soil from a nutrient management perspective, natural decomposition can also retain pests and other diseases and therefore should be monitored.

### Risk Management

Client companies should implement the following risk management practices:

- Implement systems to ensure that any pesticides, chemicals and vehicle oils or lubricants are disposed of safely.
- Monitor (for pests and diseases) the disposal of organic wastes through composting or other means of natural decomposition.

## Noise

Agriculture and forestry equipment can produce high levels of noise, which can have impacts on workers and on local communities. This equipment includes that used for planting and harvesting crops, for felling trees and for transporting goods, other equipment and personnel.

### Risk Management

Client companies should implement the following risk management practices:

- Provide all workers with additional personal protective equipment (PPE) where they are exposed to heightened noise and vibration.
- Implement management practices that rotate workers across activities in order to reduce cumulative exposure.
- Where possible, enclose noisy equipment to protect residents and/or the public from noise.
- Avoid operations in the evenings after 6pm within communities or put in place adequate noise control measures should such be unavoidable.

## Transportation

Vehicles used in the transport of workers, equipment, crops and lumber can pose health and safety risks to workers and nearby residents and can also cause nuisance for nearby residents. Often, the types of vehicles used in the agriculture and forestry sector are those used to carry heavy loads, and are therefore larger and more difficult to manoeuvre than standard road vehicles. This can increase the likelihood of accidents which may harm workers or nearby residents. Vehicles may also require particular types of maintenance to ensure that they can be used safely for a number of years. Furthermore, these vehicles can slow down traffic and can be noisy which may cause a nuisance for local populations.

### Risk Management

Client companies should implement the following risk management practices:

- Provide all workers with sufficient training in the operation of any vehicles.
- Reward workers for demonstrating a track record of safe vehicle operation.
- Install noise mitigation devices in vehicles when possible.
- Avoid transportation activities at peak traffic times. Where possible only undertake transportation when members of local communities will be off the roads.

# Key E&S Opportunities

There are also a variety of opportunities for the agriculture and forestry sector clients to deliver positive E&S impacts which can benefit their financial bottom lines and engender good will.

**In turn, these benefits to agriculture and forestry sector clients can also lead to benefits to banks in the form of:**

- **Increased revenue and profitability from working with clients that have strong, sustainable financial positions;**
- **Increased business opportunities for work with new clients that arise as a result of working in strong sustainable, affluent communities; and**
- **Improved reputation from working with clients who effectively manage E&S issues.**

In order to benefit from these opportunities, banks must first encourage their agriculture and forestry sector clients to pursue the opportunities specific to their sector, which are detailed below.

## **Opportunities that may improve a client's profitability include but are not necessarily limited to:**

- Boosting irrigation systems can lead to farming all year round especially during dry seasons where there is little or no rainfall.
- Investing in alternative energy solutions, including wind power and irrigation with solar pumps, can allow a farmer to reduce energy costs and increase profitability.
- Purchasing up-to-date and more efficient farming equipment, including tractors, harvesters, grain separators, etc. can result in improved energy efficiency and lower maintenance costs.
- Saving carbon by applying production methods which decrease deforestation can lead to a monetisation of these savings, in the form of payments for ecosystem services (and specifically Reduced Emissions from Deforestation and Forest Degradation (REDD+)<sup>1</sup>.
- Applying the right type of fertilizers suitable for the soil will reduce soil deterioration and boost yields. These fertilisers can be applied using drone technologies to minimise and accurately apply both fertilisers and pesticides and identify water stress<sup>2</sup>.
- Installing rain harvesting and water recycling facilities can decrease the costs of sourcing freshwater and improve effluent quality especially if treated for re-use or disposal.
- Utilising agricultural waste to generate bio energy and/or biogas.
- Adopting organic farming is likely to increase profitability as products can be sold at a premium.
- Local sourcing can considerably reduce import costs and provide some tax incentives.

## **Opportunities that may strengthen communities and lead to improved reputation:**

- Improving community infrastructure such as roads can decrease amount of time spent on transportation, improving productivity as well as community development.
- Providing community training on health and safety can prepare local community and employees in the event of an emergency.
- Providing community training on sustainable agriculture, investments, and other agricultural financing schemes to increase agricultural production and improve local economic development.
- While engaging with local communities, align initiatives with those that address key sustainable development needs of the communities, such as access to fresh water, electricity, health care and education.
- Mobilising 'out grower' schemes with communities to create shared value and brand recognition.

1 - The Government of Ghana is in negotiations with the Forest Carbon Partnership Facility (made up of major donor countries) to enter into a contract for the country to reduce its forestry emissions. Once signed, the contract will award Ghana tens of millions of dollars for reductions in deforestation. Ghana is working closely with major companies, for example in the Cocoa sector, who have committed to working with the Government and reducing their deforestation rates.

2 - <https://agricinghana.com/2017/05/10/drone-technology-for-agriculture-in-ghana/>

# Due Diligence Questions for Clients

- Do you have a board member dedicated to addressing E&S issues?
- Does your company have any links between E&S performance and executive compensation?
- Do you have a Code of Conduct?
- Have you had an environmental impact assessment, if so how did you perform, if not then why not?
- Do you operate in a stable ecosystem or one with biodiversity risks?
- How do you source fresh water?
- Do you track emissions?
- Have you implemented Integrated Pesticide Management and Integrated Nutrient Management techniques?
- Are you in compliance with Ghana's *Children's Act*, *Labour Act 2003*, and *Human Trafficking Act*?
- Are you aware of and do you operate in accordance with the 'Protect, Respect and Remedy' Framework in the United Nations Guiding Principles on Business and Human Rights?
- Do you have a Code of Labour Practice and does it address issues associated with child labour?
- Are you aligned with the Voluntary Principles for Security and Human Rights?
- Do you have non-zero accident targets for workers?
- Have you registered any land acquisitions with the appropriate authorities?
- Do you have policies and procedures in place to control/limit worker and community noise and chemical exposure?
- Have you had any local community opposition?
- Do you devote resources to community investment?
- Do you have a system in place to respond to community grievances?
- Have you incurred any environmentally or socially related fines in the last 5 years?
- Do you have recognized certifications of your operating system e.g. ISO 14001 (environmental management) and/or OHSAS 18001/ISO 45001 (health and safety management)?

# Key Performance Indicators

- Documented evidence of permits around E&S practices
- Reduction in the use of/prevention of child labour in corporate operations.
- Reduction in the use of/prevention of child labour in value chains
- Number of fires and explosions
- Number of incidents
- Number of injuries
- Number of fatalities
- Number of near misses
- Water use
- Level of biochemical oxygen demand (BOD), chemical oxygen demand (COD), pH, total suspended solids (TSS), total nitrogen and phosphorous in on-site and off-site water supplies and waste water
- Number of chemical spills
- Number of injuries and fatalities due to chemical exposure
- Soil nutrients
- Use of fertiliser, pesticide, herbicide and insecticide
- Hectares of land converted for agricultural operations
- pH level, salinity and nutrient balance of soil
- Green House Gas emissions
- Release of Sulphur oxides (SO<sub>x</sub>), Nitrogen oxides (NO<sub>x</sub>), and volatile organic compounds (VOCs)
- Use of GMOs and GM products

# Sources for Additional Information

For further reading banks may find resources from the following organisations useful:

- IFC Environmental, Health and Safety Industry Sector Guidelines ([http://www.ifc.org/wps/wcm/connect/Topics\\_Ext\\_Content/IFC\\_External\\_Corporate\\_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/](http://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/))
- EBRD Sub-sectoral Environmental and Social Guidelines (<http://www.ebrd.com/who-we-are/our-values/environmental-emanual-toolkit.html>)
- Ghana Environmental Protection Agency (EPA) (<http://www.epa.gov.gh/epa/>)
- Ministry of Environment, Science, Technology and Innovation (<http://mesti.gov.gh>)
- Ministry of Food and Agriculture (<http://mofa.gov.gh/site/>)
- Forestry Commission ([www.fcghana.org](http://www.fcghana.org))
- Ministry of Land and Natural Resources ([www.ml.nr.gov.gh](http://www.ml.nr.gov.gh))