1. Applicability

This sector profile is designed to help fund managers quickly familiarise themselves with the most frequent and important environmental, social and governance (ESG) aspects of investments in the agriculture and aquaculture sector. It aims to be a starting point for thinking about ESG risks and opportunities, and not a detailed technical guidance document.

- Using this sector profile
  A company can be affected by non-sector specific issues such as impacts on Indigenous Peoples and cultural heritage. Therefore, each company must be carefully considered based on its specific characteristics and circumstances including scale of operation, location, technology used, management capacity, commitment and track record, and supply chains. Additionally, environmental and social (E&S) impacts, risks and opportunities in a particular company or sector can change over time for a number of reasons (e.g. changes in the applicable laws, or expansion of a company's activities or assets). Fund managers should have systems in place to identify such changes and manage any associated risks and impacts and, where possible, capitalise on new opportunities.

  This sector profile draws on internationally recognised good practice standards and guidance, particularly the International Finance Corporation (IFC) Performance Standards and the World Bank Group Environmental, Health and Safety (EHS) Guidelines. The sector profile identifies key standards that are generally applicable to each sector (refer to the 'Standards, guidelines and other resources' section below). It is not a substitute for such standards, which should take precedence as authoritative sources and basic technical references. Applicable laws and regulations must be taken into account and compliance with them should be regarded as the minimum acceptable performance standard.

  See CDC environmental and social checklist and CDC governance and business integrity checklist for questions that fund managers should consider when evaluating an agriculture and aquaculture investment from an ESG perspective.

- Scope of this sector profile
  This sector profile covers the following activities:
  - Growing and harvesting arable crops, legumes, plantation crops (cotton, palm oil,

cocoa, coffee, tea and sugar), nuts, spices, fruits, vegetables and flowers.

- Raising livestock, as well as fish and shellfish in farming systems (aquaculture).

For related activities such as primary or secondary processing facilities and food and beverage manufacturing, refer instead to Sector profile: Food and beverages. Commercial fishing is addressed in Sector profile: Fisheries.

Unless otherwise stated, the risks, impacts and opportunities outlined below relate to the operational phase of business activities. Generic guidance on ESG risks, impacts and opportunities associated with project design and construction are discussed in the Project design and construction guide.

2. Key environmental and social aspects

This section outlines some of the specific risks and impacts that emerge from poor ESG practices. Weak management of these aspects may lead to reputational damage, have an impact on a company's capacity to raise funding (debt and equity) and, more broadly, negatively impact a company's financial performance. Conversely, sound E&S practices are likely to improve a company's reputation, access to investors and overall performance.

- Management commitment, capacity and track record (CCTR)
  Companies need management's commitment and sufficient capacity to ensure that the necessary resources are available for sound E&S management.

- Environmental and social management system (ESMS)
  Companies should develop and implement an ESMS commensurate with the level of risks and impacts associated with its activities. For further advice refer to E&S topic: Environmental and social management systems (company-level).

- Labour and working conditions
  Note – Occupational health and safety is covered separately below.

Risks for the business	- Companies may face prosecution or fines (or having their licences removed) if they fail to comply with labour laws and regulations. - Financial, reputational and legal risks, and lower production efficiency, product quality and profitability can result from poor employee morale, industrial action, high staff turnover and deterioration of employees' health (e.g. due to excessive working hours). - Higher costs can be incurred to recruit and train new workers if turnover is high due to poor labour and working conditions. - Reliance on seasonal labour and part-time employment creates additional costs, recruitment and training challenges, all of which can adversely affect product quality, as well as increase scrutiny from regulators and others in the value chain.
Opportunities for the business	- Costs can be reduced and productivity enhanced by upholding good labour and working conditions. Companies may also find it easier to attract and retain competent workers. - Market access can be enhanced if a company achieves certain standards and/or related certifications related to labour and working conditions (e.g. SA 8000).

Wages and working hours: The sector is a major employer of low-paid and often unskilled labour, including temporary or seasonal labour, migrant workers, and workers who provide services via supply chains (e.g. outgrower programmes). Furthermore, working hours are typically long. Workers should be paid at least the minimum statutory wage for the sector and working hours should be in accordance with applicable laws and sector regulations/agreements. Companies should not use third party contractors as a means of exceeding working hour regulations or avoiding minimum wage payments.

Good practice in this area can help to manage costs relating to recruitment, training and talent retention and maintain or enhance customer service and build the agriculture and aquaculture sector's reputation and overall business success.

Child labour and bonded/forced labour: These forms of labour are employed in some production and farming systems, particularly primary suppliers (e.g. smallholders). Non-compliance with ILO Core Labour Conventions on Child Labour/Minimum Age and Forced Labour is not acceptable under international

standards. Measures to eradicate these forms of labour should be implemented as a matter of priority.

Equal opportunities and non-discrimination: Discrimination can also be prevalent in the sector, particularly towards women (in relation to terms and conditions of employment and wages), as well as seasonal, temporary and migrant labour. Companies should address discrimination by identifying key issues (through consultation with affected workers) and putting in place policies that deter discrimination. Doing so can help to manage recruitment and training costs, improve worker retention, and maintain or enhance productivity.

Supply chains: The sector is heavily reliant on complex supply chains and working practices (part-time and seasonal harvest work, migrant labour etc.). Companies should always strive to reduce risks of poor labour and employment practices in their supply chain over time. This can be accomplished by shifting to those suppliers with better practices or by engaging with poorer quality suppliers to enhance employment and labour practices. It may require collaboration with other producers, regulators and non-profit organisations (NGOs)

For further general guidance on Good International Industry Practice (GIIP) relating to labour standards and working conditions (in line with ILO Core Conventions), refer to E&S topic: Labour standards and IFC Performance Standard 2: Labor and Working Conditions, and IFC Good Practice Note: Non-Discrimination and Equal Opportunity.

- Occupational health and safety

Risks for the business	- Companies may face prosecution or fines if workers or contractors are injured or killed. - Loss of production or loss of clients and business may result from a poor record regarding injuries to workers and fatalities. - Legal costs and insurance claims, as well as higher insurance premiums. - Low workforce morale and erosion of trust can lead to higher staff turnover, lower productivity, additional training and recruiting costs, and reputational damage.

Opportunities for the business	- Proactively involving workers and contractors in key decisions can help to identify and maintain good OHS practices, and improve their acceptance if new or significantly different to previous practices. - Productivity can be improved and insurance premiums for workers and compensation payments can be reduced. - Market access can be enhanced if a company achieves certain standards and/or certifications that cover OHS matters.

OHS is an important consideration for any business, regardless of sector, and all companies must have in place appropriate OHS and emergency preparedness and response management systems, commensurate with the level of risks.

OHS risks are, however, particularly significant in this sector, which suffers consistently high serious injury incidents relative to many other sectors.

If contractors are involved in operation and maintenance activities, companies should implement measures to ensure contractors work in accordance with applicable regulations and GIIP. Such measures should be covered in companies' OHS and emergency preparedness and response management systems.

Specific OHS risks in the agriculture and aquaculture industries include:

- Physical hazards (e.g. use of machines and vehicles, manual handling, repetitive work, drowning (aquaculture), electric shocks (mainly aquaculture) and working in confined spaces such as silos and pits).
- Chemical hazards (e.g. handling of pesticides, fungicides and herbicides).
- Exposure to biological hazards (e.g. exposure to biological agents such as bacteria, fungi, mites and viruses transmitted from live and dead animals, excreta, parasites and ticks, exposure to water-borne diseases in the case of aquaculture).
- Risks related to working long hours outdoors (e.g. risk associated with prolonged exposure to high and low temperatures and/or sunlight). Exposure to high temperatures and/or high humidity levels (e.g. sugar mills, shrimp breeding facilities).

- Travel to and work in remote sites. (e.g. where operations are located in remote sites lacking basic infrastructure and requiring temporary accommodation). Remote locations may require excessive travel, sometimes by dangerous means and on substandard roads.

- Risk related to the quality and adequacy of accommodation.

For further general guidance on GIIP relating to OHS, refer to E&S topic: Occupational health and safety, IFC Performance Standard 2: Labor and Working Conditions, World Bank Group General EHS Guidelines and CDC Good Practice: Preventing Fatalities and Serious Accidents.

- Resource efficiency and pollution prevention

Risks for the business	- Fines for non-compliance with pollution prevention legal requirements, especially with respect to solid waste and hazardous materials (e.g. pesticides) management and disposal. - Excessive expenditure on energy, water supply, managing emissions, solid waste and wastewater quality. - Lower productivity and resource availability due to land and water contamination because of inadequate use/management of chemicals (e.g. pesticides), animal manure, waste and wastewater. - Lower productivity or product loss due to climate change causing increased weather risks (e.g. flood, drought, heat wave), the spread of diseases and increased competition for water resources. - Regulatory compliance costs if new regulations are introduced for certain production systems (e.g. rice, cattle/livestock, dairy) with high greenhouse gas (GHG) emissions. - Higher operational costs relating to threats to the availability of water and/or soil due to overuse and/or inadequate land/water use planning. - Fines for non-compliance with pollution prevention legal requirements, especially with respect to solid waste and hazardous materials (e.g. pesticides) management and disposal.

Opportunities for the business	- Enhanced market access, profit margins and reputational benefits from adopting good practice environmental and social management (including carbon management) and achieving sustainability certification. - Additional income from selling or sustainably using agricultural waste to generate energy and/or growing crops that can be used as biofuels. - Improve resilience, production and yields through good management of soil and water resources, and cropping and farming systems that take climate risk into account. - Lower operating costs due to investments in energy and water efficiency and cleaner production measures. Additional benefits are a lower environmental footprint and better preparedness for resource shortages. - Avoidance of higher operational costs and long-term risks and impacts by using resources sustainably (e.g. water and soil).

Energy efficiency: Certain commodities and types of agricultural operations (e.g. production systems that use large volumes of pumped water) are energy intensive. It is important to ensure that the energy supply is sufficient and regular, and that back-up systems are in place in order to enable continuous production. Energy- and resource-efficient technologies (e.g. drip irrigation or renewable power sources such as biogas) can increase production efficiency and significantly reduce production costs.

Water management: Many agricultural operations rely on access to water of a suitable quality and may need extra supplies at certain stages of the crop cycle. Agriculture and aquaculture operations may compete with others for access to water, including local residents and industrial facilities. They need to ensure that they have agreements, legal rights and/or permits to the water they need, at all times of year, and that they have quality testing systems in place. Where water deficit risks are evident, particular attention should be paid to stakeholder engagement so as to gauge community concerns about water use in the catchment early and effectively. The Water Risk Filter, developed by DEG (German Investment and Development Corporation) and the environmental NGO WWF, helps companies to identify potential water-related risks by commodity or watershed.

Chemical use: Most agricultural and aquaculture operations rely on agrochemicals such as pesticides, fertilizers and herbicides. While use of agrochemicals is often necessary, there is a long record of poor and excessive use of these products in these

sectors. Many agrochemicals can cause immediate and/or long-term environmental and health impacts if not applied correctly. These impacts may affect workers or nearby communities (via aerial spraying, water contamination, or re-use of chemical containers by third parties). While there have been improvements in the specificity of agrochemicals, and some progress in reducing toxicity/risk to non-target species (including humans), there remain a range of highly toxic agrochemicals — including those classified by the World Health Organisation (WHO) as being 'extremely hazardous' (Class Ia) or highly hazardous' (Class Ib) — that require particular attention. Care also needs to be taken when aerial crop spraying is undertaken so as to avoid contaminating local communities and watercourses. Companies should put in place proper procedures for procuring, storing and applying all chemicals, as well as for the disposal of containers. Integrated Pest Management (IPM) is an important way of reducing agrochemical use and costs, protecting the health and safety of workers and reducing environmental impacts. IPM should form part of the management approach to all primary production investments.

Crop waste and waste management: Livestock and aquaculture operations may have to dispose of large amounts of slurry or wastewater, as well as chemical waste and other hazardous effluents. They need to demonstrate that appropriate permits have been acquired and that robust systems are in place to store and dispose safely of the waste. Importantly, biological wastes can often be used as source of energy (biofuel or bagasse) or for soil enhancement.

For further general guidance on GIIP relating to resource efficiency and pollution prevention, refer to E&S topic: Resource efficiency, E&S topic: Pollution prevention, IFC Performance Standard 3: Resource Efficiency and Pollution Prevention, and World Bank Group General EHS Guidelines. If Indigenous Peoples may be affected, refer to IFC Performance Standard 7: Indigenous Peoples.

- Community health, safety and security

Risks for the business	- Social licence to operate can be put at risk if social impacts and/or community relations are not well managed (e.g. issues associated with the use of ecosystem services such as water). - Reputational damage and significant management costs to address social opposition and criticism if conflicts over land/water use and rights arise. - Financial risks arising from health and compensation claims from surrounding communities exposed to immediate and long-term health and safety risks arising from improper use of agrochemicals and poor management of biosecurity.
Opportunities for the business	- Building good relationships with local communities can contribute to reducing security risks and may yield other benefits in terms of increasing production through access to a better and/or bigger potential labour pool/outgrower programmes.

In addition to the risks and impacts arising from pollution prevention and resource use, community health, safety and security risks and impacts associated with agriculture and aquaculture primarily relate to:

Emergency preparedness and response: Companies must implement emergency preparedness and response systems to respond to accidental and emergency situations associated with the company's activities in a manner appropriate to prevent and mitigate any harm to people and/or the environment. Companies should develop these systems in collaboration with appropriate and relevant third parties (e.g. local authorities).

Use of security personnel: Agricultural operations sometimes employ security personnel to prevent theft or unauthorised access, or for safety reasons. Companies should be guided by the principles of proportionality and good international practice in relation to hiring, rules of conduct, training, equipping, and monitoring of such workers, as well as by applicable law. These principles include practices consistent with the standards and principles set out in the general guidance documents noted.

Traffic: There is often a significant level of traffic associated with agricultural operations, which can put local populations at increased risk of traffic-related accidents (especially given the poor quality of many rural roads). Companies should ensure that they adopt good traffic control practices (e.g. controls on harvesting and crop transport through communities and villages), particularly at harvest time and

other times with higher than normal traffic volume. Provision of lifts to local people can create liabilities and increase accident risks, so should be given careful consideration.

For further general guidance on GIIP relating to community health, safety and security, refer to E&S topic: Community health, safety and security, IFC Performance Standard 4: Community Health, Safety and Security, UN Guiding Principles on Business and Human Rights and Voluntary Principles on Security and Human Rights.

- Land access, use and acquisition

Risks for the business	- Incomplete understanding of formal and informal arrangements that communities have for the use of land can undermine a company's licence to operate. - Long time frames and significant costs can be encountered when securing land, access and water rights. This is particularly relevant if resettlement of people and/or significant economic displacement of communities is/are required. - Reputational damage and significant management costs can arise in relation to social opposition and criticism due to inadequate land purchase /lease/acquisition practices (e.g. lack of transparency during negotiations). Risk of a business being perceived as 'land grabbing'. - Strong evidence that land acquisition often involves the corruption of local regulators and village leaders which creates business integrity risks and liabilities.
Opportunities for the business	- Developing and maintaining good relations with local communities will help to manage their expectations identify concerns (e.g. access to water and other ecosystem services). - Building relationships with local communities and managing land access and use processes well may generate benefits such as increased production throughput from out-grower schemes or a better/bigger potential labour pool.

Land rights: Agriculture and aquaculture developments frequently occupy large areas and may require the use of large plots of land or water. It is imperative that companies have, or are in a position to negotiate, necessary legal rights to use and access the land or water body (aquaculture), and related resources (e.g. water for irrigation). There may also be a need to negotiate access via customary (informal) land use processes. In emerging markets, land tenure and use rights can be unclear and

complex due to a lack of regulation, customary/traditional land tenure, and/or the presence of communities that occupy and use lands, but without a recognisable legal right or claim. Companies may therefore need to engage experts to assist them with the land acquisition/purchase process in order to avoid local opposition.

Economic and physical displacement: In some cases, people living on or near the agricultural or aquaculture operation may be subject to economic displacement (i.e. the loss of crops or arable land) and/or involuntary physical displacement (i.e. resettlement). If this cannot be avoided, it is imperative for the company to undertake a comprehensive and credible social baseline, to properly identify and compensate Affected Communities and to help them improve or restore their standards of living or livelihoods. This will help to avoid additional costs and/or loss of the company's licence to operate. Such situations create very high social risks for companies and need to be approached with care.

Community relations: It is often important for companies to develop and maintain good relations with local communities. Sufficient time and resources should be made available to consult with Affected Communities in a culturally appropriate manner. Efforts should be made to accommodate their needs and reasonable requests; however, it is also important to manage local communities' expectations as well as to take into account precedents that may have been set (see 'legacy land situations' below). It is important to view stakeholder engagement as an ongoing process. Mechanisms should be in place or set up to hear grievances and address complaints.

Legacy land situations: Where the investment is into a pre-existing farming/aquaculture operation, attention should be given to the risk that there are longstanding and unresolved grievances by local communities because of actual or perceived failures in past land acquisition. Where such situations are evident, additional efforts will be required to consult with affected parties, to assess the scale and significance of impacts (if possible) and define mutually agreed solutions. For further guidance, refer to CDC's 'Guidance Note on Managing Legacy Land Issues in Agribusiness Investments' included in Reference materials.

Support for local facilities and infrastructure: In some cases, companies may be asked to support community development or provide public services (e.g. the construction or running of schools, clinics or other local services). Companies should not provide these facilities or services in order to try to trade off impacts that could have been avoided, reduced or mitigated. Ultimately, the goal should be to ensure that

community impacts are addressed in the first instance and to deliver additional, mutually beneficial support thereafter. One important area of support can be through outgrower programmes that create livelihood opportunities for communities via company operations and needs.

Indigenous Peoples: In rare circumstances, those affected by land transactions, acquisition or use may be formally recognised as Indigenous Peoples who must be afforded particular consideration and rights, including Free, Prior and Informed Consent (FPIC). For further sector-specific guidance, refer to IFC Performance Standard 7: Indigenous Peoples and Section 4 of this Sector profile.

If a company is considering acquiring a well-established agricultural business, and not expanding the land area, the risks mentioned above are likely to be less significant. However, they still need to be managed by the company, as there may be legacy issues and that need to be resolved.

For further general guidance on GIIP relating to land access and acquisition, refer to E&S topic: Land acquisition and involuntary resettlement and IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement. In addition, please refer to the Interlaken Group's Respecting Land and Forest Rights report and CDC's Guidance Note on Managing Legacy Land Issues in Agribusiness Investments.

- Biodiversity and ecosystem services

Risks for the business	- License to operate can be put at risk from negative impacts to local biodiversity including ecosystem services used by local communities. - Reputational damage due to production practices associated with investments that directly or indirectly e.g. via supply chains) adversely impact biodiversity (e.g. impacts on tropical forests). - Reputational and business interruption due to adverse interaction with local communities if ecosystem services (e.g. water, timber and soil) are damaged or access to use is impaired. - Reduced access to international markets for some commodities if production or supply chains are seen to damage biodiversity or fail to manage GHG emissions effectively. - Delays and additional costs in investments that affect protected areas or endangered species and/or Critical Habitats, as mitigating and compensating for these impacts could be complex and expensive compared to investments that do not impact these habitats and/or species.
Opportunities for the business	- Increased production/productivity through better management and sustainable use of natural resources (especially water and soil). - Enhanced market access, stronger relations with buyers, increased profits and reputational benefits where proactive management of biodiversity, natural resources and climate change is evident. Certification under a credible voluntary standard can provide assurance and increase access to international markets.

As pressure on land from agriculture and urban development increases, threats to biodiversity also increase. Regulators, buyers, investors and NGOs now have significantly greater interest in the biodiversity impacts generated by agribusiness and aquaculture.

As with other E&S risks and impacts, companies should always adopt a mitigation hierarchy to anticipate and avoid — or where this is not possible, to minimise — risks and impact to biodiversity. Where residual risks or impacts remain, companies should compensate or offset for these. This hierarchy of conservation measures aims to direct primary production to areas with the least biodiversity value. Typically, impacts on areas with high biodiversity values (e.g. protected areas) will require additional permits and more complex and expensive management measures. Avoiding impacts on these types of areas will reduce the costs associated with environmental management

measures.

Habitat degradation and destruction, and impacts on ecosystem services: Habitat alteration is one of the most significant potential threats to biodiversity associated with agriculture and aquaculture operations. It can also affect the provision of ecosystem services including: (i) soil formation and nutrient cycling; (ii) the provision of freshwater to local communities; (iii) protection from natural risks; and (iv) sacred sites and areas of importance for recreation and aesthetic enjoyment.

If significant impacts on biodiversity and/or ecosystem services are likely, companies should specifically assess these potential impacts and implement (biodiversity) management systems and plans to manage biodiversity and ecosystem service risks in accordance with the mitigation hierarchy.

Genetic modification: In some countries, there is significant opposition to, or concern over, the use of genetically modified (GM) crops — also referred to as genetically engineered (GE) crops or genetically modified organisms (GMOs). Should a company be considering the use of GM crops, it will need to assess: (i) the regulatory controls to be met; and (ii) market access and reputational risk issues. Chain of custody assurance measures in supply chains should also be considered, as there are controls on the importation and sale of GMOs in many countries.

Alien species: Agriculture and aquaculture can also result in the spread of alien species. Where alien species have invasive tendencies, significant controls and a comprehensive environmental management system must be put in place.

For further sector-specific guidance, refer to IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

For further general guidance on GIIP relating to biodiversity and ecosystems services, refer to E&S topic: Biodiversity and ecosystems services and IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

- Biosecurity

Risks for the business	- Fines and/or loss of licence to operate. - Product loss due to absent or weak management systems or regulatory controls. - Direct loss of production, increased costs in remediation/sanitation, insurance cover and potential loss of market share/clients. - Reduced productivity or reputational damage due to human disease (e.g. from poultry infections). - Product recall and loss of access to markets/value chains.
Opportunities for the business	- Good biosecurity can lead to increased productivity, higher product quality where biosecurity is good and increased resilience to disease outbreaks. - Enhanced access to markets through certification systems.

Effective biosecurity is critical in livestock and aquaculture production. Risks involve the death of livestock as a consequence of poor biosecurity or disease outbreak, as well as the slaughter of flocks/livestock if disease outbreaks occur in the vicinity of farms.

An increased risk of disease outbreaks occurs where cumulative risks (i.e. many similar production systems in a restricted area) are not managed effectively, or (in the case of aquaculture) where farms or production facilities use a common water source (i.e. farms in the same catchment or bay). This risk is compounded where biosecurity measures are weak and regulations are weakly enforced or inadequate.

Disease incidents can lead to fines and licence loss and also significantly affect companies' reputations and can result in loss of access to markets even if the company does not lose its licence to operate/export goods. It should be noted that over the past years, a number of biosecurity accidents/issues have led to changes in national and international regulations and controls and raised consumers' awareness in this respect.

- Climate change

Risks for the business	- Changes in temperature range and increased incidences of extreme weather may change productivity or viability of crops. Higher temperatures lead to increased incidence of plant diseases. - Food production processes are temperature sensitive and prolonged phases of higher temperatures may have negative impacts in terms of consistent and effective production processes. - Potential increase in cost of agricultural products resulting from increased competition for agricultural commodities and diminished resources (e.g. water scarcity). - Ocean acidification could have an impact on aquaculture. - Loss of clients or inability to access markets due to concerns over products' carbon footprint (e.g. if higher average temperatures lead to increased energy consumption increased from greater refrigeration requirements in transportation and storage). - Regulatory compliance costs if new regulations are introduced for certain production systems (e.g. rice, cattle/livestock, dairy) with high emissions.
Opportunities for the business	- Improved crop resilience, production and yields through good management of soil and water resources, and cropping and farming systems that take climate risk into account (e.g. breeding to improve resilience). - Additional revenue through carbon markets for agricultural-based emission reduction, and carbon sequestration.

It is particularly important for businesses in this sector to understand local climate conditions, including trends and predicted future changes.

Many regions are experiencing significant climatic change and extreme weather events (e.g. droughts, flooding, extreme heat), which can significantly affect the quality and quantity of crops produced. In agricultural operations in such areas, appropriate land and soil management techniques need to be used (e.g. no or low-tillage, crop rotation and farming systems that increase resilience to climate related risks). In aquaculture operations, the focus needs to be on storms and flood events that are likely to affect water levels and quality.

Careful consideration should be given to the strains of crops grown and the systems used in order to manage risks to quality and yields. For example, in areas that are

becoming more prone to drought, drought resistant strains should be adopted, and drip irrigation or similar systems to conserve and use water as efficiently as possible.

The use of genetically modified (GM) crops is likely to be increasingly evident as a response to climate related risks; companies need to balance the opportunities afforded by GM traits (e.g. drought resistance) against the environmental, reputational and other risks (e.g. access to some markets) associated with GM.

For further general guidance on GIIP relating to climate change, refer to the E&S topic: Climate change, and to the US Environmental Protection Agency's Climate Impacts on Agriculture and Food Supply webpage.

- Animal welfare
  Livestock and aquaculture businesses should consider a range of animal welfare issues as they may have a negative impact on product quality, access to some markets and a company's reputation and/or revenues. In order to reduce these risks, and potentially increase productivity, companies should have systems in place to ensure:
  - Proper physical conditions and living environment.
  - Proper transportation and slaughtering.
  - Use of veterinarian services.
  - Appropriate use of antibiotics.

For further guidance on GIIP relating to animal welfare, refer to E&S topic: Animal welfare.

- Supply chains

Risks for the business	- Reputational and business continuity risks linked to the sourcing of agricultural inputs from unsustainable supply chains and/or providers that do not meet basic international standards and conventions (e.g. international conventions on child labour and forced labour) or sustainable standards.

Opportunities for the business	- Collaborate with and, where possible, train suppliers to improve E&S management measures. This can lead to improvements in resource use sustainability (e.g. water and soil), higher productivity and product quality, stronger and better relationship with suppliers and, more broadly, a more reliable, sustainable, resilient and competitive supply chain. - Enhanced market access where approved supplier programmes include E&S requirements and/or where customers take into account sustainability factors.

As covered above, the adequacy and sustainability of supply chains can be a significant business success factor for many agriculture and aquaculture companies. Challenging issues at the supplier level can include:

- Labour and working conditions (including the use of child labour and/or forced labour) – see ‘Labour and working conditions’ section above.
- Inappropriate/illegal land use or acquisition – similar issues occur as described above.
- Impacts on water resources due to poor management.
- Ecological and social impacts resulting from the conversion of natural habitats (such as deforestation) and sourcing feedstock (e.g. soya-based feed from Latin America) linked to the conversion of natural habitat, as well as the use of seafood for aquaculture production, which depletes wild stocks of marine fisheries (e.g. anchovies).
- Biosecurity risks (e.g. in aquaculture activities where companies buy animals from fish hatcheries).

Where companies can reasonably exercise control, their ESMS and supply chain policies should seek to identify and manage such risks and impacts. Where control of risks is not possible (insufficient influence via supply chain leverage or relations), companies should at least gain an understanding of the scale, type and significance of the E&S issues involved. This will allow them to assess the risks associated with continuing the relationship with supplier. Companies may wish to explore alternatives if the risks are considered significant.

For further general guidance on GIIP relating to supply chains, refer to CDC E&S Briefing Note: Supply Chains, IFC Performance Standards, World Bank Group General EHS Guidelines and IFC Good Practice Handbook: Assessing and Managing Environmental and Social Risks in an Agro-Commodity Supply Chain.

- Antimicrobial Resistance
  The agriculture and aquaculture sector has a vital role to play in reducing antimicrobial resistance (AMR). At least two-thirds of antimicrobials across the world are fed to intensively farmed livestock and fish. Of those, 75 per cent are used preventively or as growth promoters, rather than to treat specific illnesses. Orally administered antibiotics in particular are inefficiently metabolised, with an estimated 30-90 per cent of antibiotics excreted either unmodified or only partially digested. This leads to increased antimicrobials in the environment through water and wastewater systems, and also through the spreading of manure on crops.

  There is also growing concern about the use of antimicrobials, particularly antifungals, in crop culture. Although estimates show that the proportion of antimicrobials used for crops is low, the potential risks should not be ignored.

  The consequences of AMR in the agriculture and aquaculture sector include reduced food production and security, greater food safety concerns, higher economic losses to farm households, and contamination of the environment. By 2050, the negative impact of AMR could lead to animal production falling by 2.6-7.5 per cent every year, a reduction which is expected to disproportionately impact low income countries.

  Proactively identifying and managing AMR risks and impacts can put companies ahead of the curve, helping them to reduce operating risks and avoid regulatory penalties or public censure. Investors are in a unique position to set market-leading requirements linked to AMR, and support companies through the implementation and monitoring of those requirements.

Risks for the business	- Reduced production and profits due to animal resistance to antimicrobials. - Reputational damage, fines and penalties due to misuse and overuse of antimicrobials in animals, and environmental pollution resulting from the disposal of antimicrobials. - Negative media coverage and civil society campaigning if companies do not take actions to reduce AMR. - Negative implications on business due to changing legislative landscape regarding antimicrobials use, potentially causing significant operational disruptions. At least 64 countries have limited the use of critically-important antibiotics for growth promotion, with others expected to phase out their use altogether.
Opportunities for the business	- Investing in strategies to reduce dependency on antimicrobials will help companies to prevent future operational shocks. - Improved brand value and reputation if reducing AMR becomes part of company strategy. - Preparedness for regulatory changes regarding the use of antimicrobials in animals. - Better hygiene practices, leading to improved animal health and enhanced operations overall.

Measures to reduce AMR

- **Enforce prudent and responsible use:** Phase out the routine, preventive use of antimicrobials and implement measures to promote good practices related to antimicrobial use. All practices should follow internationally-agreed standards (for example the OIE Standards, Guidelines and Resolution on Antimicrobial Resistance and the Use of Antimicrobial Agents and the WHO guidelines on use of medically important antimicrobials in food-producing animals).

- **Include AMR as a core component of communication and educational programmes:** Institute educational training for employees, farmers, and veterinarians that promotes the effective stewardship of antimicrobials. Programmes should include information on disease prevention, appropriate storage conditions and the proper disposal of unused or expired products.

- **Develop or contribute to AMR surveillance systems:** Use surveillance and monitoring schemes to assess and determine the trends and sources of antimicrobial resistance, to analyse the effects of actions to combat AMR, and help track antimicrobial consumption patterns. Farm-level monitoring in line with industry standards (such as milligrams of antibiotics per kilogram of animal weight), are a good starting point to track usage over time. More broadly, companies can also identify and contribute data to sector-wide surveillance schemes. Laboratory capacities and related infrastructures should be strengthened to actively contribute to surveillance on AMR. Stakeholder engagement and alliances on supporting infrastructure, such as improving laboratory capacity, are also important steps.

- **Enhance diagnostic tools:** Rapid diagnostics are essential to ensuring that the use of antimicrobials achieves the best animal health outcomes. The diagnosis of illness, the correct prescription of antimicrobial drug and the administration of the correct dose in the appropriate manner are critical factors in preventing the development of resistance.

- **Implement responsible promotional practices:** Private veterinarians usually earn their income both by charging for their services and – in many countries – by selling drugs directly to the producers. Companies should partner with stakeholders to reduce negative incentives to oversell antimicrobials. Additionally, food producers should include information in their products regarding the use on antimicrobials, helping consumers to make more informed buying decisions.

- **Ensure effective environmental risk management strategies:** Implement measures to reduce the environmental impact of antimicrobials through setting science-based discharge limits. It is essential to collect and treat the wastewater and manure produced in livestock operations and in aquaculture systems before reusing or disposing of them.

- **Improve hygiene and prevent the spread of infection:** Improving hygiene and sanitation in the agricultural and aquaculture sector is crucial to counteracting increased drug resistance. Companies should follow the standards outlined in the joint World Health Organization (WHO), Food and Agriculture Organization (FAO) and World Organisation for Animal Health (OIE) report: Technical Brief on Water, Sanitation, Hygiene and Wastewater Management to

Prevent Infections and Reduce the Spread of Antimicrobial Resistance.

Further resources OIE: OIE Standards, Guidelines and Resolution on antimicrobial resistance and the use of antimicrobial agents (2015) WHO: WHO guidelines on use of medically important antimicrobials in food-producing animals (2017) WHO: Technical brief on water, sanitation, hygiene, and wastewater and management to prevent infections and reduce the spread of antimicrobial resistance (AMR) (2020) WHO and FAO: Codex Alimentarius

3. Business integrity considerations

Fund managers should ascertain and continue to ensure that companies (regardless of sector) comply with the fund's business integrity requirements. For further information, see Business integrity.

- Business integrity issues specific to the agriculture and aquaculture sector:
  The main corruption risks in the forestry sector revolve around property title and tenure permits to operate, and access to infrastructure and resources such as water. Companies should have systems in place for managing and overseeing interactions with local community leaders and with government officials.

4. Advice for Fund Managers

See also Environmental and social checklist, Governance and business integrity checklist and Investment cycle.

- Sector risk overview
  The agriculture and aquaculture sector intrinsically involves potentially complex, significant and diverse ESG risks and impacts that are likely to have material implications for long-term shareholder value. Therefore ESG matters will normally be a significant element of due diligence, investment structuring, and ongoing ownership and monitoring. Fund managers should give serious consideration to using independent ESG experts to support them in transactions in this sector.

Additionally, fund managers should bear in mind that the sector is under increasing scrutiny from regulators, buyers, stakeholders in the supply chain, consumers and NGOs in relation to ESG issues.

- Scoping considerations
  In addition to the aspects highlighted above linked to the company's assets, activities and workers, fund managers should take into account the following during the life of the investment, from screening to exit:
  - **Associated facilities** (e.g. access roads, shared processing facilities, dams and reservoirs).
  - **Contractors** whose operations present significant E&S issues which could have an impact on the business including harvest labour forces (especially if migrant in nature) or out-growers as a source of production.
  - **Supply chains** (e.g. grain supplier for livestock consumption) where these present significant E&S risks (e.g. child labour risks). Even where a company cannot directly address risks because it lacks leverage or commercial influence, it is important that fund managers are aware of the risks. For further guidance refer to E&S topic: Supply chains.

- Situations requiring extra attention
  Extra attention, longer timescales and more intensive ESG due diligence may be required in more complex situations. This will ordinarily involve engaging consultants (see CDC guidance: Working with consultants) to conduct a gap analysis against the applicable local and international E&S standards (typically IFC Performance Standards and World Bank Group EHS Guidelines).

  Examples of activities or situations in this sector requiring extra attention include:
  - Companies or activities that involve buying or leasing large plots of lands (including in the case of willing buyers and sellers), as this may involve involuntary economic and/or physical displacement of communities, even if they have no formal title or ownership rights to that land. This can also apply in situations where the land is farmed or used intermittently (e.g. pastoralists,

nomadic use). Fund managers should be aware of increasing concern and criticism around these types of deals. They are being characterised as 'land grabs' by some governments, as well as local and international NGOs. Concerns relate to the loss of livelihoods for affected communities, the most productive lands being used by (usually foreign) investors to produce export crops, displacement of local farmers, increased risk of low-paid work on those farms, and reduction of the food available to local people. Businesses may face extensive and prolonged public and media criticism, which can be challenging to address and make completing a deal more difficult. Where a significant land area is needed, fund managers should gain a good understanding of the local social context regarding land use and availability, and consider whether the company has in place a good approach to avoiding — and, where unavoidable, effectively managing — these risks and impacts.

- Companies and activities involving potential adverse impacts on Indigenous Peoples or other vulnerable groups, including restricted access to land, impacts on their customary rights or, more broadly, impacts on their livelihoods.

- Situations where the conversion of natural habitats or proximity to protected areas or Critical Habitats is evident or likely, or where development may impact the area's ability to continue to provide ecosystem services (e.g. water and timber to local communities).

- Water-intensive businesses (e.g. sugar cane, rice or cotton) in locations that are subject to significant water scarcity, especially where there is the potential for competition or conflict with other water users such as local communities.

- Where there are large numbers of agricultural workers (including migrant or temporary labour) or in commodities or geographies where there is a record of child or forced labour in production or supply chains.

- Where companies will rely on, or introduce, GM or non-native (alien) species as part of their operations.

- Companies and activities involved in bio-security contingencies or presenting major bio-security risks (e.g. intensive aquaculture in areas that may affect other farms and/or the public).

- Where production for international markets is assumed (and certification and

supply chain assurance may be required).

- Transactions or geographies with high business integrity risks.
- Any other activities or Projects involving involuntary economic and/or physical displacement of communities, or significant adverse impacts on biodiversity, habitats or ecosystem services, Indigenous Peoples, Cultural Heritage or local communities.

5. Standards, guidelines and other resources

For authoritative guidance, fund managers should consult the applicable IFC Performance Standards and World Bank Group EHS Guidelines.

- Applicable IFC Performance Standards
  The IFC Performance Standards most commonly applicable to investments in this sector are:
  - IFC 2012 Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts.
  - IFC 2012 Performance Standard 2: Labor and Working Conditions.
  - IFC 2012 Performance Standard 3: Resource Efficiency and Pollution Prevention.
  - IFC 2012 Performance Standard 4: Community Health, Safety and Security.
  - IFC 2012 Performance Standard 5: Land Acquisition and Involuntary Resettlement.
  - IFC 2012 Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

  In addition, other IFC Performance Standards may be applicable depending on the specific characteristics and locations of a company's operations. The screening stage

of the fund manager's ESG due diligence should always include a routine check for the potential presence of significant impacts covered by IFC Performance Standards.

- Applicable World Bank Group EHS Guidelines
  The most relevant World Bank Group EHS Guidelines in this sector are:
  - World Bank Group General EHS Guidelines.
  - World Bank Group EHS Guidelines for Mammalian Livestock Production.
  - World Bank Group EHS Guidelines for Poultry Production.
  - World Bank Group EHS Guidelines for Annual Crop Production.
  - World Bank Group EHS Guidelines for Aquaculture.

- Additional references, standards and guidelines
  Additional resources that may be valuable are:
  - The European Integrated Pollution Prevention and Control Bureau (IPPC) – BAT reference documents (BREFs).
  - Principles for Responsible Agricultural Investment.
  - The 2050 Criteria Guide to Responsible Investment in Agricultural Forest and Seafood Commodities.
  - Respecting Land and Forest Rights: A Guide for Companies.
  - Voluntary Guidelines on the Responsible Governance of Land Fisheries and Forests in the Context of National Food Security (VGGT).
  - Private Equity and Emerging Markets Agribusiness:Building Value Through Sustainability EDFI commodities and Value Chains Report.
  - Investments in the Agricultural Value Chain: Expanding the Scope of Environmental and Social Due Diligence.

- WWF/DEG Water Risk Filter.
- World Organisation for Animal Health.
- Transparency International.
- FAO: Climate-Smart Agriculture.

Certification bodies and sustainable and organic agriculture standards:

As discussed above there are now a broad range of voluntary standards that have been developed by industry, companies, NGOs and others to promote better production and management practices. The adoption of these standards can generate cost savings and production efficiencies (through better use of resources), access to a broader range of markets and buyers, as well as increased staff efficiency and productivity. There are frequently, costs associated with the development and implementation of voluntary standards and certification.

Some of the standards have particular market share or influence. Inclusion here does not indicate endorsement of standards, and fund managers should make their own determination on the appropriateness and credibility of standards that they might want to implement.

iSEAL is an important internationally recognised organisation that can provide further guidance and advice on credible certification systems and standards, and the International Trade Centre has a useful tool that compares the attributes of a large range of international sustainability standards.