FACTORY FARMING: ASSESSING INVESTMENT RISKS

2016 report
FACTORY FARMING: KILLER STATS INVESTORS CAN’T IGNORE

1. Reason for rapid spread of bird (H5N2) and swine (H1N1) flu
   - $3.3bn industry losses due to US bird flu outbreak in 2015

2. User of antibiotics in the US
   - 80% of all antibiotics in the US now used in animal factory farms

3. 14% of global GHG emissions, more than the transport sector
   - *From livestock sector as a whole, with factory farming as key component

4. 21% rise in ‘heat stress’ days set to hit cattle industry due to warming climate

5. Consumer of water in drought-stricken California
   - $250m and rising hit on profits of California dairies due to drought in 2015

6. Down investors in McDonald’s and KFC
   - Hit by US$10.8bn loss of market cap in 2014 due to food safety scandal at a Chinese supplier

7. UP alternative food tech company Hampton Creek set to be fastest growing food company in history, benefiting from impact of 2015 US bird flu crisis

8. Down animal welfare scandal leads to largest meat recall in US history, and bankruptcy for meat-packer Hallmark/Westland in 2012

9. Down investors in Tyson Foods exposed after company reveals environmental violations, possible $500m of regular government contracts at risk

10. Up alternative food tech company Hampton Creek set to be fastest growing food company in history, benefiting from impact of 2015 US bird flu crisis

11. 85% of all soya globally is used in animal feeds, a major cause of deforestation

12. 14% rise in ‘heat stress’ days set to hit cattle industry due to warming climate

13. $250m and rising hit on profits of California dairies due to drought in 2015

14. From livestock sector as a whole, with factory farming as key component

15. US$10.8bn loss of market cap in 2014 due to food safety scandal at a Chinese supplier

16. 80% of all antibiotics in the US now used in animal factory farms

17. 28.4% of all soya globally is used in animal feeds, a major cause of deforestation

18. 85% of all soya globally is used in animal feeds, a major cause of deforestation

19. 14% rise in ‘heat stress’ days set to hit cattle industry due to warming climate

20. $250m and rising hit on profits of California dairies due to drought in 2015

21. From livestock sector as a whole, with factory farming as key component
FOREWORD

This report explores the industrialisation of the world’s meat and fish production, a relatively recent trend, and assesses the potential risks that a range of environmental, social and governance (ESG) issues present to that model. Looking at the industry through an ESG lens produces alarming results that should raise a red flag to mainstream investors across the world. This is the first study to undertake this important analysis.

NEW TREND CREATES A KNOWLEDGE GAP AMONG INVESTORS

Over 70% of the world’s farm animals are now factory farmed, including an estimated 99% of US farm animals. Cattle feedlots can hold upwards of 100,000 cattle at any one time – equivalent to almost the entire dairy cow population of Greece in one farm. This industrialisation of meat and fish production is currently set to continue at pace as prosperity in emerging economies rises.

Our research reveals the many investment risks that need to be considered if this trend continues. Most obvious are the short-term risks such as the threat of a reputational or regulatory backlash against any investee company involved in factory farming and shown to have poor ESG (including animal welfare) standards. However this report also digs deeper and explores, perhaps for the first time, some of the longer-term risks that might affect value.

It identifies 28 ESG issues which can have a negative financial impact on companies connected with animal factory farm-related investments. These range from food safety scandals to environmental fines and the industry’s reliance on government subsidies, and affect companies right through the value chain. One particularly worrying issue is the overuse of antibiotics. Around 80% of all antibiotics produced in the US are now used on farm animals and there is a real risk of drug resistant bacteria developing as a result of this. In addition, factory farms also provide ideal conditions for viruses to develop and spread.

Increasingly, major investors are paying attention to factory farming’s risk and incorporating them into their decisions. For example there is evidence that the 2019 H1N1 strain of swine flu, which killed over 150,000 people and wiped billions off the value of many agriculture investments, originated in a US factory farm. Factory farming also catalysed the spread of H5N2 bird flu in the US this year, estimated to have cost £3bn to the wider economy.

Increasingly, food companies and consumers are starting to see these risks and now some major investors and asset managers the world over are paying attention to factory farming’s risk and incorporating them into their decisions. But there’s still a long way to go. Even many of the investors publicly committed to taking ESG issues into account as signatories of the UN-supported Principles of Responsible Investment overlook this issue when it comes to their risk management.

PROTECTING LIVESTOCK, PROTECTING VALUE

This report does not have all the answers, but it does highlight a knowledge gap which I urge the investment community to address. That would not only create a more sustainable farming industry but would also give investors the information they need to help safeguard long-term value.

Jeremy Coller
Founder, FAIRR Initiative

“Increasingly, major investors are paying attention to factory farming’s risk and incorporating them into their decisions.”
EXECUTIVE SUMMARY

→ Ignoring ESG issues associated with animal factory farming leaves investors exposed to significant material risks.
Animal factory farming has not historically received meaningful attention from the responsible investment community. However, in a relatively short period of time it has come to dominate global meat production despite wider risks over its potential impacts on areas such as public health, the environment and food safety. The available literature studied for this report shows that these risks are material for mainstream investors, especially those with significant exposure to the agricultural and food value chains.

→ Animal factory farming is a new phenomenon that has established itself as the predominant mode of livestock production.
Over the past half century drivers such as population growth, rising incomes and urbanisation have driven a sharp increase in meat consumption and a shift towards factory farming as the way to meet demand. An estimated 70% of farmed animals are now raised in this system, including 99% of US farm animals.
Now many Asian countries have started to industrialise their animal farming systems at pace and scale.

→ A knowledge gap exists about animal factory farming risks among investors.
This report analysed several economic, academic and NGO studies to understand whether there was financial vulnerability for long-term investors due to the rise of intensive farming. Most of these studies focused on the sector’s vulnerability to policy and regulation and we believe that this report is the first study to reveal unpriced risks from the impacts of wider environmental, social and governance issues on animal factory farms.

→ Animal factory farms are vulnerable to at least 28 ESG issues that may damage their financial performance and returns.
This diverse range of 28 issues are split into ‘environmental’, ‘social’ and ‘governance’ risks. The links between ESG issues and financial outcomes can be complex and difficult to assess, but nevertheless a hard line can often be drawn between issues such as droughts or food contamination and financial performance. This report has developed a framework to link ESG issues with four key financial levers: ‘production and price’, ‘market access’, ‘reputation’ and ‘legal and regulatory’.

While industrial farm animal production has benefits, it brings with it growing concerns for public health, the environment, animal welfare, and impacts on rural communities.

Pew Commission on Industrial Farm Animal Production (US)

The key risks are:

- **Environmental** – These are the most quantifiable of the three [ESG] areas and include issues such as climate change, water scarcity and water pollution. For the latter the example of North Carolina is cited, which permanently banned new pig factory farms in 2007 to protect water courses and prevent pollution. Reports indicate that if the industry was forced to meet the costs of its pollution, this could equate to billions of dollars.
- **Social** – The report concludes that there is a tremendous amount of financial value potentially at risk as a result of social issues. These include health impacts from the overuse of antibiotics in factory farms, pandemic risk and reputational damage to companies due to changing consumer attitudes. For example, it describes how the 2015 outbreak of bird flu in the US, thought to have been catalyzed by factory farms, caused over $3.3bn of economic costs. The example of Yum! and McDonalds losing US$10.8bn of combined market capitalisation after a food safety scandal in a Chinese supplier is also explored.
**Governance**: There are four broad governance issues that impact the animal factory farming industry, with potential changes to subsidy support from governments presenting the most significant financial risk. For example, one study argues that the success of the animal factory farming model is due largely to subsidy support, including almost US$4bn that the US industry receives in benefits annually from subsidised grain. Shifting production to developing countries also raises concerns for investors due to less robust corporate governance in these countries.

**A toe in the water.**
This report aims to broaden the current understanding of risk linked to investment in animal factory farming, but it is clear that further in-depth research and engagement between investors and the industry would help close the knowledge gap that exists. Ideas for further research and other practical steps are offered in the last chapter of this report.

**Some leading investors have already started to integrate animal factory farming risks into investment processes.**
Historically, investors have been largely unaware of investor risks in this area. However in recent years some parts of the financial community have taken steps to improve their understanding. Some investors have begun to consider it in both their investment analysis and active ownership processes. This includes development financial institutions such as the IFC and EBRD as well as several mainstream investors such as PPGM, BNP Paribas and Aviva Investors. In this report we provide a list of available resources that investors are currently using to integrate animal welfare practices and highlight the Business Benchmark on Farm Animal Welfare (BBFAW) – an independent benchmark that ranks how the world’s leading food companies are managing and reporting their farm animal welfare practices.

“**Intensive farming practices raise material, health, environmental and operational risks that investment organisations cannot afford to ignore. Given that they also rely heavily on government subsidies the model does not look like a sustainable one for long-term investors and they should take action to manage the risks.”**

Alan Briefel, Executive Director, FAIRR

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**CASE STUDY**: A warming climate is set to make factory farming less financially viable. E.g. increasing cattle ‘heat stress days’ by 21% by 2045. The US dairy industry already loses US$897m/year from heat stress on cattle.

**CASE STUDY**: The dense concentration of animals in factory farms may lead to major health issues. E.g. in 2007 swine flu caused the MSCI US Agri & Food Index to plunge 1.5%; Smithfield Foods lost 12%. Over 150,000 people died from the virus.

**CASE STUDY**: Animal factory farming is highly vulnerable to changes in its commercial context. For example, ESG factors may threaten subsidy support such as the US$4bn of benefits the US industry receives annually from subsidised grain.
This report aims to provide investors with a better understanding of the short- and long-term financial impacts of ESG issues on companies directly involved in animal factory farming and indirectly linked via the value chain. The specific objectives are to:

- Identify the key ESG issues that are relevant to animal factory farming;
- Establish empirical evidence of the short- and long-term financial impacts of ESG issues on animal factory farming;
- Help investors to understand the key issues and highlight where knowledge gaps exist;
- Identify activities that could be undertaken by interested stakeholders in the financial community to protect investors against the risk present in animal factory farming-related investments.

We hope investors can use this report practically as part of their strategic decision-making and day-to-day operations, or to help develop lending policies or guidelines that incorporate animal factory farming criteria. The evidence and leading practice case studies can also provide support for shareholder activism, such as pressuring companies to establish better management systems or eliminate risky practices.

Methodology and structure
This ESG analytics and research in this report were produced by Verisk Maplecroft with the aim of identifying current and emerging ESG risks that are relevant to animal factory farming. This review drew on a wide number of sources including academic journals, industry and government publications, company documentation, NGO reports and studies and media reports.

The case studies on the financial impacts of ESG issues on food sector companies and bovine heat stress were developed through original research. The financial analysis of company performance was undertaken through the use of proprietary datasets and open source information on stock prices. Bovine heat stress was quantified by calculating the annual average Heat Stress Days in a current (1981-2000) and future (2026-2045) climate. This was achieved by adjusting Maplecroft’s proprietary Country Risk Indices – specifically Heat Stress [current climate] and Heat Stress [future climate] 2015 indices – by a common measure of heat stress, the temperature-humidity index (THI):

\[
\text{THI} = T + 0.55 \times \left(1 - \frac{0.55 \times \text{RH}}{100}\right) \times (T - 58),
\]

where T is the dry-bulb temperature and RH is relative humidity.\(^4,5\)

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CHAPTER 1:
CONTEXT – PUTTING ALL OUR EGGS IN ONE BASKET

1.1 OVERVIEW

Over past decades, traditional livestock farming has been largely replaced by highly industrial production systems, or animal factory farms. An estimated 70% of animals farmed for food globally are raised within a factory farming system. Large poultry farms can contain more than 500,000 broiler chickens, pig farms can contain more than 10,000 hogs, and cattle feedlots can hold upwards of 100,000 cattle at any one time (that is almost the entire dairy cow population of Greece in one farm).

Animal factory farming as a production process originated in the United States and has since been replicated in other Western nations. More recently, animal factory farming is becoming established in new geographies, including South Asia (India), East Asia (China), sub-Saharan Africa and South America. In this context, it is more important than ever that investors understand the potential risks associated with investment in animal factory farming and related industries.

Over the past half century, the increase in global agricultural output has been achieved largely through the intensification of production. The global human population increased from 3.2 billion in 1963 to just over 7 billion in 2014. To meet rising demand, world food production has also grown dramatically. Increasing yields, cropping intensity and land use have driven crop production. Greater fisheries catches as well as the expansion of aquaculture have meant that world fisheries production has also increased with the aim of meeting the growing demand for food.

At the same time, population growth, rising incomes and urbanisation (particularly in developing nations) have resulted in a sharp increase in the demand for meat and fish. There were approximately 7 billion cattle, pigs, sheep, goats and poultry in 1963. By 2013, their numbers had risen to more than 25 billion, with the majority contained in factory farms. The rise in production of key livestock species alongside population growth is illustrated in Figure 1.

The shift towards factory farming as the predominant mode of livestock production began in the United States and other industrialised countries. Animal factory farming began to emerge in industrialised countries following the Second World War. This process entailed a shift in animal production systems from smaller scale, mixed species systems to large-scale, intensively farmed and highly mechanised systems, focusing primarily on one single species. There was also a marked shift in the structure of the industry, with fewer and fewer farms producing increasing numbers of animals. As part of this consolidation, corporations assumed a more dominant role, with many livestock farmers functioning under the control of larger companies. By 1997, half of the world’s beef, and more than half of the world’s pork, poultry and eggs, were produced by animal factory farms (or ‘concentrated animal feeding operations’ – CAFOs).

Future growth in meat production and animal factory farming is expected to be driven by developing countries. Thus far, developed countries have accounted for the majority of intensively farmed livestock systems. However, production in many of these countries is now beginning to stagnate. For example, while major producers such as Brazil, Argentina and Russia demonstrated rapid growth in meat production over the past decade, this is not expected to continue. Many key meat-producing countries and regions will be unable to satisfy rising global demand. This is due to a number of reasons, including: constraints on natural resources, competition from crops for land and water, and inadequate investment in supportive infrastructure.

By comparison, intensive animal farming is increasing rapidly in emerging markets. Meat production in the least developed countries doubled over the two decades prior to 2012. Although this growth is likely to continue based on current trends, there may be an increasing differentiation in these markets between conventional industrial farming (which we argue represent high-risk investments), more medium-risk factory farms that take animal welfare issues into account and non-industrial farming. In this context providers of plant-based protein alternatives to meat also appear as a strong growth opportunity.

Many Asian countries have already started to industrialise their animal farming systems, with the pace and scale of change most visible in China. Many Asian governments are encouraging a shift from small-scale, subsistence and non-intensive farming towards more intensive farming systems. While animal stocks in developed countries have been largely stable over a 40-year period from 1963 to 2013, there has been significant growth in countries such as China, Vietnam and Indonesia. China is a strong supporter of the industrial production model and this is reflected in the tremendous growth in livestock produced in the country.

Growing Chinese livestock

Between 1993 and 2013:
- Head of cattle increased from 80 million to 114 million in 2013, an increase of 43%.
- The number of pigs increased from 367 million to 482 million, or 31%.
- Chicken numbers increased from 2.7 billion to 5.5 billion, or 104%.

China has become the world’s largest producer and consumer of pork, the second largest producer of poultry and the world’s third largest milk producing nation.
FUTURE PROJECTIONS
Population growth, affluence and urbanisation will continue to shape consumer preferences and drive demand for meat or similar proteins. Key demographic and socio-economic drivers include:

- World population is expected to grow by a third between 2014 and 2050, rising from 7 billion to 9.1 billion.14 The vast majority of this growth will occur in developing countries.
- Per capita incomes are projected to be a multiple of today’s levels, with some emerging economies catching up to developed nations in per capita terms.15
- Urbanisation processes will accelerate, resulting in 70% of world population living in cities by 2050 (up from 54% in 2014).14,15

The global demand for animal protein is expected to increase 70% by 2050, largely as a result of increasing affluence. This has already been observed in China, where a fourfold increase in per capita income following economic reforms in the 1970s coincided with a 30% increase in average meat consumption per person (between 1978 and 1997).16 However the future trend towards increased meat consumption is far from a certainty. Growth in meat consumption has started to falter in some developed countries, suggesting that evolving consumer preferences could re-shape future meat demand. There is a slowly growing trend in countries such as the US and the UK towards more plant-based or ‘flexitarian’ diets, with meat playing a less important role in meal planning. This has arisen out of an increased awareness of health, animal welfare and environmental sustainability issues, and awareness and availability of plant-based proteins as an alternative. Since the 1980s, for example, the consumption of red meat has declined in the UK.22 This has been partly attributed to a number of food-related health scares, including the 2013 horsemeat scandal. Meat consumption in the US has also been declining for almost a decade, largely because of health concerns and economic constraints.23 WHO’s classification of processed meat as carcinogenic in late 2015 is likely to encourage a further decrease in red meat consumption in these markets.

Food technology companies such as Hampton Creek (see page 43) Impossible Foods and Beyond Meat are also emerging which in the coming years may offer protein-dense plant-based foods that consumers select as alternatives to meat, taking market share from animal protein sources and reducing global meat demand.

The strongest links between the impacts of ESG issues on financial performance related to animal factory farming are drawn from short-term and anecdotal reports. There are numerous examples of reports describing the numbers of livestock culled across different geographical areas as a result of drought and rising feed costs on the livestock.22 Often this is translated into economic costs at the national or regional level.24 Studies have also downscaled the impacts of widely experienced events to the producer level. For example, drought in 2012 led to a US$155,000 increase in feed costs for broiler farms in Georgia.25 Livestock-related disease outbreaks also focus attention on the impacts on key producers or regions. During the 2009 swine flu outbreak, Tyson Foods reported a drop in its domestic pork sales, while industry analysts downgraded stock and lowered annual earnings for both Tyson Foods and Smithfield Foods.26 Meanwhile, hog producers in Indiana were estimated to have lost US$20 a head at the peak of the outbreak.27 There is less information available regarding the financial impact of reduced stocks on the sector or on individual farms, although fines for environmental or labour law infractions are commonly available.

However, there is limited information available which measures and quantifies the materiality of broader ESG issues in relation to animal factory farming. There is a growing body of academic research examining the relationship between ESG issues and financial performance – the majority of this research highlights a positive relationship between ESG issues and performance.22 However, the impacts of ESG issues can vary across sectors, meaning that investors need detailed information relating to the specific sector, country, or asset class, etc. that they are interested in.

There is little within the investment literature that is targeted specifically at animal factory farming. This contrasts with much greater focus on other sectors that present severe environmental or social challenges. These sectors include: clothing and apparel due to the association with poor working conditions; oil and gas because of the contribution to climate change; and the mining industry because of its association with human rights abuses and exposure to water scarcity.

This report aims to take a first step to broadening the current understanding of risk linked to investment in animal factory farming, by identifying and expanding on the ESG issues which affect the sector. These issues are listed in Table 1 and discussed in more detail in the following section.

**Several economic studies have focused on the financial vulnerability of animal factory farming to changes in policy and regulation, suggesting significant unpriced risks within the sector.**

Table 1: ESG issues that may have an adverse impact on financial performance and returns from animal factory farming

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>KEY ISSUES</th>
</tr>
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<tbody>
<tr>
<td><strong>Environmental</strong></td>
<td>Disease outbreaks, GHG emissions, deforestation and biodiversity loss, natural hazards, climate change, water pollution, water scarcity, resource scarcity, poor animal welfare, waste generation, high water use, air pollution, soil degradation and desertification.</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Excessive antibiotic use, spread of infectious diseases/global health pandemics, social backlash, changing consumer preferences, poor working conditions, human rights violations, labour availability and productivity, health impacts on surrounding communities, loss of rural livelihoods, land rights violations, social licence to operate compromised.</td>
</tr>
<tr>
<td><strong>Governance</strong></td>
<td>Policy changes (e.g. removal of government subsidies, changes to policy, trade restrictions), weak regulatory oversight, sustainability disclosure, corporate governance.</td>
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</tbody>
</table>
In the first half of 2015 the US suffered the worst outbreak on record of the deadly H5N2 strain of avian influenza. At the time of writing it had led to nearly 50 million hens and other poultry being destroyed, and America’s $6 billion poultry exports, suffering dramatic falls of around 14% and rising.

The virus was thought to have spread further and faster than any other historical outbreak because of the role of factory farms in modern farming.

The crowded and confined conditions of factory farm poultry sheds create a disease incubator, meaning that when the virus got in it quickly spread. Coupled with the large flock sizes of up to five million birds in a concentrated space – an outbreak of bird flu in one hen house means you have to cull the chickens in the neighbouring hen houses too.

There are less than 200 commercial egg farms in existence in the US today, compared to over 10,000 forty years ago.

Despite significant biosecurity measures in place, H5N2 was able to penetrate the defences on a large number of factory farms.

Financial costs
The financial implications of H5N2 have been staggering. The value of the dead birds alone has been estimated at over $190 million, with US taxpayers asked to foot the bill of ‘restocking’ the birds. 40 countries placed bans on all US poultry and many food companies including Hormel and Post Holdings issued profit warnings following declining sales due to limited supplies and lost revenue from market closures.

In Iowa, the largest egg producing state, egg production dropped 21%. This contributed to skyrocketing egg prices between January and June which infected stocks such as food makers like Unilever, food distributors such as Sysco, and fast food firms including McDonald’s whose costs all soared.

The cost of H5N2 to the wider economy has been estimated to be over $3bn.

The US egg shortage also created new markets for companies like Hampton Creek whose egg free products became highly sought after as the outbreak continued and led to it being christened the fastest growing food-company in history. (See case study 9).
Definitions

Relationship between ESG issues and their impacts on financial outcome.

- **Production and price**: refers to the impacts on production, which are determined largely by weather conditions and disease. Price risk refers to changes in the prices of inputs and outputs and is generally external to production processes.
- **Market access**: refers to the ability of producers to sell to different markets, including national markets and specific customers (such as government bodies and private sector firms).
- **Reputation**: refers to the damage done to a company’s reputation or brand.
- **Legal and regulatory**: refers to the financial impact that may arise from changes in laws and regulations or from violations of existing laws and regulations.

### 2.3 ENVIRONMENTAL ISSUES AND IMPACTS

13 environmental issues impact the animal factory farming industry.

**Environmental issues are the most quantifiably material of ESG issues.**

Legal and regulatory impacts are the most frequent consequence of environmental issues, associated with 11 out of the 13 identified issues. With respect to legal and regulatory levers, there are numerous examples of farms being penalised for violations of environmental laws. For example, following a 500,000-gallon manure spill in 2008, the 1,000-cow dairy operation at Teabow Farms, Maryland, was forced to reimburse the town of Walkersville and Frederick County for providing emergency water supplies, testing and other costs.

**LEGAL AND REGULATORY ISSUES ARE KEY DRIVERS OF FINANCIAL RISK**

Legal and regulatory impacts are the most frequent consequence of environmental issues, associated with 11 out of the 13 identified issues. With respect to legal and regulatory levers, there are numerous examples of farms being penalised for violations of environmental laws. For example, following a 500,000-gallon manure spill in 2008, the 1,000-cow dairy operation at Teabow Farms, Maryland, was forced to reimburse the town of Walkersville and Frederick County for providing emergency water supplies, testing and other costs. Given the significant harm to the environment caused by animal factory farming (e.g., water pollution), the industry as a whole is highly regulated in developed and developing countries. Therefore, violations of national environmental laws and regulations can result in heavy fines and other types of penalties. For example, in 1997 US-based pork producer Smithfield Foods was fined US$12.6 million for violating the Clean Water Act.

**THE INDUSTRY IS HIGHLY VULNERABLE TO THE COMBINATION OF INCREASINGLY DEMANDING ANIMAL WELFARE STANDARDS AND THE GROWING BODY OF STRINGENT ENVIRONMENTAL LAWS.**

There is a clear trend towards the introduction of more stringent environmental regulations in both developed and developing countries. This is occurring alongside...
the introduction of higher animal welfare standards. More stringent environmental laws would effectively force companies to ‘internalise’ costs that have previously been borne by society, undermining profitability.

Regulators are unlikely to rapidly introduce measures that would cause dramatic economic harm to the industry, particularly in locations where it is a key provider of jobs and tax revenue – over time however, such changes could erode margins within the sector. The following examples illustrate some of the sector’s key vulnerabilities to more stringent environmental laws:

- **Greenhouse gas emissions**: The livestock sector as a whole is responsible for 14.5% of man-made greenhouse gas emissions,\(^{38}\) exposing the sector to regulatory and social pressure to reduce its contribution to climate change and potentially imposing costs on producers.
- **Water pollution**: The geographic concentration of animal factory farming can lead to serious contamination of water resources. Environmental degradation caused by the substantial growth of industrial hog production led the state of North Carolina to permanently ban new hog CAFOs, while simultaneously introducing more stringent environmental regulations to protect water courses.
- **Farm animal welfare**: the European Union has introduced the most stringent legislation on this issue. A 2010 report found that European animal welfare policies increase the costs of businesses – over time however, that would cause dramatic economic harm to the industry, particularly in locations where it is a key provider of jobs and tax revenue – over time however, such changes could erode margins within the sector. The following examples illustrate some of the sector’s key vulnerabilities to more stringent environmental laws:

In addition to the immediate impacts on animal factory farms, natural hazards can affect input and output pricing throughout the meat value chain. Extreme cold weather, for example, can result in slower weight gains and affect livestock movement, contributing to severe escalations in the price of beef.\(^{42}\) Drought, on the other hand, combined with high feed costs, can prompt unplanned sales by farmers, temporarily reducing prices due to the sudden increase in meat supply.\(^{43}\) Price volatility for feed and meat presents challenges for actors across the value chain.

**Natural hazards, particularly droughts and heatwaves, have led to substantial financial impacts by affecting production.** These types of events can be experienced by actors across large geographical areas. For example:

- Annual losses for the US dairy industry as a result of heat stress have been calculated at US$497 million, or almost US$100 per cow\(^{40}\) (see case study 2).
- In 1999, Hurricane Floyd hit North Carolina causing extensive flooding and damage to local farms. As a major livestock-producing region, a large number of livestock were lost, including more than two million chickens, 1,180 cattle, 28,000 pigs and 752,970 turkeys.\(^{41}\) The estimated cost of the damage was over US$13 million.

**TABLE 2: Key environmental issues**

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>IMPACT ON FINANCIAL LEVERS</th>
<th>EXTENT OF IMPACTS</th>
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<tbody>
<tr>
<td></td>
<td>Production &amp; price</td>
<td>Magnitude</td>
</tr>
<tr>
<td></td>
<td>Market</td>
<td>Systemic,</td>
</tr>
<tr>
<td></td>
<td>Reputation</td>
<td>widespread,</td>
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<tr>
<td></td>
<td>Legal &amp; Regulatory</td>
<td>isolated)</td>
</tr>
<tr>
<td></td>
<td>Timescale</td>
<td></td>
</tr>
<tr>
<td>Disease outbreak</td>
<td>✔</td>
<td>S</td>
</tr>
<tr>
<td>Greenhouse gas (GHG) emissions</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Deforestation and biodiversity loss</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Natural hazards (e.g., heatwaves, drought, flooding) and weather conditions</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Climate change</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Water pollution</td>
<td>✔</td>
<td></td>
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<tr>
<td>Water scarcity</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Resource scarcity/competition for resources (e.g. land, feed inputs)</td>
<td>✔</td>
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</tr>
<tr>
<td>Poor animal welfare</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Waste generation</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>High water use</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Air pollution</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Soil degradation and desertification</td>
<td>✔</td>
<td>M</td>
</tr>
</tbody>
</table>

**Definitions**

**Magnitude**
- **Systemic**: impacts affecting a high proportion of operations across a large and potentially non-continuous area
- **Widespread**: impacts affecting a high proportion of operations within a particular region or country
- **Isolated**: localised impacts to individual operations or a small number of physically proximate operations

**Time-scale**
- **Short-term** (S) = evidence of significant impacts currently being experienced or may be measurable for up to two years
- **Medium-term** (M) = significant impacts may be measurable over two years up to five years
- **Long-term** (L) = significant impacts may be measurable over a period greater than five years
- **Uncertain** = significant impacts may be measurable over an uncertain time period

**Key environmental issues**

- **Uncertain** = significant impacts may be measurable over an uncertain time period
- **Long-term** (L) = significant impacts may be measurable over a period greater than five years
- **Medium-term** (M) = significant impacts may be measurable over two years up to five years
- **Short-term** (S) = evidence of significant impacts currently being experienced or may be measurable for up to two years

**FINANCIAL LEVERS**

**IMPACT ON**

**EXTENT OF**

**IMPACTS**

**PRODUCTION AND PRICING AFFECTED BY SHORT AND LONG TERM ENVIRONMENTAL ISSUES**

Short-term production risks are highlighted by the vulnerability of animal factory farming to natural hazards (which are likely to increase in frequency due to climate change) and regulatory responses to disease outbreaks. There are at least eight environmental issues with the potential to affect productivity at the farm level, thereby reducing financial performance at the facility and company level.

**Global Agenda for Sustainable Livestock**

“The impact of emerging diseases and accelerating climate change means that livestock sector-related investments need to tackle an ever evolving set of production, pest and disease problems – often in rapidly declining environmental conditions.”\(^{47}\)
Regulatory responses to threats posed by disease outbreaks can also lead to sudden and severe consequences. For example, in April 2014, Japanese officials ordered a farm owner to cull more than 100,000 chickens following tests which confirmed the presence of avian influenza in Kumamoto prefecture, southern Japan. The authorities also restricted shipment of around 600,000 chickens in the prefecture. In the previous outbreak in 2010-2011, nearly two million chickens were culled across nine prefectures. Similarly, an outbreak of PEDV (Porcine Epidemic Diarrhoea Virus) caused severe economic damage to US pig farmers in 2013 with large numbers of hogs culled and restrictions placed on sales and transport.

Medium- to long-term production risks (such as resource scarcity and climate change) are more likely to have gradual financial impacts. Increasing competition for scarce resources is recognised as a threat to animal factory farming. According to the OECD and the FAO, competition for land and water will limit the increase in meat production in many regions and countries. In addition, by concentrating meat production into fewer and larger facilities, the industry becomes more reliant on feed grain inputs due to the reduced role played by pasture-fed production. This trend increases the financial risks to the sector stemming from high and volatile feed grain costs.

Similarly, severe drought in California forced many farmers to sell all or some of their cattle in 2014 due to increased costs and competition for feed. As of September 2014, the US Department of Agriculture indicated that 83% of cattle in California were located in areas of “exceptional drought”.21

The economic impacts of future heat stress on livestock are likely to be severe, with intensively raised animals facing unique vulnerabilities. Discounting the costs of adaptation and extreme weather events, by 2080 the costs to the UK livestock industry as a result of heat stress has been estimated at £5.8 million in production losses and £34 million in mortality losses. The impacts on animal factory farming are likely to increase over the next few decades but do not appear to be fully appreciated by the industry (see Case study 2).

**REPUTATIONAL RISKS AFFECT FINANCIAL OUTCOMES AT COMPANY AND INDUSTRY SCALE**

Environmental issues are a key driver of reputational risks, but the financial consequences of these risks are difficult to assess. Reputational risks can arise from both operational and strategic issues. Poor animal welfare, disease outbreaks, or incidents leading to severe water pollution are often due to breakdowns in management controls. In contrast, conflicts over land, water, and deforestation caused by the growing competition for land and water will limit the increase in meat production in many regions and countries. In addition, by concentrating meat production into fewer and larger facilities, the industry becomes more reliant on feed grain inputs due to the reduced role played by pasture-fed production. This trend increases the financial risks to the sector stemming from high and volatile feed grain costs.

Animal factory farming has already been affected by extreme weather events that were consistent with the predictions of climate change. For example, record heat and drought across much of Australia in 2014 led to the deaths of thousands of cattle and forced farmers to send cattle to slaughter. According to media reports, some farmers claimed that without significant rains their operations would be worthless and they would need to abandon their properties.

REPUTATIONAL RISKS AFFECT FINANCIAL OUTCOMES AT COMPANY AND INDUSTRY SCALE

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**CASE STUDY 2: FACTORY-FARMED CATTLE FEEL THE HEAT FROM CLIMATE CHANGE**

The economic cost of heat stress can be significant. In the US alone, heat stress is estimated to cost the dairy and beef industry as much as US$897 million and US$369 million per annum, respectively. For dairy cattle, this figure translates to an annual average of US$100 per cow. However, future climate change will alter regional temperature regimes in many parts of the world. The latest Intergovernmental Panel on Climate Change (IPCC) report, released in 2013, identifies that future increases in heat stress are a significant threat to the health of animals and humans alike.

Companies involved in animal factory farming can benefit from a better understanding of future heat stress risks. Investors can also use information such as this to develop a greater appreciation for the potential extent and frequency of losses from heat stress, and how this can impact financial performance.

**INTENSIVELY FARMED COWS MORE VULNERABLE TO HEAT STRESS**

Cattle are very sensitive to heat stress, which can have adverse physiological effects, resulting in decreased milk yield, breeding inefficiency, slower weight gain and general poor health. Heat stress symptoms occur when the cow is unable to regulate its body temperature. Severe heat stress can cause cattle to become uncoordinated and weak, and can result, ultimately, in death. Although all cattle are vulnerable to heat stress, feedlot cattle are typically more at risk than pastured cattle.

In part this is because pastured cattle are able to seek shade, water and air movement to help keep cool. In contrast, radiant heat is increased for feedlot cattle from the dirt or concrete surfaces on which they are housed.

There are concerns within the industry that insufficient attention has been paid to the future impacts of climate change on the industry, particularly as temperatures become warmer and more unpredictable, and less hardy species of cattle are being introduced to food chains.

New data reveals extent of global heat stress change

The current and future exposure of cattle to heat stress has been assessed using the most up-to-date climate model data. This analysis reveals the extent of heat stress impacts as a result of climate change at the global, national and subnational level:

- By 2045, each cow globally will experience on average 29
- The top 10 countries with the greatest head of cattle across all 247 countries, the number of days on Stress Days per year.
- The current and future exposure of cattle to heat stress has been assessed using the most up-to-date climate model data. This analysis reveals the extent of heat stress impacts as a result of climate change at the global, national and subnational level:

  - By 2045, each cow globally will experience on average 29 Stress Days per year.
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  - By 2045, each cow globally will experience on average 29 Stress Days per year.
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  - By 2045, each cow globally will experience on average 29 Stress Days per year.
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  - By 2045, each cow globally will experience on average 29 Stress Days per year.
  - The top 10 countries with the greatest head of cattle across all 247 countries, the number of days on Stress Days per year.
Top ten cattle producing countries by head of cattle, 2013

HEAT STRESS DAYS PER YEAR (2026–2045)*

- 331–365
- 301–330
- 271–300
- 241–270
- 211–240
- 181–210
- 151–180
- 121–150
- 91–120
- 61–90
- 31–60
- < 31
- No data

* Heat Stress Days are calculated as the number of days per year that the temperature-humidity index exceeds 72.


FIGURE 3: Future heat stress and impacts on key cattle producing countries
2.4 SOCIAL ISSUES AND IMPACTS

11 social issues impact the animal factory farming industry.

- Health impacts from antibiotic misuse and pandemic risk show high potential for material impacts.
- Social issues are challenging to measure but put large amounts of financial value at risk.
- Reputational damage due to changing consumer attitudes present both short-term and long-term risk.

SOCIAL ISSUES ARE A KEY DRIVER OF FINANCIAL OUTCOMES BUT CHALLENGING TO IDENTIFY AND MEASURE

There is a tremendous amount of financial value potentially at risk as a result of social issues. However, it is difficult for companies involved in animal factory farming or linked to the wider value chain to fully grasp the implications as the relationship between social issues and financial outcomes can be unclear. There is also less of an emphasis on social issues within the available literature. Therefore, the emergence and extent of costs due to social issues is often hard to predict, fully recognise and account for; costs can also unfold over a long period of time. Each of the social issues identified in Table 3: Key social issues, apart from one (labour availability and productivity), includes a significant reputational component. This alone creates additional challenges in specifying the financial impact.

REPUTATIONAL AND MARKET CHALLENGES ARE AMPLIFIED BY STRENGTHENING SOCIAL ATTITUDES

Changing consumer preferences around animal welfare standards present longer-term risks and opportunities for investment in animal factory farming. US surveys have found that 95% of consumers want farm animals to be treated well and more than 80% of people feel it is important that the chickens they eat are raised humanely. In the UK, a 2012 report published by the RSPCA’s Freedom Food farm assurance scheme found that for 48% of Britons animal welfare is either ‘extremely’ or ‘very’ important to them when choosing food. This confirms multiple surveys indicating that UK and European citizens would like to see an improvement in the welfare of farmed animals. Companies failing to respond to shifts in public perceptions risk missing out on market opportunities. In contrast, companies may be able to future-proof their investments by recognising the importance of farm animal welfare and associated issues such as sustainability.

Increasing public concern over farm animal welfare and associated food safety standards heightens reputational risks to companies and therefore potential financial impacts. The food sector as a whole is sensitive to changing public sentiment as regards animal welfare issues. For example, research by academics at Kansas State University found that media coverage of animal welfare issues in the US reduced pork and poultry demand over the study period. Mounting public concern related to these issues also means that it is more likely that companies will face scrutiny from pressure groups and the media. There are multiple examples from Europe, North America and Asia where companies have been targeted because of their links with industrial meat production:

- In July 2014, an undercover investigation by the Guardian newspaper revealed multiple alleged hygiene failings in the UK poultry industry. The report led to questions over the auditing systems used by leading supermarkets to ensure good hygiene standards and prompted several of them to launch emergency investigations into their chicken suppliers.
- In July 2014, an undercover TV investigation revealed that a Shanghai meat factory was selling out-of-date chicken and beef to a number of US fast food chains, including McDonald’s and Yum Brands, which owns KFC and Pizza Hut. Although the chains immediately stopped using the supplier, both experienced drops in their share prices.
- In 2008, evidence of animal cruelty and health concerns were brought against California-based Hallmark/ Westland Meat Packing Company, prompting the US Department of Agriculture to recall over 140 million pounds of beef (the largest beef recall in US history). A US$600 million court judgement was also made against the company, and it went bankrupt in 2012.

Companies implicated in poor animal welfare scandals may face severe reputational damage and consumer boycotts. Clients may also cancel contracts or avoid purchasing from companies that have been linked to these practices. Corporate approaches to farm animal welfare are seen increasingly by investors as an indicator of how companies respond to shifting social attitudes and consumer preferences, and can also reveal how well they are positioned to manage risks embedded within their supply chains.

TABLE 3: Key social issues

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>IMPACT ON FINANCIAL LEVERS</th>
<th>EXTENT OF IMPACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive antibiotic use</td>
<td>✓</td>
<td>S</td>
</tr>
<tr>
<td>Spread of infectious diseases/ global health pandemics</td>
<td>✓ ✓ ✓ ✓</td>
<td>S</td>
</tr>
<tr>
<td>Social backlash against poor animal welfare standards</td>
<td>✓ ✓ ✓ ✓</td>
<td>M-L</td>
</tr>
<tr>
<td>Changing consumer preferences</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>S</td>
</tr>
<tr>
<td>Poor working conditions</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>S</td>
</tr>
<tr>
<td>Human rights violations</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>S</td>
</tr>
<tr>
<td>Labour availability and productivity</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>M-L</td>
</tr>
<tr>
<td>Health impacts on surrounding communities</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>M-L</td>
</tr>
<tr>
<td>Loss of rural livelihoods</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>U</td>
</tr>
<tr>
<td>Land rights violations</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>U</td>
</tr>
<tr>
<td>Social licence to operate compromised due to opposition to new development</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>S-M</td>
</tr>
</tbody>
</table>

For definitions and colour key, refer to Table 2 on page 18.
On 20 July 2014, a major food safety scandal in China broke in the local and international media. Following a television investigation, Chinese authorities accused Shanghai Husi Food Co. (owned by US-based OSI Group) of intentionally selling meat beyond its shelf life. The food manufacturer had been supplying fast-food chain restaurants in China and Japan, including Yum! Brands, McDonald’s and Starbucks.

In the aftermath of the news, buyers quickly cancelled their orders from the Shanghai supplier and in some cases the OSI Group as a whole. Within days the OSI Group had also withdrawn all implicated products from the marketplace. Despite this, the negative news coverage rapidly hit fast-food sales in China, prompting a decline in the full-year earnings of fast-food restaurants as well as a drop in share prices.

Referring to the Shanghai incident in its August quarterly report, McDonald’s issued a warning that “As a result of the China supplier issue, the Company’s global comparable sales forecast for 2014 is now at risk.”

In a financial report released just days after the incident broke, Yum! Brands stated that “The result has been a significant, negative impact to same-store sales at both KFC and Pizza Hut. While sales are rebounding, same-store sales continue to be negative.”

Financial analysis for July to October (see Figure 4) shows that the fall in sales had a substantial impact on the company share prices of Yum! and McDonald’s. The companies recorded a fall in share price of 8.29% and 7.4%, and a drop in equity of US$3.6 billion and US$7.2 billion, respectively, between 18th July and 20th October 2014.

By November 2014, the value of Yum! and McDonald’s share prices and equity had risen again, although they still remained lower than that recorded before the scandal broke. Comparably, Starbucks, who were less visibly associated with Shanghai Husi Food Co., reported a less significant drop in equity of US$2.4 billion between 18th July and 20th October 2014. Furthermore, by November 2014, Starbucks’s equity value had risen to levels almost matching that prior to the scandal breaking.

It is too early to know how quickly sales will rebound in China and the corresponding full-year financial impact to Yum! Brands. However, if the significant sales impact is sustained, it will have a material effect on full-year earnings per share.”

In its October quarterly report, Yum! said that “since July 21st, China Division has experienced a significant, negative impact to sales and profits at both KFC and Pizza Hut. While sales are rebounding, same-store sales continue to be negative.”

HEALTH IMPACTS, PARTICULARLY FROM ANTIBIOTIC USE AND POTENTIAL PANDEMICS, POSE SECTOR-WIDE REPUTATIONAL AND REGULATORY RISK

Global health pandemics and public concerns over animal welfare have resulted in clear financial impacts to the agricultural sector as a whole and to individual companies. Animal factory farming has been implicated in a number of global health scares. There is evidence that the 2009 H1N1 strain of swine flu – which the CDC estimates resulted in between 151,700 and 574,400 deaths globally27 – first originated in US factory farms in 1998.25 In addition, poultry factory farming was implicated in the emergence and spread of bird flu (or avian influenza) in both 2015 and 2003. The large number of densely confined birds facilitates the mutation of viruses into harmful strains and international trade contributes to the global spread.

The industry at both a national and regional level is highly exposed to negative financial consequences in the event of disease outbreak. According to one study, the H1N1 outbreak led to an 11% drop in global pork trade.24 In the US, farmers were estimated to be losing US$30 to US$35 on every sold pig. Major producers such as Tyson Foods and Smithfield Foods were reducing their herds and selling assets, and thousands of producers were predicted to be put out of business.25 The sudden reduction in consumer demand saw pork prices drop in many countries. Market access was also restricted for many producers as major importers such as Russia and China introduced import bans on pork from the US (see Case study 4 for further information on the financial impacts of global health pandemics and food safety scandals at a sector level.).

“Resistance in the foodborne zoonotic bacteria Salmonella and Campylobacter is clearly linked to antibiotic use in food animals, and foodborne diseases caused by such resistant bacteria are well documented in people.”

International Finance Corporation

The animal factory farming industry may suffer reputational impacts and is subject to unforeseen costs due to impacts to human health arising from excessive antibiotic use. According to estimates, approximately 50% of all antibiotics used in the UK and 80% of all antibiotics sold in the US are given to farm animals.27 Moreover, farm use of antibiotics has increased over the past decade while human medical use is declining.24 Antibiotic resistance presents an increasing human and animal health risk globally, linked to a higher risk of death and more severe illness. The additional costs of healthcare associated with antibiotic resistance are huge – estimated costs to the US economy reach as high as US$20 billion in direct healthcare costs.79 There is substantial debate over the use of antibiotics within animal factory farming, particularly those considered critically important for human and animal medicine. The debate is driven by concern over the development of drug-resistant bacteria in humans, such as E. coli, Salmonella and MRSA, which can be linked to high antibiotic use in farm animals. In June 2015 an investigation by the Guardian newspaper in the UK found that the livestock-associated MRSA CC398 virus, which is linked to the intensive farming of pigs, had spread to humans. In Denmark 1,271 people contracted the CC398 bug as a result of the infection.26
Regulatory restrictions on the use of antibiotics in farm animals will result in financial harm, as animal factory farming is dependent on high use of antibiotics as a main driver of profitability. Within the industrial model, antibiotics are used for both prevention and treatment of disease and for growth promotion. Restrictions on prophylactic antibiotic use could undermine productivity due to the increased prevalence of disease and sickness in densely packed facilities. More comprehensive bans on antibiotics that constrain drug use in the entire chain of chicken production (including parent birds) would cause more significant financial harm, as they would require a complete restructuring of the infrastructure of the animal factory farm model.

Some European countries, including the Netherlands and Denmark, have banned the use of preventative antibiotics in farming, while it is still legal in the UK and the USA (with antibiotic use for growth promotion also legal in the USA). There is mixed evidence relating to the economic impact of these bans, as they do not apply to the whole supply chain and only cover certain antibiotics. For example, according to the World Health Organisation (WHO), Denmark’s 1998 ban on use of some antibiotics for broiler chickens and swine did not significantly affect farmers’ incomes; in contrast, industry-funded research found that several large producers experienced severe health problems and large costs. It has been estimated that a similar ban on antibiotics in the US would cost producers US$4.50 per animal during the first year and cost the industry over US$700 million over a 10-year period (at 2003 prices).

However, these European bans remain limited as they only cover drugs deemed presently valuable for humans and treatment of birds for direct human consumption, rather than addressing the full chain of chicken production (including parent birds). Therefore, this negative impact on industry may be minimal compared to what could be on the horizon in the regulatory future, as consumers and governments begin to demand more meaningful elimination of drugs from the production system.

A related investment risk stems from trade restrictions arising over the use of antibiotics in animal feed. For example, in 1989 the EU banned the import of beef from animals raised using growth hormones – the move was in response to concerns about the addition of six hormones to the vast majority of American beef. Now rising fears over antibiotic resistance are prompting many jurisdictions, including the EU, New Zealand and South Korea, to introduce restrictions and bans on the import of livestock and poultry products grown with antimicrobial drugs.

The introduction of these measures can have a negative impact on producers in countries with more lax regulations. While it is difficult to predict or quantify the aggregate magnitude of impact to affected producers, it is an area that investors can readily monitor and assess. Some companies within the industry are beginning to address reputational risks presented by antibiotic use. In the last two years, a number of large food producers that operate animal factory farms have taken significant steps to reduce the amount of antibiotics they use.

In September 2014, Perdue Farms, the third largest producer of chicken, beef and pork globally – announced it had stopped using antibiotics at its chicken hatcheries. The following month Tyson Foods – the second largest producer of chicken, beef and pork globally – announced it was no longer using antibiotics in its 35 chicken hatcheries. Changing consumer attitudes towards antibiotic use are also presenting commercial opportunities. Despite the risk of increased production costs, sales of antibiotic-free meat are growing quickly – indicating increased consumer demand. According to market research, the value of US sales of antibiotic-free chicken rose by 34% in 2013.18

LOCAL IMPACTS UNDERMINE THE INDUSTRY’S REPUTATION, JEOPARDISING SOCIAL LICENSE TO OPERATE

There are multiple social issues linked to the impacts of animal factory farming on those working in the industry and on surrounding local communities.

Social issues include impacts on rural livelihoods and health, poor working conditions, and human rights and land rights violations. Where adverse impacts are experienced by workers – including illegal, migrant or seasonal workers, those on low wages, and child, forced or trafficked workers – costs to the company are likely to arise in the form of fines, compensation or legal fees, and reputational harm.

In 2005, Human Rights Watch found that in the US, “meat and poultry industry producers set up the workplaces and practices that create [health and safety] dangers, but they treat the resulting mayhem as a normal, natural part of the production process, not as what it is – repeated violations of international human rights standards”. In response to a high number of fatalities and injuries on Wisconsin dairy farms, the Occupational Safety and Health Administration (OSHA) established a more rigorous inspection regime in 2012.14 Approximately 40% of the state’s 34,000 dairy farm labourers are immigrants, the implication being that they are less likely to be familiar with health and safety rights and responsibilities than domestic workers. As animal factory farming becomes more dominant in Asia, low labour standards and enforcement regimes are likely to pose increasing reputational risks to investors.

Another often cited example of mismanaged social risks is AgriProcessors slaughterhouse (now AgriStar) in Postville, Iowa. In this case, a 2004 undercover expose into animal cruelty prompted investigations into worker rights abuses and the use of undocumented workers. In 2008 the plant was subject to the largest single-site immigration raid in US history and the plant went bankrupt as a result.16

When animal factory farms impact on local communities, costs borne by companies are likely to arise as a result of conflict. Issues such as the loss of rural livelihoods or health impacts may become intertwined with environmental concerns and result in community opposition to proposed or current facilities. Examples of community opposition to factory farms exist in multiple jurisdictions, in both developed and developing countries.

In 2014, community opposition was mobilised against a proposed 25,000-pig factory farm near Foston, in the county of Derbyshire, UK. The concerns cited by the opposition group included: animal welfare; the use of antibiotics, and their potential impact on human health; air pollution and bad odours; the economic effects on smaller producers, and increased traffic. The strength of opposition contributed to lengthy delays in the approvals process for the Foston Farm. The farm was first proposed in 2009 and had still not been approved as of November 2014.

In Germany, civil society halted the development of 11 factory farming operations within a four-month period while in the Netherlands, a judge ruled against what would have been the country’s first animal factory farm – a proposed development for housing 1.1 million chickens and 35,000 pigs.17 There is very limited empirical evidence as to the economic costs of these events to the affected companies. However, it is likely that costs will emerge as a result of delays during the approval or construction process, extra staff time required to manage conflicts, and reduced productivity due to work disruptions.
Global health pandemics – such as swine flu, avian influenza (bird flu) and Bovine Spongiform Encephalopathy (BSE) – pose a major financial risk to investments in companies linked to animal factory farming, including those in the wider meat supply chain. It is difficult to disentangle the financial impacts on companies arising from pandemic outbreaks from other factors that can affect performance. However, analysis of the US swine flu outbreak of 2009 and the China avian flu outbreak of 2013 indicates a correlation between these events and the underperformance of companies with significant exposure to the pork and poultry sectors.

### SWINE FLU (2009)

The 2009–2010 H1N1 strain of swine flu began in spring 2009, spreading to the US via Mexico. As the outbreak unfolded in April 2009, investors responded by moving money from exposed sectors, with shares in pork producers, airlines and hotel firms suffering as a result. The outbreak forced major US producers to reduce their swine herds and sell assets, while the viability of thousands of smaller producers was also compromised. The outbreak forced major US producers to reduce their swine herds and sell assets, while the viability of thousands of smaller producers was also compromised. The outbreak forced major US producers to reduce their swine herds and sell assets, while the viability of thousands of smaller producers was also threatened.

By January 2010, there were confirmed cases in 171 countries and 14,738 deaths attributed to the virus (although the true figure is likely to be much higher).

Although the impact on share prices was significant, it was also short-lived and these large companies performed well over the course of the year. In part this was due to the easing of concerns over the pandemic and a better understanding of the risks presented by the virus, as well as a general improvement in economic conditions.

### AVIAN FLU (2013)

The H7N9 strain of bird flu was first recorded in China in March 2013. According to the World Health Organisation, most cases of human infection were reported following exposure to live poultry and contaminated environments. The virus spread promptly culling and restrictions on live poultry markets in China, resulting in significant economic impacts. A 2014 study of the February to May 2013 outbreak estimates poultry industry losses of US$1.24 billion in the ten affected provinces and US$0.59 billion across eight neighbouring, unafflicted provinces, with lost sales accounting for the majority of the losses.

Several large poultry producers have been adversely affected by the most recent outbreak, including Thai-based Charoen Pokphand Foods PCL (CPF) and Chinese company New Hope Liuhe Co Ltd.

CPF is Thailand’s largest agribusiness, operating in over 20 countries with over 100,000 employees. CPF’s operations include live animal production, feed, hatcheries, animal health services and food processing. It is involved in the manufacture and distribution of feedstuffs, and meat and milk products. The company was China’s biggest poultry producer in 2012.

Between 29 March and 31 December 2013, the share prices of both companies underperformed relative to many industry peers and the MSCI Asia Agriculture and Food Chain Index for large periods. Over these months shares in CPF fell by 15%, reducing its market capitalisation by US$1.23 billion. It was not the first time the company had been adversely affected by the virus. During a bird flu outbreak in 2003–04 the company’s shares experienced a sudden 6.5% drop after Thailand confirmed its first human deaths from the virus and Japan and the EU imposed bans on Thai chicken products.

Although the share price of New Hope Liuhe increased by 20% between March and December 2013, between the end of March and 26 July the share price declined by 26%. According to Forbes Asia, as a result of bird flu net profits at New Hope Liuhe dropped 15% in the first half of the year to US$141 million. The company’s Chairman Liu Yonghao stated that bird flu had ‘tremendously impacted’ Chinese poultry farmers and that in response to the virus he was looking to invest outside of China, mainly in developed countries.

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CASE STUDY 4: RISK OF PANDEMIC DRIVES UNDERPERFORMANCE OF FOOD COMPANIES

US-based Smithfield Foods, Tyson Foods and Hormel Foods were three of the world’s largest pork producers. As illustrated in Figure 5, each company suffered a drop in share price following initial confirmation by US authorities of several human cases of swine flu in April 2009. Between 14 April and 28 April, Smithfield Foods experienced the greatest decline, with shares dropping 12.8%. The company was linked to the initial disease outbreak at a Mexican subsidiary. Tyson share prices declined by 5.6% over the period and Hormel shares dropped by 3.1%. In comparison, the MSCI US Agriculture and Food Chain Index – which includes US listed companies operating across the agriculture food chain – fell by 1.5% over the period.

Tyson Foods and Hormel Foods make reference to swine flu in their financial reports for 2009, outlining the risk to business from impacts on production, export restrictions and changing demand for pork products. Smithfield stated that the company’s first quarter 2009 loss “reflects the continuing adverse business environment in the hog production segment ... the sharply lower hog prices reflect the impact of the H1N1 outbreak at the end of the prior quarter.”

Although the impact on share prices was significant, it was also short-lived and these large companies performed well over the course of the year. In part this was due to the easing of concerns over the pandemic and a better understanding of the risks presented by the virus, as well as a general improvement in economic conditions.

**AVIAN FLU (2013)**

The H7N9 strain of bird flu was first recorded in China in March 2013. According to the World Health Organisation, most cases of human infection were reported following exposure to live poultry and contaminated environments. The virus spread promptly culling and restrictions on live poultry markets in China, resulting in significant economic impacts. A 2014 study of the February to May 2013 outbreak estimates poultry industry losses of US$1.24 billion in the ten affected provinces and US$0.59 billion across eight neighbouring, unafflicted provinces, with lost sales accounting for the majority of the losses.

Several large poultry producers have been adversely affected by the most recent outbreak, including Thai-based Charoen Pokphand Foods PCL (CPF) and Chinese company New Hope Liuhe Co Ltd. CPF is Thailand’s largest agribusiness, operating in 12 countries including China where they are heavily involved in swine and poultry production. New Hope Liuhe operates across multiple countries in Asia and is involved in the manufacture and distribution of feedstuffs, and meat and milk products. The company was China’s biggest poultry producer in 2012.

Between 29 March and 31 December 2013, the share prices of both companies underperformed relative to many industry peers and the MSCI Asia Agriculture and Food Chain Index for large periods. Over these months shares in CPF fell by 15%, reducing its market capitalisation by US$1.23 billion. It was not the first time the company had been adversely affected by the virus. During a bird flu outbreak in 2003–04 the company’s shares experienced a sudden 6.5% drop after Thailand confirmed its first human deaths from the virus and Japan and the EU imposed bans on Thai chicken products.

Although the share price of New Hope Liuhe increased by 20% between March and December 2013, between the end of March and 26 July the share price declined by 26%. According to Forbes Asia, as a result of bird flu net profits at New Hope Liuhe dropped 15% in the first half of the year to US$141 million. The company’s Chairman Liu Yonghao stated that bird flu had ‘tremendously impacted’ Chinese poultry farmers and that in response to the virus he was looking to invest outside of China, mainly in developed countries.

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**FIGURE 5:** US pork producers see share prices plummet following swine flu outbreak, Apr 2009

**FIGURE 6:** Major Asian poultry firms see share price declines during avian influenza outbreak, 2013
2.5 GOVERNANCE ISSUES AND IMPACTS

4 broad governance issues impact the animal factory farming industry

Animal factory farming vulnerable to changes to the commercial context in which it operates

Changes in government policy, particularly subsidy support, present significant financial risk

Shifting production to developing countries presents strong longer-term risk due to less robust corporate governance in these countries

GOVERNANCE ISSUES DETERMINED BY CORPORATE AND POLITICAL DECISION MAKING

Within this report, governance refers to both internal corporate management activities and the external commercial context as defined by politics and regulatory decisions. Like most industries, animal factory farming is highly vulnerable to changes to the commercial context in which it operates. Strong evidence suggests that the future success of the industry is dependent on continuity in government policy. This is particularly true with respect to direct and indirect subsidy support. There is also growing recognition among corporations and investors that companies which can show they are more prepared for the ESG issues they face are better positioned to manage them. In turn, enhanced disclosure on ESG issues can help to attract investment and drive long-term value.108

POLICY CHANGES COULD DRAMATICALLY AFFECT PRODUCTION, PRICING AND MARKET ACCESS

Changes in government policy, particularly subsidy support, present significant financial risks to animal factory farming. The industry receives subsidy support in both developed and developing countries. The majority of attention has focused on the US, where the animal factory farming industry receives direct and indirect government support. Direct support includes insurance payments, which protect farming operations from income losses stemming from weather-related disasters or reduced revenue. Indirect support arrives via the purchase of subsidised grain (for policies which result in crop overproduction), and public funding to help prevent pollution and remediate polluted land.

In the US, the animal factory farming industry receives public support in the form of funding (US$125 million in 2007) to help prevent pollution from farms, and publicly met remediation costs (US$56 million just in Kansas) for cleaning up the land under hog and dairy CAFOs.109

In China, animal factory farming has received government support via various subsidies and land access.110

Feed prices often account for the largest proportion of operating costs. Therefore, increasing feed costs are likely to have a material impact on financial performance. Evidence indicates that grain subsidies created over a number of decades indirectly benefit CAFOs in the US by almost US$4 billion annually.111

As a result of the US Farm Bill (1996), commodity prices dropped to 26% below production costs, thereby dramatically reducing feed costs for industrial operations.112 This decline reduced hog CAFO operating costs by 13%, saving these types of operations US$947 million annually between 1997 and 2005.113

Academic research shows that changes to the Farm Bill saw the US broiler industry gain average monetary benefits of US$1.25 billion per year between 1997 and 2005.114 The research concluded that although the Farm Bill was designed to support family farmers, agribusiness and industrial livestock operations are major beneficiaries. Furthermore, it found that government policies were effectively driving industrialisation in the livestock production system by “making factory farms appear more cost efficient than diversified, independent operations that grow their own feed.”

GOOD CORPORATE GOVERNANCE REQUIRED TO MANAGE EMERGING ESG RISKS AND OPPORTUNITIES

The range and significance of ESG issues related to animal factory farming underscores the importance of strong corporate sustainability disclosure.

The evidence presented above includes multiple examples of how ESG issues have impacted financial performance. However, animal factory farming is exposed to ESG issues that can result in financial impacts over medium and longer term horizons. Disclosure and transparency can provide investors with insight into how companies are managing their ESG exposure. Additionally, although not specific to animal factory farming, there is evidence showing that a strong ESG reputation can help to shield companies from financial harm.115 Overall, evidence suggests that companies with high ratings for corporate social responsibility (CSR) and ESG issues enjoy a lower cost of capital.116 Such companies are also a lower risk to investors.117

Large corporations with significant exposure to animal factory farming (either directly through ownership of operations or indirectly as a result of their position with the wider value chain) have begun to focus on improving their sustainability reporting. Smithfield Foods released an integrated report in 2013, fulfilling the application level A from the Global Reporting Initiative for the first time. The company’s “reputation for quality and safety” was a cited as a key factor in Chinese pork producer, WH Group’s US$4.7-billion acquisition of Smithfield in 2013.118

Good corporate governance is also likely to become an increasingly important factor due to the exposure of animal factory farming to ESG issues and high levels of industry growth in developing economies. There is strong empirical evidence that good corporate governance affects overall company performance,119 although there is little information specific to animal factory farming. It is also recognised that a key function of corporate governance is, according to the OECD, to ensure that “risks are understood, managed and, when appropriate, communicated”.120 The substantial and potentially material financial risks presented by ESG issues underscore the importance of strong corporate governance with respect to animal factory farming.

For definitions and colour key, refer to Table 2 on page 18.

TABLE 3: Key governance issues

<table>
<thead>
<tr>
<th>ISSUES</th>
<th>IMPACT ON FINANCIAL LEVERS</th>
<th>EXTENT OF IMPACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy changes (e.g. removal of government subsidies, changes to policy, trade restrictions)</td>
<td>✔ ✔ ✔ ✔</td>
<td>✔️ M</td>
</tr>
<tr>
<td>Weak regulatory oversight</td>
<td>✔ ✔ ✔ ✔</td>
<td>✔️ S</td>
</tr>
<tr>
<td>Sustainability disclosure</td>
<td>✔ ✔ ✔ ✔</td>
<td>✔️ S–M</td>
</tr>
<tr>
<td>Corporate governance</td>
<td>✔ ✔ ✔ ✔</td>
<td>★ S–M</td>
</tr>
</tbody>
</table>

For definitions and colour key, refer to Table 2 on page 18.

“China’s food industry has faced a real crisis of confidence over the past seven years. Despite government efforts, the number of scandals continues to keep coming. [Should the US trust Chinese food processing given] China’s poor enforcement of their own laws and rampant corruption?”113

Chris Smith (US Republican politician)
Furthermore, animal factory farming is assuming a more dominant role in developing countries, where corporate governance is less robust than in developed countries. Less developed countries are expected to account for 77% of additional meat output growth between 2012 and 2021. Despite being lauded for ‘quality and safety’, corporate governance concerns were among the reasons why the China’s WH Group’s initial IPO was cancelled in April 2014. In contrast, UK poultry producer Moy Park demonstrates a robust approach to corporate governance and a progressive attitude towards sustainable meat production. These factors have contributed to a positive outlook and keen investor interest in the company’s potential IPO (see Case study 5).

**CASE STUDY 5: STRONG GOVERNANCE OF FARM ANIMAL WELFARE ISSUES BOOSTS REVENUE AND INVESTOR INTEREST**

UK poultry producer Moy Park, was purchased by Brazil-based chicken giant JBS in June 2015, for a reported $1.5bn.

Moy Park’s progressive strategy to focus on marketing its high-quality, high-welfare chicken appears to support strong sales and the company’s continued development. The company has not been implicated in recent food safety scandals involving the UK poultry industry. In the second quarter of 2014, Moy Park’s revenue rose by 0.6% to £356.4 million.

Moy Park was the first company in the UK to introduce free range and organic birds. The company is now the largest producer of organic and free range chicken in the UK and Ireland. Although the company’s chickens are raised using a variety of ways – organic, free range, indoors – all methods aim towards higher welfare standards. For example, Moy Park has stringent stocking density standards and antibiotic-use policies. According to Moy Park’s principles, it is committed to working with its farmers to ensure that the best welfare conditions are provided for all of its birds.

The company’s animal welfare programme is based on the concept of the Five Freedoms, in which all Moy Park farmers must be trained. Furthermore, the company has a fully traceable supply chain in place and actively works to reduce its carbon footprint. It also operates an ‘Antimicrobial Stewardship Forum’, which aims to educate poultry producers in antimicrobial resistance and best practice to reduce usage of antimicrobials.

Sustainability disclosure is supported through a plethora of literature, including Moy Park’s ‘Farming Way’ booklet and Corporate Responsibility brochures, as well as the company website. Moy Park’s clear commitment to corporate responsibility and responsible farming has been awarded in several ways. The Business Benchmark on Farm Animal Welfare [BBFAW], which assesses companies on their approach to managing farm animal welfare, recognises the efforts of Moy Park (under the Marfrig Group).

In 2013, Moy Park reached Tier 2 [‘Integral to Business Strategy’] of the BBFAW, improving from Tier 4 [‘Making Progress on Implementation’] in 2012. Moy Park was also the first poultry company to be recognised in the Business in the Community’s Corporate Responsibility Index. This was improved upon in 2014, when the company was awarded a ‘3 star’ rating in the index.

Legal and regulatory frameworks and government oversight is also generally weaker in developing countries, increasing the potential risks associated with many ESG issues. For example, the explosion in pig production in the Chinese city of Jiaxing in Zhejiang province has led to severe environmental damage, improper production and processing practices, and a black market meat trade. The severity of the problem was brought to international attention when, in March 2013, more than 16,000 dead pigs were found in the region’s waterways, threatening drinking supplies. In locations such as these there will be a greater onus on companies to ensure they are mitigating risks to their own operations and in their supply chains.

**CHAPTER 3:** INTEGRATING ANIMAL FACTORY FARMING RISKS INTO INVESTMENT PROCESSES

3.1 OVERVIEW

The food and agriculture sector presents significant investment opportunities with a growing world population driving ever-increasing demands for more food. However there are signs of growing recognition amongst stakeholders, including many in the financial sector, that investments in agriculture should not negatively affect people, livelihoods and the natural environment.

Within this context, animal factory farming is under increasing scrutiny and some leading investors are looking more carefully at risks associated with the sector including development finance institutions and those who define themselves as mainstream responsible investors.

3.2 INVESTING IN FOOD AND AGRICULTURE

The food and agriculture sector presents significant investment opportunity. Overall food production must increase by around 70% between 2005/07 and 2050 to meet rising global food need. This is being driven by population growth and, currently, by greater demand for animal protein as a result of rising wealth. Meanwhile, there has also been an upward trend in food prices in recent years. On the back of these fundamentals, appetite for agricultural investment is strong and can be met through several options including commodity futures, equity in farming and food production companies, and agricultural ETFs.

For many investors the sector is attractive because of the additional potential for positive returns or value preservation. It also provides an opportunity to diversify portfolios, manage inflation risks and provide exposure to emerging markets.

However, there are signs that the financial community is beginning to recognise the need to ensure that investments in agriculture, including meat production, are responsible and do not negatively affect people, livelihoods and the natural environment. In response, a number of instruments – guidelines, compacts, principles, standards, etc. – have been created to help inform responsible investment across the agricultural sector and specific sub-sectors, such as livestock production. For example, the International Finance Corporation (IFC) issued voluntary guidelines and recommendations for clients on how to incorporate animal welfare considerations in intensive livestock operations. Instruments such as these are increasingly being used by investors to help improve financial performance, manage risk and contribute to the economic, social and environmental sustainability of the agricultural sector (see Case study 6: International financial institutions get on the front foot to monitor factory farms).

There is also growing engagement by investors on ESG concerns specifically related to animal factory farming. Led by the international financial institutions, a small group of private investors are now looking more carefully at risks associated with poor animal welfare which primarily stem from the proliferation of animal factory farming. Awareness of the additional ESG challenges that are linked to the intensification...
of livestock production is also rising. Largely within the context of responsible investment, animal factory farming risks are:
- Being integrated into ESG research and decision making;
- The focus of engagement and active ownership; and
- Providing the basis of greater demands for disclosure.

### 3.3 Integrating Animal Factory Farming Risks into Investment Processes

Integrating animal factory farming risks into ESG research and decision making helps investors to manage key factors driving risk and returns and select the best-positioned companies. The integration of animal factory farming risks also recognises that negative impacts from the sector may affect long-term sustainable returns by undermining social, environmental and economic systems. Integrating the risks from animal factory farming depends on creating the appropriate policies and associated documentation and then implementing these into the investment process.

Financial institutions have developed policies, guidelines and position statements to steer and explain their activities in relation to animal factory farming. Rabobank, reportedly one of the world’s largest investors in factory farms, has established livestock farming position papers and a separate animal welfare statement. Triodos Bank excludes (animal) factory farming from financing due to increased sustainability risks, unless firms can demonstrate that they are proactively attempting to prevent controversies.

A number of ethical investment funds include factory farming as a negative investment screening criteria, excluding companies involved in the rearing of animals in intensive conditions. For example, ethical funds sold by Standard Life Investments avoid investments in companies that use intensive production and mammalian livestock production.

In 2013, the IFC commissioned an update of the 2006 GPN to reflect emerging best practice and thinking on the issues.

### European Bank for Reconstruction and Development (EBRD):

In May 2014, the EBRD revised its Environmental and Social Policy (ESP) to guarantee agribusiness clients’ compliance with EU animal welfare laws. This is the first time that an IFI has introduced compulsory animal welfare standards for investments. The revision followed the publication by Humane Society International, Compassion in World Farming and Four Paws of a report in 2013 in which the EBRD was criticised for providing loans to non-EU companies using extreme farm animal confinement practices.

### Equator Principles (EPs):

Eighty financial institutions located in 34 countries have adopted the Equator Principles (EPs), a risk management framework to provide environmental and social due diligence for certain project finance advisory services, project finance, project-related corporate loans and bridge loans. The identification of projects requiring environmental and social review and due diligence is based on the IFC performance standards and would be applied to animal factory farming projects.

Several international financial institutions (IFIs) have established policies, guidelines and tools to ensure that they do not fund projects that would result in significant environmental or social harm, including those that would be considered animal factory farming. Pressure from outside stakeholders (such as NGOs) has encouraged financial institutions to consider the environmental and social dimensions of their investments. These same pressures are helping to driving improved practice within the financial sector, such as how issues such as animal factory farming should be treated.

Key examples of how IFIs have sought to influence investment in animal factory farming include:

#### World Bank:

A 2001 World Bank report recommended that the organisation ‘avoid funding large-scale commercial, grain-fed feedlot systems and industrial milk, pork and poultry production except to improve the public good areas of environment and food safety.’

#### International Finance Corporation (IFC):

In 2006, the (IFC) incorporated the issue of animal welfare in intensive livestock operations into its investment decisions through a Good Practice Note (GPN) on animal welfare. The GPN provides voluntary guidelines and recommendations for IFC clients, rather than compulsory requirements. In 2007, the IFC published environmental, health and safety guidelines for intensive poultry farming projects.

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### CASE STUDY 6: INTERNATIONAL FINANCIAL INSTITUTIONS GET ON THE FRONT FOOT TO MONITOR FACTORY FARMS

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There are a number of different investors that are integrating ESG risks associated with animal factory farming into their investment processes. These include asset owners and investment managers, retail and institutional investors, those with a specific ethical mandate and mainstream investors. There are also a wide range of ways in which investors, or their service providers, are approaching this challenge, including via use of ESG research, engagement and active ownership, and encouraging greater disclosure with respect to animal factory farming risks.

In one of its first documents the FAIRR Initiative published case studies from nine investors or investment agencies to show how they are taking these issues into consideration. The featured investors are:

- BNP Paribas

"One of the key elements of our research process is what we call ‘horizon scanning’, that is looking out for those issues and risks that may not be material today but that may significantly impact on our investments in the future. One such issue is farm animal welfare."

BNP Paribas
The key risks from the stock sheet drew on ESG analysis, highlighting that “crop failure due to climate change impacts on feed prices. Feed costs are a very significant part of the livestock producers’ P&L and disruptions to the supply chain caused by climate change would impact on farm profitability with a consequential knock-on to [the company]."

The Co-operative Asset Management

The amount of influence that an investor bears will also reflect the level of investment and the culture of the portfolio company or region it is based in. Examples of active engagement and ownership on animal factory farming risks include:

- **Proxy voting**: A number of investment firms – such as JP Morgan, Russell Investments, First Affirmative and AllianceBernstein (part of AXA) – include animal welfare within their proxy voting procedures and guidelines.
- **Shareholder resolutions (animal welfare)**: Ethical engagement policies have also provided the basis for investors to discuss animal factory farming production systems with companies they hold equity. In 2014, Wespath co-filed a shareholder resolution (alongside the Humane Society of the US and Green Century Capital Management) with Tyson Foods that encourages the company to consider and report on the reputational, financial and regulatory risks associated with its use of gestation crates. A coalition of US SRI investors filed a shareholder resolution in 2007 with US-based Dean Foods over the company’s organic milk claims despite operating factory farming conditions. In 2008, a shareholder resolution was filed against Tesco over its animal welfare practices.
- **Shareholder resolutions (sustainability)**: Since 2011, there have been 39 shareholder resolutions filed by members of the CERES investor network with companies in the food and beverage sector over sustainability-related issues. Even Chipotle Mexican Grill, with its sustainability and animal welfare policies, has come under fire from shareholders over its failure to produce an annual sustainability report and validate its credentials.
- **Monitoring**: Responsible investment policies can also help investors prioritise which ESG issues they should focus on in the short and medium-term with their portfolio companies. For example, Co-operative Asset Management encourages companies to shift from intensive farming systems. The Co-operative has written to Kellogg’s regarding its use of animal factory farming systems, including barren battery cages.
<table>
<thead>
<tr>
<th>INVESTMENT ACTIVITY</th>
<th>PURPOSE</th>
<th>TYPES OF RESOURCES AVAILABLE</th>
<th>EXAMPLES</th>
</tr>
</thead>
</table>
| Industry analysis           | To enable a better understanding of the sensitivity of animal factory farming as a whole to particular ESG issues | There are studies revealing the risks associated with changes in particular parameters, such as resource availability, temperature and government subsidies. Analysis also highlights the 'hidden costs' associated with animal factory farming, demonstrating the industry’s sensitivity to key issues (e.g. greenhouse gas emissions). | • Agricultural Policy Monitoring and Evaluation 2013 (OECD)\(^\text{14}\)  
• OECD-FAO Agricultural Outlook 2014–2023\(^\text{15}\)  
• Beyond Factory Farming: Sustainable Solutions for Animals, People and the Planet (Compassion in World Farming, 2009)  
• Livestock’s Long Shadow: Environmental Issues and Options (FAO, 2006) |
| Macroeanalysis at the country level | To enable a better understanding of ESG issues that are likely to affect animal factory farming within a particular country | Research highlights the impacts of evolving regulations or subsidy regimes on animal factory farming and long term constraints on growth, such as land or water availability. There is extensive information available that can be used to assess country-level factors which can impact the industry, such as levels of government investment in supportive infrastructure and long-term economic or demographic trends. | • CAFOs Uncovered: The Untold Costs of Confined Animal Feeding Operations (Union of Concerned Scientists, 2008)  
• Costs of compliance with EU regulations and competiveness of the EU dairy sector (Bezlepkina, I.V. et al, 2008\(^\text{16}\))  
• Assessing the economic cost of endemic disease on the profitability of Australian beef cattle and sheep producers (Meat and Livestock Australia, 2008\(^\text{17}\))  
• International Monetary Fund (IMF) regional and country reports\(^\text{18}\) |
| Analysis of company strategy | To enable a better understanding of how companies are managing ESG risks and opportunities related to animal factory farming and the subsequent impact on key performance metrics | Corporate documentation and third party information demonstrates corporate awareness and management of ESG issues. | • Business Benchmark on Farm Animal Welfare (2012, 2013)\(^\text{19}\)  
• Company CSR/Sustainability reports |
3.4 INTEGRATING FARM ANIMAL WELFARE OPPORTUNITIES INTO INVESTMENT DECISIONS.

By integrating farm animal welfare issues into their investment process, investors are also becoming aware of opportunities around the potential changes in the market. This is because as food safety scandals and other risk from factory farmed meat appear to be changing consumer behaviour, companies with high animal welfare standards are positioned to benefit.

The case study of American fast food chain Chipotle is a good illustration of this trend. Chipotle used ethics and good animal welfare standards as part of their marketing in 2012 and saw revenues rise 23%.

There are also exciting opportunities to invest in companies developing plant-based alternatives to satisfying the world’s growing demand for protein, including companies related to the technology and infrastructure of those more sustainable alternatives. The case study on the growth of Hampton Creek is a good example of this, as are US food technology company Impossible Foods which uses specific proteins and nutrients from greens, seeds, and grains to recreate the complex taste of meat and dairy products.

CASE STUDY 8: TASTY FINANCIAL RESULTS FOR US RESTAURANT THAT PUTS HIGH ANIMAL WELFARE STANDARDS AT HEART OF ITS BUSINESS

US restaurant chain, Chipotle, has a history of increasing sales and share prices by recognising the importance of animal welfare. After a visit to an animal factory farm in 1999, Chipotle’s CEO Steve Ells implemented a new sourcing policy for ‘natural’ pork. Under the Chipotle policy, ‘natural’ refers to animals that are:

- Fed a vegetarian diet
- Not given growth hormones or antibiotics in their feed
- Allowed to roam free in a pasture and are treated humanely.

Following the switch towards sustainable sourcing efforts in 2000, Chipotle was forced to raise the price of its pork burrito by US$1. Typically, sales would be expected to drop following a price increase, however Chipotle saw sales increase sharply as a result of its commitment to better welfare pork. Since then, Chipotle has broadened its natural sourcing policy to include chicken and beef where possible. Chipotle is now reported to be the largest restaurant buyer of naturally raised meat in the US. Other sustainability efforts, such as sourcing local and organic produce, support Chipotle’s commitment to ‘food with integrity’.

“Food with Integrity” is our commitment to always look closer, dig deeper, and work harder to ensure that our actions are making things better, not worse. It’s our promise to run our business in a way that doesn’t exploit animals, people or the environment.”

Steve Ells

In recognition of the low awareness among consumers of farm animal welfare and factory farming issues in the US, Chipotle has invested in awareness-raising campaigns over a number of years, including an award-winning animated film in 2014, to support their sustainability strategy. Industry metrics following Chipotle’s ‘Cultivate a Better World’ marketing campaign showed improved customer loyalty. Social media activity during the campaign reportedly contributed to a 23.2% increase in Chipotle’s revenue during the first half of 2012.

Chipotle’s initial public offering in 2006 rose 100% during its first day on the New York Stock Exchange, with share prices rising from US$22 to US$44 per share. The company’s announcement in 2013 that it will strive to remove GMO ingredients from its products was followed by a 15% increase in stock prices. Chipotle’s share price sat at US$619.25 (as of 23 June 2015). The share price remained relatively high compared to historic levels even after an E.coli outbreak in late 2015 offered a reminder that managing potential health risks is an ongoing challenge for even progressively-minded food retailers.

CASE STUDY 9: EGG SUBSTITUTE COMPANY SET TO BECOME FASTEST GROWING FOOD COMPANY IN HISTORY

Established in 2011 Hampton Creek is a US based food tech company built on the belief that there are more sustainable, humane and cheaper ways to feed the planet than animal factory farms. Based in San Francisco, the company has analysed thousands of plant proteins to find low-cost, environmentally friendly and healthy alternatives to animal-based proteins to use in a range of products, such as a Canadian yellow pea protein as a substitute for egg.


Growing and harvesting plant protein is less resource intensive and expensive than egg production. This means Hampton Creek products are cheaper than equivalent products containing eggs. Just Mayo the company’s first product for example can be supplied to supermarkets for about 10% less than the normal cost of regular egg based mayonnaise.

In terms of resource use, Hampton Creek estimates it has saved over one billion gallons of water and 191m grams of CO₂ each year.

The 2015 outbreak of Avian flu crisis in the U.S has shown both the vulnerability of current egg production models and the potential of companies such as Hampton Creek. The outbreak led to the death of more than 40m birds (80% of which are egg laying hens in factory farms) in the first half of 2015. The Avian flu outbreak has led to an egg shortage in the U.S with egg prices more than doubling.

Since the avian flu crisis hit, Hampton Creek reports receiving enquiries from most major fast food chains and predicts its revenue run rate will from $48m to $120m per year. The company looks on track to become the fastest growing food company in history.

In just four years of operation, Hampton Creek has attracted a number of large customers. Such as Compass Group, a global catering company who supply over 4bn meals a year to schools and hospitals across the US, and UK and the convenience store 7/11. Hampton creek estimates the switch to Just Mayo in 7/11 products will save 81m gallons of water and 191m grams of CO₂ each year.

The company has invested in awareness-raising campaigns in 2012 and saw revenues rise 23%.
CHAPTER 4: IMPLICATIONS AND NEXT STEPS

4.1 OVERVIEW

This report draws on a wide range of sources to assess the potential material risks of animal factory farming from an ESG perspective. A strong case is made for responsible investors to incorporate these risks into their investment approaches. However, the limited extent to which investors have engaged with animal factory farming historically indicates a need to raise more awareness of the financial risks associated with the sector.

A number of activities can be undertaken to help address existing knowledge gaps and provide the investment community with a better understanding of the risks associated with animal factory farming. These activities include:

- Further in-depth research, which explores in more detail the connection between the issues and financial returns and distinguishes animal factory farming from traditional livestock production.
- Analysis of the effect of strong ESG management (including high animal welfare standards) on the long-term financial performance and investment returns of the animal factory farm sector.
- Increased engagement with stakeholders in countries that are expected to see the highest future growth in animal factory farming.
- Deepening understanding and raising awareness of how investors are engaging with animal factory farming and shifting investment to less intensive production systems or plant-based agriculture.

These activities will also help to build the momentum around responsible investment and animal factory farming.

4.2 IMPLICATIONS OF THE FINDINGS FOR INVESTORS

The social and environmental impacts of animal factory farming identified in this report support the case for greater scrutiny of the sector as part of responsible investment practice. Animal factory farming is associated with severe environmental and social impacts, which can be experienced at local, regional and global scales. This places animal factory farming alongside other high impact sectors including oil and gas, mining, and clothing and apparel. Environmental and social risks can have a significant financial impact on investments, including reducing the value of the asset or diminishing dividends as a result of changes in the operating costs. The reputation of investors may also be at stake if stakeholders associated them with environmentally or socially damaging investments.

The negative financial impacts of ESG issues on animal factory farming highlight the importance of integrating analysis of these issues into investment research and decision-making. ESG issues can affect financial outcomes through a range of pathways, including production and pricing, market access, legal and regulatory and reputation. The manner in which ESG issues affect these financial levers can be relatively straightforward, such as in the case of short-term events like natural hazards or food scandals. However, the magnitude and time-scales over which effects are felt can vary tremendously. Disentangling the longer-term effects of ESG issues from other drivers of company and investment performance is more challenging.
Investors that integrate analysis of ESG issues into their investment approach must look across agriculture and food value chains, particularly as the magnitude of financial risks is likely to increase over the long term. Companies directly involved in animal factory farming are most exposed to key ESG issues. However, consumer-facing companies at the end of the value chain – such as food retailers and restaurants – are also exposed to financial harm. The magnitude of risks to companies involved in animal factory farming and industrial food production are likely to increase as a result of rising capital costs, the shifting gravity of production to developing countries with less robust regulation, the impacts of climate change and increasing social concerns over animal welfare and sustainability.

There is a need to raise awareness of ESG issues related to animal factory farming and the financial risks they present to more investors, and to companies with links to the sector. Outside of a few far-sighted institutions there is a general lack of awareness among the wider investment community of the short and long-term risks that are inherent to the continued growth of the animal factory farm industry.

Finally, there is a clear need for additional research in a number of areas to support the initial exploratory findings contained in this report. The bulk of the evidence for this report has been drawn from academic, government and industry studies on short-term events that are well recognised by the livestock industry; b) pressure group reports, with some lacking the perceived rigour of objective, peer-reviewed research; and c) anecdotal media stories. However, there is still a significant knowledge gap with respect to the financial implications of ESG issues for companies associated with the animal factory farming industry. Suggestions for further research are included in the ‘Next Steps’ section below.

4.3 NEXT STEPS

Greater scrutiny of animal factory farming by a wide range of stakeholders has highlighted the need for further research and engagement on critical ESG issues. Governments, civil society, the public, companies and financial institutions would all be wise to take a closer look at the negative impacts of animal factory farming and how the industry may potentially be affected by external changes to the operating environment. These stakeholders can ask challenging questions to help them write laws and regulations, mobilise support for opposition campaigns, buy goods, develop business strategies and to help inform investment decisions.

Despite increasing interest and momentum, many of these questions remain unanswered. A number of steps would help to address these knowledge gaps. These include further research that may include:

- Research to clearly distinguish between the effects of ESG issues on animal factory farming and traditional (or ‘smaller scale’) production.
- Research which more clearly identifies the specific effects of ESG issues on different types of animal factory farming, such as cattle, poultry and pig production.
- More detailed analysis of the extent to which strong ESG management (including high animal welfare standards) in the farming sector could improve long-term financial returns. This should include a clear definition of the animal farming universe and how the performance of these companies would compare to those with poor ESG management.
- Research to establish practical steps that can best retool and improve industry practices so that the sector can both help meet the demand for global meat while exhibiting strong ESG management.

Practical steps to close the knowledge gap can also include:

- Increased engagement from investors with animal factory farming stakeholders in countries that are expected to see the highest growth in animal factory farming over coming decades, particularly China and India.
- Publishing more case studies that demonstrate how private investors are engaging with animal factory farming (including shifting investment towards less intensive production systems or plant-based alternatives to meal) and the results that have been achieved.

Events at SeaWorld in Florida over the last two years perfectly demonstrate the material impact that poor management of animal welfare issues can have on investment value.

SeaWorld in Florida, part-owned by private equity group Blackstone, has suffered plummeting stock prices and attendance figures since the release of independent documentary Blackfish in 2013, a film cataloguing alleged mistreatment of whales at SeaWorld’s parks. For example, the film claims that the company’s treatment of whales provoked violent behaviour in the animals, contributing to the deaths of three people.

Between the release of that documentary and the time of writing (Nov 13) SeaWorld’s shares have lost over half of their value. The company also saw the CEO resign at the end of 2014 and has seen attendance at its orca theme parks in San Diego and San Antonio continue to fall. Figures from San Diego authorities showed a 17% drop in attendance at the park in 2014 from 4.5 million to 3.7 million.

The original Blackfish film is thought to have cost just $76,000 to produce and originally played in only five movie theatres yet its financial impact on SeaWorld’s Entertainment continues to be felt. In November 2015, investors were warned that full-year profits will fall by a further $10m.

There has also been regulatory backlash. In October 2015, California authorities banned SeaWorld from attempting to breed new whales in a planned $100m extension to its whale tanks in San Diego.

SeaWorld Entertainment has clearly recognized the long-term damage done to their reputation. It has reportedly spent $15m on a TV and social media campaign to counter negative sentiment and promote the work it does to protect and care for whales and other animals. In November 2015, SeaWorld in San Diego responded to the ongoing pressure by announcing that they would end live killer whale performances at the park.

**CASE STUDY 11: SHARE PRICE TANKS AFTER ANIMAL WELFARE REVELATIONS**

Events at SeaWorld in Florida over the last two years perfectly demonstrate the material impact that poor management of animal welfare issues can have on investment value.

“SeaWorld’s shares have lost over half of their value following the release of a film alleging mistreatment of animals”

FAIRR founder Jeremy Coller commented, “SeaWorld is not part of the factory farming universe but I think the harsh financial lessons its investors have learnt since the release of Blackfish shows the dangers of not acting to manage animal welfare risks. We live in an age where the power of social media and changing consumer behaviour can quickly combine to transform profitable businesses into value-destroying liabilities. Smart investors will take note.”
Animal factory farming – This report does not seek to define animal factory farming using specific criteria or thresholds. Instead, it considers animal factory farming to be operations which exhibit certain characteristics that differentiate it from traditional, non-intensive livestock production. These are:

- The large scale of the operations in terms of animal stock numbers;
- Confinement that undermines the five animal welfare freedoms;123
- Management and husbandry practices which may compromise the health and safety of workers, surrounding communities and the environment;
- Highly mechanised production methods, such as the use of hardware and automation for tasks such as feeding and cleaning.

There is no universally agreed definition of ‘animal factory farming’. The term has been used mainly by NGOs or pressure groups to refer to livestock production systems that demonstrate the above characteristics. Alternative terms include ‘industrial livestock production’ and ‘intensive animal farming’.

Various definitions are provided by government regulators. The term ‘Concentrated Animal Feeding Operations’ (CAFO) is commonly used by industry and external interests to describe animal factory farming. The term originates from the United States Environmental Protection Agency which defines CAFAs as farm operations that exhibit particular characteristics. These include the confinement of animals for at least 45 days per year, and the absence of grass or other vegetation from the confinement area during the normal growing season.141 In the US, CAFOs can be classed as large, medium or small, depending on the number of animals that are confined, how wastewater is managed, and whether the operation is a significant contributor of pollutants.142

In the European Union (EUE), ‘intensive’ is defined as an operation which may rear, or be designed to rear, 40,000 poultry, 2,500 production pigs (over 30kg), or 750 sows.143 The EU recognises that ‘intensive farming is likely to result in worse conditions for the animals than low intensity, ‘natural’ or organic farming’.144 The Canadian province of Saskatchewan defines an ‘intensive livestock operation’ as one where the space per animal unit, in which livestock is confined, is less than 370m².145

The US-based Pew Commission on Industrial Farm Animal Production has developed a more all-encompassing term, Industrial Farm Animal Production (IFAP). This refers to highly intensive production practices regardless of the size of the facility.146 IFAP encompasses all aspects of breeding, feeding, raising and processing animals or their products for human consumption”, with a focus on a small number of species.

Animal factory farming can also be differentiated from traditional or conventional farming, although the distinctions may not always be entirely clear cut. Generally traditional or conventional farms are often considered to be family owned and operated, smaller in scale, use less chemicals, antibiotics and feed inputs, raise a range of animal breeds and treat animals more humanely.147

This report focuses on primary livestock species associated with animal factory farming: cattle, poultry and pigs. Globally, however, there are a large number of livestock species, including rabbits, ducks, and buffalo that are raised in conditions consistent with the characteristics of factory farming.

ENDNOTES

7. dairy.abrd.org.uk/resources-library/market-information/ farming-data/cow-cow-numbers/#.VYQvBVoeXdk


ABOUT US

The FAIRR Initiative is a collaborative investor network that aims to raise awareness of the material impacts farm animal welfare issues can have on their portfolio. It helps investors share knowledge and form collaborative engagements on the issue.

Launched in summer 2015 the FAIRR network welcomes both institutions who wish to become signatories and individual supporters.

Signing up as either a signatory or supporter is simple and free and gives you access to:

- A range of publications including our "Case studies and guidance" booklet;
- A global network of investors working to integrate animal welfare issues into their investment process;
- Regular updates including our quarterly FAIRR newsletter.

Find out more, or join us, at: fairr.org

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Help us close the knowledge gap. Join FAIRR, at: fairr.org