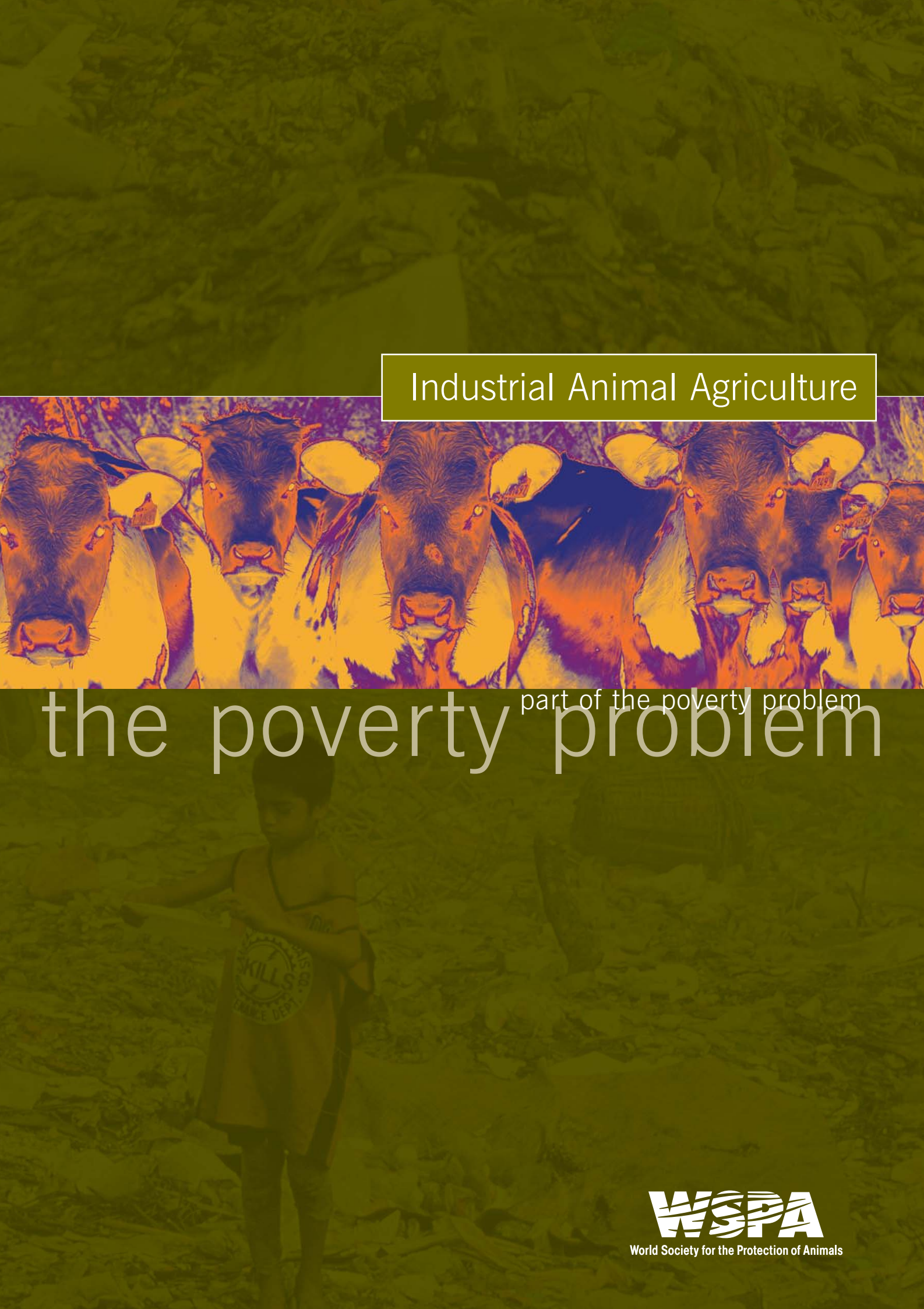
Industrial Animal Agriculture

part of the poverty problem

the poverty problem



WSPA
World Society for the Protection of Animals

Industrial Animal Agriculture

Part of the Poverty Problem

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(WSPA)

"A battle is beginning to rage for control of farming in poor countries. (…) [F]arming increasingly dominated by large corporations, will leave the poor further marginalised. (…) [T]oo little is done to help small farmers grow food in sustainable and organic ways. (…) [F]alse promises about ending hunger mean a fundamentally flawed approach to farming could rapidly take hold around the world, because of the lobbying and marketing power of the companies involved."

Christian Aid[1]

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ABOUT THE AUTHOR

Janice Cox specialises in consultancy work for various animal protection societies, including the World Society for the Protection of Animals (WSPA) and Compassion in World Farming (CIWF). Janice has carried out a two-year research project for CIWF on the development of industrial livestock farming in developing countries, and has co-authored various publications, including "Livestock Revolution – Development or Destruction?" She previously held the positions of Regional Director for Europe and International Legislative Adviser at the WSPA, International Development Director at CIWF, and Senior Executive Officer at the UK's Ministry of Agriculture, Fisheries and Food, where she worked on various aspects of agricultural policy. She is also the co-founder and a director of World Animal Net, the largest worldwide database of animal protection societies.

LIST OF ACRONYMS

AFA Asian Farmers' Association for Sustainable Rural Development

CAST Council for Agricultural Science and Technology

FAO Food and Agricultural Organisation of the United Nations

FAOSTAT FAO Statistical Database

IBRD International Bank for Reconstruction and Development

IFPRI International Food Policy Research Institute

ILRI International Livestock Research Institute

LEAD Livestock, Environment and Development

OCM Organisation for Competitive Markets

OECD Organisation for Economic Co-operation and Development

OSHA Occupational Safety and Health Administration of the United States

USDA United States Department of Agriculture

WTO World Trade Organisation

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Foreword

Is the world getting better – more just, more equitable, more humane, more secure? If not, are we at least on the right track?

The world's most powerful politicians, bankers, and industrialists seem in little doubt. The dominant strategy is the global market and if it sometimes seems to have unfortunate side-effects – well, that is mainly because we don't yet have enough of it. Besides, as a recent British Prime Minister famously declared, "There is no alternative".

The World Society for the Protection of Animals' brilliant report shows us a very different picture. The particular issue explored goes right to the heart of the matter practically as well as morally and politically: does industrialized animal production exacerbate global poverty? Their answer is that of course it does – in a dozen different ways; one of the most obvious being that it puts millions (and potentially hundreds of millions) out of work, with no hope of alternative employment. Unemployment is probably the prime cause of poverty which, at its extreme, destroys lives and souls and societies and landscapes.

Industrialized animal agriculture isn't just an incidental occurrence, a lucrative bonus. It has become the prime focus, requiring more and more of the world's resources and drawing in – or more usually, sidelining – a greater and greater proportion of humanity: supported by big business; by the governments that are beholden to big business; and by highly questionable arguments about the presumed needs and desires of people at large. In significant part it is frank malpractice on a global scale, upheld by carefully crafted untruth.

The world is not getting better. With present strategies, of which "modern" animal farming is a prime exemplar, we are moving precisely in the wrong direction. To some extent, we might correct the mess ad hoc. We could change agricultural practice, adopting the many alternatives that are available, sometimes traditional, sometimes brand-new. But then we need to examine the root of the problem, and re-think the economy that has given rise to the status quo, and the governance that has brought that economy to dominance.

There is a growing literature, from many quarters, on the need to re-think all our ambitions and strategies. This report is a significant contribution to it. It presents precisely the kinds of ideas we need to take seriously if we are going to have any hope at all.

Colin Tudge

Author of *Feeding People is Easy,* from Pari Publishing, Tuscany, 2007.

Abstract

The research studied the exponential growth of industrial animal agriculture in developing countries, threatening the sustainability of both rural populations and traditional food production systems. According to the International Food Policy Research Institute (IFPRI), countries in Latin America, Asia and Africa will be the world's leading producers of animal products by 2020, with industrial animal agriculture likely to be the predominant production method. With little regulation currently in place to control the impacts of industrial animal agriculture, the results for the development of communities are of great concern.

Industrial animal agriculture has historically been promoted by some international organisations, development agencies and national governments due to the – now discredited – belief that the growth generated through increased agricultural production would "trickle down" to benefit those suffering from poverty and hunger. But research has shown that, far from making poverty history, industrial animal agriculture forms part and parcel of the poverty problem.

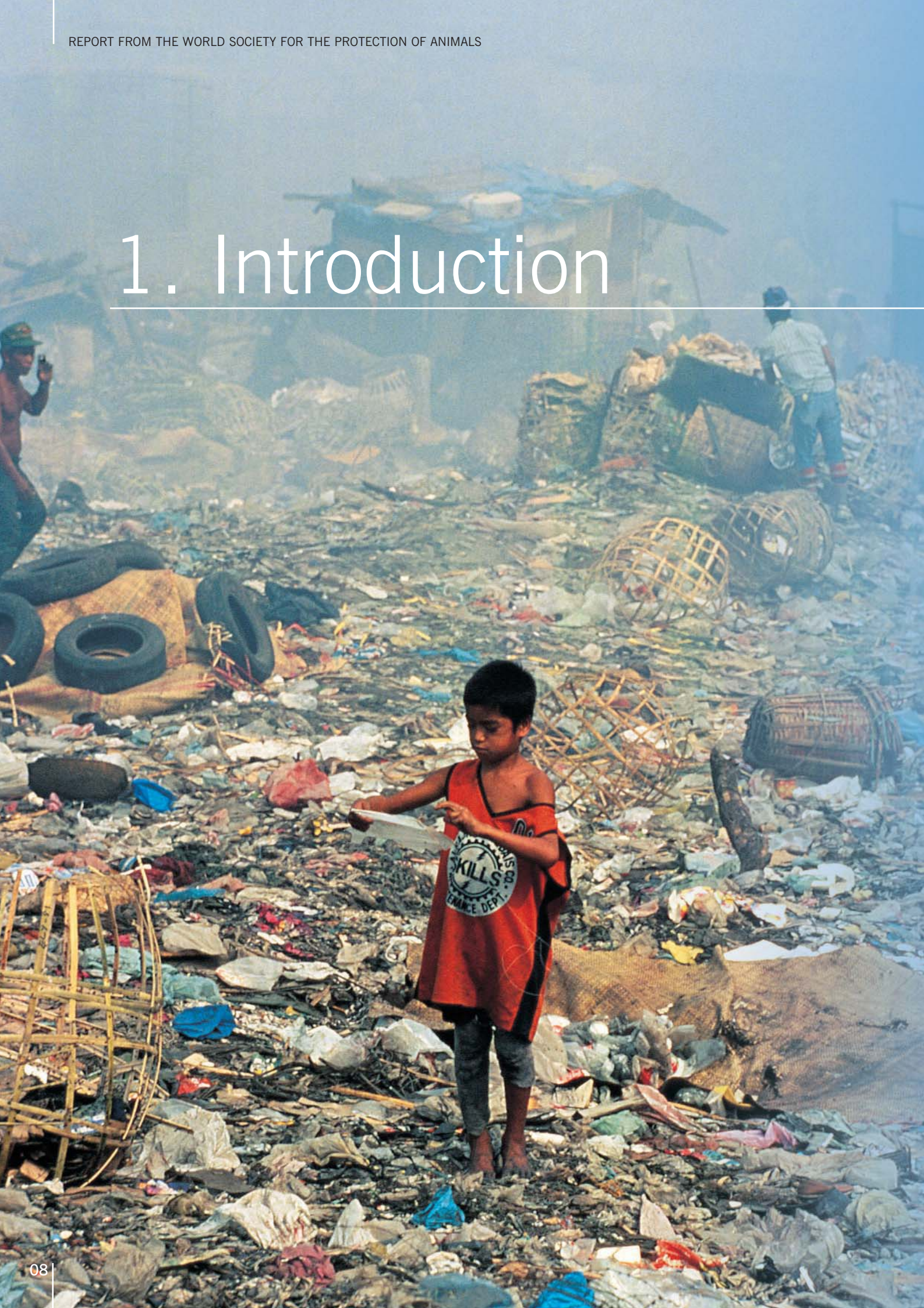
Industrial animal agriculture is bad news for animal welfare and bad news for the poor in developing countries.

In developing countries, industrial animal agriculture devastates the livelihoods of local farmers, destroying rural structures and communities; its inefficient use of food sources and production, together with its dependence on imports and technology, makes food supplies insecure; and its significant environmental and health costs are borne by the countries involved, rather than by the often foreign-owned corporations profiting from the goods.

The United Nations' Millennium Development Goals include halving the proportion of people living in extreme poverty and in hunger by 2015. The profits of industrial animal farming are concentrated in the hands of a small number of major commercial interests, and its products go to feed well-off urban populations. The only impacts of industrial animal agriculture on poor communities are detrimental ones.

This report is a call to action for international development agencies and NGOs to tackle the problem of industrial animal agriculture as an integral part of their poverty alleviation work. It is a call for them to advise policy makers to allocate future support to humane and sustainable agriculture, rather than to industrial animal agriculture, which undermines the elimination of poverty and hunger in developing countries.

1. Introduction



"hunger and malnutrition cause tremendous human suffering, kill more than five million children every year, and cost developing countries billions of dollars in lost productivity."

Over ten years ago, in 1996, Heads of State and Governments met in Rome for the World Food Summit. They agreed that hunger was a global emergency – and who could have disagreed, with as many as two billion people living in poverty and approximately one billion living in "utter poverty" with daily hunger and deprivation? World Leaders committed themselves to halving, by 2015, the number of undernourished people in the world from the 1990 level. Ten years later, a report called "The State of Food Insecurity in the World 2006" by the Food and Agricultural Organisation of the United Nations (FAO) stated the "sad reality" that "virtually no progress has been made towards that objective."[2]

A recent assessment by the FAO states that there are still 854 million undernourished people worldwide (using 2001-3 figures): 820 million in the developing countries, 25 million in the transition countries, and 9 million in the industrialised countries. In a previous report on "The State of Food Insecurity in the World 2004"[3] , the FAO stated that "hunger and malnutrition cause tremendous human suffering, kill more than five million children every year, and cost developing countries billions of dollars in lost productivity."

The World Bank estimates that 1.2 billion people (22% of the world's population) currently live on less than US$1 per day.[4] Around 50% of the world's poor and hungry are actually farmers – 65% in low-income countries.[5] More than 70% of the world's extremely poor and food-insecure people live in rural areas, and 85% of rural populations are engaged in agriculture in a broader sense.[6] So tackling poverty means addressing the problems that these poor rural populations face.[7]

The international development community is making considerable progress in highlighting the need for developed nations to work together to consign poverty to history. The "Make Poverty History" campaign has spread internationally – becoming the "Global Campaign

against Poverty". It has captured political as well as individual consciences. The campaign has generated significant awareness, which is now moving into action on many fronts. The United Nations even held an "International Day for Poverty Eradication" in October 2006.[8]

However, in this growing awareness, there is little recognition voiced of the way in which burgeoning industrial animal agriculture detrimentally affects the lives and living standards of many of the world's poor. Industrial animal agriculture is one of the unseen root causes of poverty, and many of the familiar aspects of poverty are caused by this industrial onslaught which attacks the sustainability of both rural populations and traditional food production systems. Perhaps one of the main reasons why this has not yet been voiced or tackled is that this problem lies at the very heart of globalisation and free-market ideology. As the FAO publication "World Agriculture: Towards 2015/2030" states at the beginning of its chapter on "Agriculture in Poverty Alleviation and Economic Development", these are "some of the most contentious issues in the field of economic development."[9]

Industrial animal agriculture is increasing at an alarming rate, particularly in developing countries. Although driven by private enterprise, it has historically been promoted by some international organisations, development agencies and national governments due to the – now discredited – belief that the growth generated through increased agricultural production would "trickle down" to benefit those suffering from poverty, unemployment and hunger.[10]

History and common sense have proved that industrial animal agriculture has a devastating effect on family and small-scale farmers, and rural communities. In reality, the "trickle down" effect does not occur in ways that benefit the poor – industrial animal agriculture profits are made by large corporations, and its products go to feed well-off urban populations. The only "trickle down" effects the poor feel are the problems caused by its detrimental impacts.

This is confirmed by the findings of a 2005 report from Food First/Institute for Food and Development Policy, which states that artificially cheap food on the world market makes hungry people hungrier.[11] "It's ironic," says Kirsten Schwind, author of the report. "You would think cheap imported food would help alleviate hunger. But often it doesn't. It devastates the livelihoods of local farmers, who then face the choice of migrating to cities to work in sweatshops." This migration actually drives down wages in urban areas, and increases the number of poor people in cities who cannot afford even cheap food.

History and common sense have proved that industrial animal agriculture has a devastating effect on family and small-scale farmers, and rural communities.

In its report "World Agriculture: Towards 2015/2030", the Food and Agricultural Organisation of the UN (FAO) states that the "strongest structural trend in livestock production has been the growth of intensive, vertically-integrated establishments close to large urban centres, particularly for pig and poultry meat production in East Asia and Latin America, and for broiler production in South Asia. Similar trends are apparent in dairy and beef production, albeit to a lesser degree."[12] The FAO also acknowledges that this is happening "at the expense of diminishing the market opportunities and competitiveness of small rural producers."

This situation is set to continue, according to the joint report of the Organisation for Economic Co-operation and Development (OECD) and the FAO on the agricultural outlook for 2005-2014. This states: "The ongoing structural changes in the food industry, characterised by increasing concentration and globalisation and changes in food chain governance, such as the growing role of product standards and vertical coordination, are likely to continue over the outlook period (2005-2014)."[13]

The co-presenters of this report are noted (in the report itself) as having the following roles:

- "FAO leads international efforts to defeat hunger."
- The OECD is the forum where "the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation."

The essence of the problem is that industrial animal agriculture:

- Puts small farmers out of business.
- Destroys rural structures and communities.
- Uses food sources and production inefficiently (growing animal feed, which produces lesser amounts of protein when fed to animals – and therefore using additional space, energy, water and money – instead of producing low-cost cereals and legumes that could feed the poor and hungry directly).
- Makes food supplies insecure (industrial animal agriculture is often import- and technology-dependent, and concentrated in the hands of a small number of major commercial interests. Its rearing of large single-species units, in close-confinement systems, also makes it particularly vulnerable to disease, health risks and accidents).
- Imposes significant environmental and health costs, which are borne by the countries involved, rather than by the corporations profiting from the goods.

2. What is industrial animal agriculture?

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Industrial animal agriculture is a system of raising animals, using intensive 'production line' methods that maximise the amount of meat produced, while minimising costs. Industrial animal agriculture is characterised by high stocking densities and/or close confinement, forced growth rates, high mechanisation, and low labour requirements. Examples include battery cages for laying hens, and veal crates for calf rearing. Latterly, the term has been extended to include farming practices that involve the use of transgenetic farm animals.[14]

Chickens

Three quarters of the world's 5.6 billion egg-laying hens are confined in battery cages, which may contain as many as nine other birds.[15] Their cages, stacked one on top of another, allow for little movement. Each year over 48 billion 'broiler' chickens are reared for meat worldwide. Although not confined in cages, broilers are often crammed in barren, dimly lit sheds where they grow at accelerated rates. Chickens raised in industrial animal farms often suffer from lameness, and many die of heart attacks because their hearts are not strong enough to support their disproportioned bodies.[16]

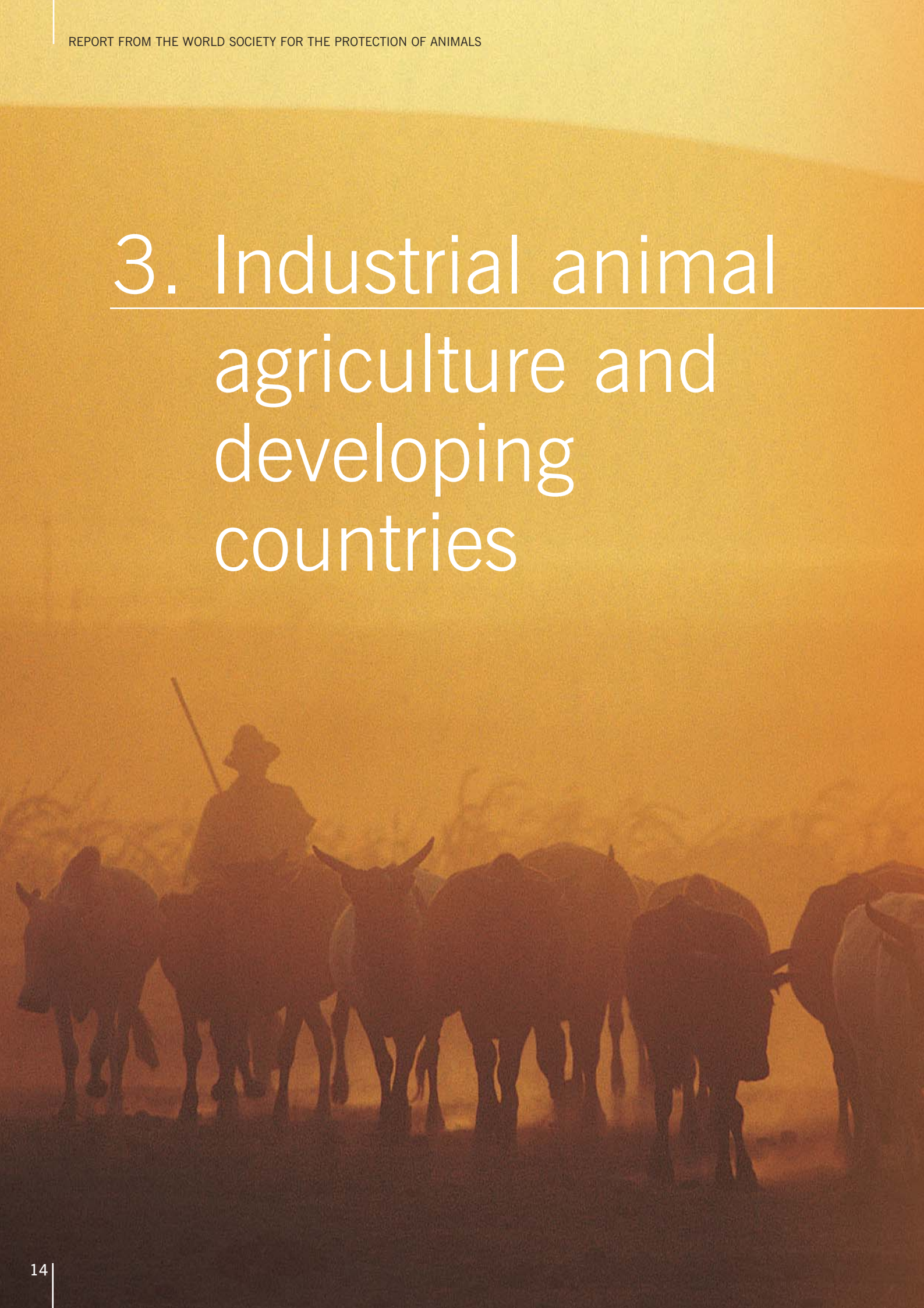
Pigs

Half of the world's 1.3 billion pigs are raised in industrial animal farms. Sows raised in industrial animal farms often spend most of their time crammed into narrow crates where they are unable to turn around, nest, root, or exhibit other natural behaviours. These stressed animals are often artificially inseminated and give birth to numerous litters of piglets during their lifetimes.[17]

Cattle

Most cattle begin their lives on pasture, but to increase weight before slaughter, most spend the last weeks of their lives in crowded feedlots, where they receive an unnatural diet of grain. Because of the crowded and unsanitary conditions, they often arrive at slaughterhouses covered in faeces.[18]

3. Industrial animal agriculture and developing countries



About two-thirds of the world's livestock are found in developing countries.[19] Most farmers in these countries have mixed farms, where crops and livestock are managed in sustainable systems.

Whilst industrialised countries currently dominate industrial livestock production, developing countries are rapidly expanding and intensifying their production systems.[20] This growth is set to continue. The "OECD-FAO Agricultural Outlook 2005-2014" states: "Similar to historical trends, meat production gains, while moderating, are expected to occur mainly in developing countries and to outpace those of many other commodities. Growth in global meat production will continue to be driven by rising pig meat and poultry output in developing counties."[21]

Notably, foreign-owned industrial animal farms are expanding into developing countries. These companies from the affluent North, particularly North America and Europe, seek to expand further in the never-ending search for profits. They search out new markets and lower-cost production, exporting industrial models of animal agriculture and products. Production costs in developing countries are low due to factors such as low labour, land and input costs – and often lower "compliance costs", as animal welfare and environmental standards are lax or non-existent.

As developed countries have adopted mechanised livestock rearing, they have simultaneously found themselves to be less and less self-sufficient and more and more import-dependent. Grains, tractors, fuel for tractors, fertilisers and special animal units and processors are all needed for industrial livestock rearing, none of which a developing country starts out by making itself.[22]

Regular "intensive livestock" fairs are held in developing countries with the aim of promoting industrial animal agriculture systems and inputs – where companies ply their trade in industrial animal agriculture systems and products. Sometimes the

Whilst industrialised countries currently dominate industrial livestock production, developing countries are rapidly expanding and intensifying their production systems

governments of developed countries also take part, promoting their countries' industrial animal agriculture industries.[23]

International and national agricultural and trade polices can have a significant impact upon agricultural production and food security – beneficial or adverse. As the "OECD-FAO Agricultural Outlook 2005-2014" states: "Agricultural and trade policies play an important role in domestic and international agricultural markets because they provide support to agricultural producers and thus affect the level and location of production, consumption and prices, leading to market and trade distortions."[24]

The dumping of the products of the developed world's industrial animal agriculture in developing countries creates unfair competition for the farmers in those countries. The farmers who grow the traditional foods that are abandoned in favour of the dumped items suffer most directly. Loss of income due to diet change and unfair competition may lead these farmers to become growers for corporations, or otherwise give up the production of local foods for local people in favour of the production of cash crops for export – or even to leave the industry altogether. This lessens the food security of the region, since reliable local production for local consumption is replaced by reliance on imports and unstable foreign markets.[25]

This trend is exacerbated by World Trade Organisation (WTO) rules that prevent governments from initiating measures to protect small, independent farmers.[26]

Selected Country Case Studies are given at Annex 1. Some key points of interest are:

Poland

Poland managed to maintain a traditional landscape, with numerous smallholdings and farms, throughout the socialist period. However, foreign-owned corporations – like the US pork giant Smithfield Foods – are multiplying in Poland, seeing the country as a foothold into European Union markets.

There was a 65% increase in pigs slaughtered in Poland from 1984 to 2004.[27]

These new industrial animal farms are polluting Poland's earth, air and water, putting small farms out of business, and changing the rural landscapes.

India

The Indian broiler chicken industry has grown phenomenally. Over 60% of Indian chicken meat production is now from industrial systems – and production has

rocketed from 95 million birds slaughtered in 1974 to 2 billion in 2005. This has caused considerable disruption to traditional poultry production.

This increase has no impact upon human hunger, as the market is the fast-growing middle class. Industry sources have estimated that 75% of poultry consumption is in urban areas – reinforcing the concern that these industrial products are not reaching India's rural poor.[28]

Brazil

Brazil is a prime example of a country whose industrial production boomed at the expense of its small rural farmers. It is now the third largest poultry producer in the world, after the USA and China. The industry is now almost entirely run by large corporations.

In Santa Catarina State alone, 20,000 families left the countryside in 1998, many leaving pig and poultry production because they could not compete with the big corporations.[29]

Thailand

Thailand had developed into the fourth largest poultry producer in the world, through export-orientated industrialisation, before Avian Flu ravaged its industry. The industry has become vertically-integrated, as well as highly concentrated, with small producers being pushed out of the market.

However, as with India and Brazil, there has been no beneficial impact upon the widespread poverty within Thailand.

China

China's meat production levels have risen massively over the last 20 years. It is now the world's largest producer-country for pig meat, beef and eggs, and the second largest (after the United States) for poultry meat.

Chinese production is moving away from traditional small-scale farmers, towards specialised livestock producers and commercial industrial producers. It now has a growing obesity problem in cities, whereas rural poverty is severe.

4. Local food production and livelihoods

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Vertical integration

Those promoting industrial agriculture sometimes claim that industrial animal agriculture brings jobs and investment. But in reality, owners of industrial animal farms seek to minimise costs, and hire fewer workers.[30]

Furthermore, the jobs that are created in the broader meat-processing industry are generally undesirable due to the hazardous conditions to which the workers are routinely exposed. According to the Occupational Safety and Health Administration (OSHA) of the United States, meat-, poultry- and fish-processing jobs are among the most hazardous in America.[31]

Communities expect the construction of an industrial animal farm to help support local businesses, but large-scale industrial agriculture operations typically purchase all necessary building materials, equipment and supplies from companies outside the region. As a result, industrial animal farms provide very little stimulus to the economies of local communities.

Leading development organisations – including the FAO, the World Bank, the International Food Policy Research Institute (IFPRI) and the International Livestock Research Institute (ILRI) – now acknowledge that industrial animal agriculture puts small farmers out of business. This is nothing new in Europe and North America, where small farmers have been witnessing at first hand the devastating effects of industrialisation for decades. Put simply, large corporations corner the market and there are limited opportunities left for small, independent producers.

This industrialisation brings with it "vertical integration", whereby producers of grain for feed, other input suppliers, breeders, "rearers/growers" and meat processors and packers all merge under one giant company controlling meat production from "cradle to grave".

Michael Stumo, the general counsellor for the Organisation for Competitive Markets (OCM), commented that "when industry vertically integrates, it gains control of farm production. Independent farmers are no longer needed."[32]

In a vertically-integrated system, farmers who rear animals do so under contract to large corporations. Some small farmers who are unable to compete with industrial

Some small farmers who are unable to compete with industrial animal agriculture operations become contract growers themselves.

animal agriculture operations become contract growers themselves. They generally have to finance their own start-up costs (buildings, equipment, etc.) in this hi-tech, capital-intensive business, and often borrow from the corporation. This ties them to the corporation – as does reliance on the corporation's inputs and markets, making it easy for the corporation to exploit them without redress. So it is hardly surprising that many contract farmers end up earning less than a living wage.

These contract farmers are often told exactly what and how to produce, and have no control over their own processes. When the industry is in decline, their contracts are simply terminated.

Farmers outside industrial animal agriculture regions are also affected by the power of large corporations – including farmers who grow products such as maize or soya

for animal feed. In these cases, large agricultural corporations can control markets and drive prices down. They can also insist on a certain level and consistency of supply, which affects the viability of small producers. Dumping of intensively-farmed products in developing countries also creates unfair competition for national farmers.

When local farmers take up the production of cash crops for export, this impacts on the region's food security, as local production for local consumption is replaced. Exports are dependent on unstable foreign markets, international competition and price variations. Local goods then have to be bought in, often at increased prices. Sometimes, this is through imports, which are also vulnerable to price variations, currency fluctuations and supply vagaries.

Rural to urban migration

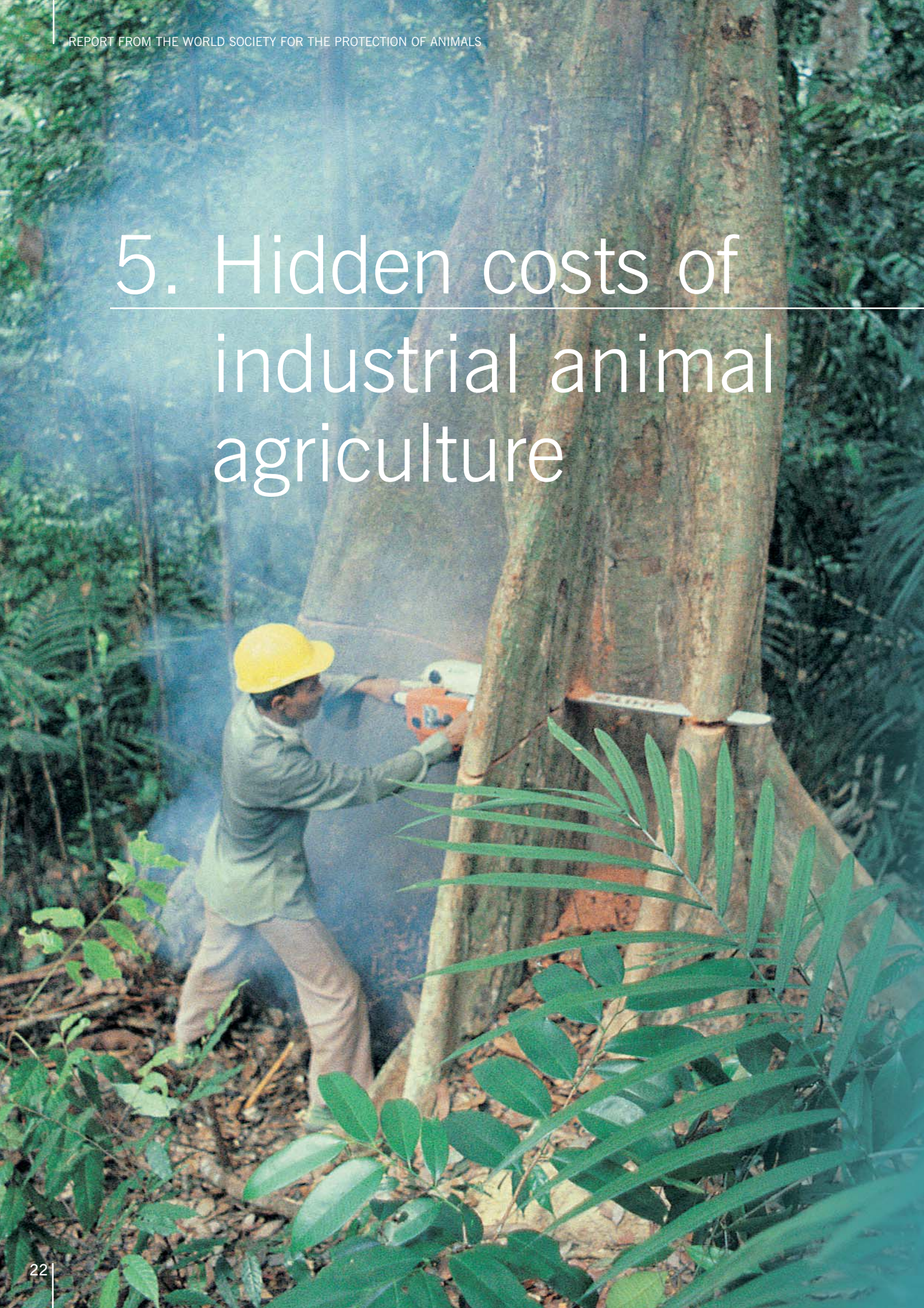
When industrial animal agriculture and cheap imported food devastate the livelihoods of local farmers, they are then faced with the choice of rural unemployment and poverty or migrating to cities in search of work.

The result is a swell of urban unskilled (although rural skilled) looking for work. This migration drives down wages in urban areas and adds to the number of poor people in cities who cannot afford cheap food. It also causes urban overcrowding, pressure on services, unemployment and homelessness.

Conversely, rural areas are depopulated, and rural structures and landscapes are changed. Where industrial animal agriculture has moved in, social scientists have recorded "economic stratification" – where the rich become richer, and the poor become poorer.[33]

This migration drives down wages in urban areas and adds to the number of poor people in cities who cannot afford cheap food.

5. Hidden costs of industrial animal agriculture



Industrial animal agriculture imports destructive technologies into regions such as South Asia and South America that are already struggling with poverty and environmental distress. This brings devastating environmental, health, animal and worker abuses into low-income nations at the countries' own expense.

These hidden costs are known as "externalities" because they are external to the costs borne by the corporations that reap the profits from the activity. International agencies, such as the FAO, recognise the need to "internalise" these externalities (that is make the corporations liable, so these costs are taken out of their profits), but there has been no serious move to put this into practice as yet. So in the meantime, vulnerable countries have to suffer these unwanted long-term side effects whilst corporations continue to reap profit from the activities that cause them.

Lack of food sovereignty is another hidden cost, as reliable local production for local consumption is replaced by reliance on imports and unstable foreign markets. Food security and competitiveness are also affected, because production is concentrated in the hands of a small number of major commercial interests.

This lack of competitiveness, and the shrinking job market in the food industry, can also lead to restrictive work practices, and lack of fair market wages and working conditions.

In a 2006 Livestock, Environment and Development (LEAD) report entitled "Livestock's Long Shadow – Environmental Issues and Options", the full impact of the livestock sector on environmental problems is assessed by leading international researchers (including Henning Steinfeld and Cees de Haan). They conclude that the sector's contribution to environmental problems is on a massive scale – being one of the top two or three most significant contributors to the most serious environmental problems, on every scale from local to global. The findings of this report suggest that improved livestock management should be "a major policy focus when dealing with problems of land degradation, climate change and air pollution, water shortage and water pollution, and loss of biodiversity."[34]

6. Inefficient food systems

Up to half of the world's harvest is fed to farm animals – while 800 million people still go hungry.[35] Industrial animal agriculture has a particularly acute negative impact on global food security.

Other than in areas where animals are fattened predominantly on grazing land that could not easily grow food crops for direct human consumption, or where they eat primarily crop residues or other waste products, livestock farming actually wastes resources. This is because grain-fattened animals take more energy and protein from their feed than they return in the form of food for humans.[36] It is an inefficient and relatively expensive product for people devoid of resources and lacking the means to afford even the most basic foods.

It takes, on average, ten pounds of grain or soya to produce one pound of meat. Land used to grow rice can support 19 times more people than land devoted to egg production.

Recognition is growing that water scarcity may become a major factor in food production in the near future.[37] Already more than one billion people lack enough safe water to meet minimum levels of health and income, and many environmentalists warn of an impending crisis in supply.[38] The production of livestock products utilises significant water resources, when water used for the production of livestock feed is also brought into the equation. Plant-based proteins use less water to produce.

The devotion of so many of our world food resources to the production of animal-based foods that are known to cause disease in their relatively affluent consumers is inefficient and inequitable.[39]

The International Food Policy Research Institute (IFPRI) estimates that a 50% reduction in meat eating in the developed world by 2020 could mean 3.6 million fewer malnourished children in developing countries.[40] Furthermore, it does not make sense to increase the production of livestock products to feed the poor in developing countries, when there are alternative protein sources that are more efficient, humane and sustainable. Many traditional diets in developing countries are not largely meat-based, so it is perverse to move towards new dietary habits that are both unsustainable and unhealthy over the longer term. Poverty and hunger need to be considered a global problem, and to be addressed in a way that has the potential to help the maximum number of people in a manner that will also sustain future generations.

It would be more effective to grow edible crops that have a good yield and can be fed to people directly to alleviate hunger.

There are various assessments of the "efficiency" of animal farming. Pro-trade sources may omit certain factors in their food conversion calculations, such as health costs from food-borne diseases, industrial worker health problems, costs of transporting feed, etc. The following analyses are from independent sources, but they still indicate that meat production is an inefficient food conversion process. Animals eat more than they end up producing. It would be more effective to grow edible crops that have a good yield and can be fed to people directly to alleviate hunger.

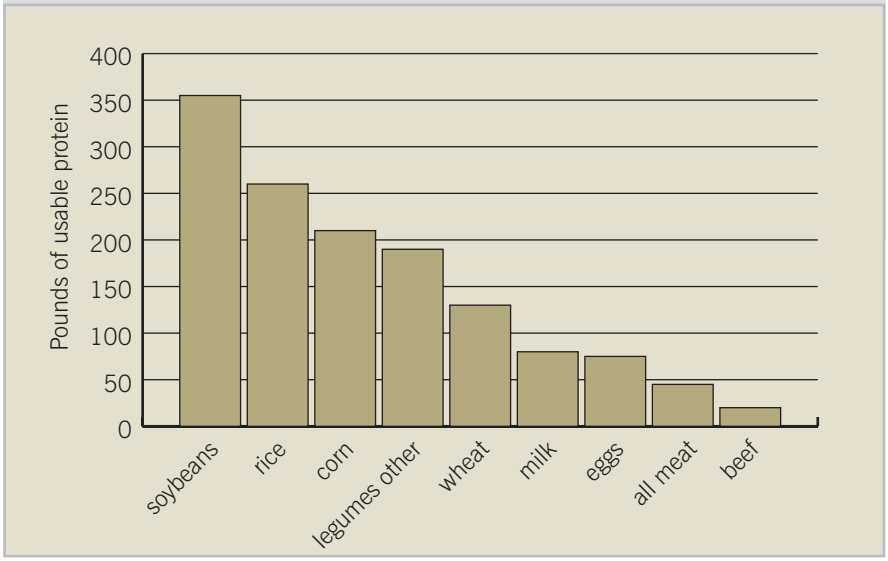
TABLE 1: Food Conversion

Species	Kg feed per kg live-weight gain	Kg feed per kg product
Aquaculture	1.2-1.6	1.5-2.0
Poultry-meat	1.8-2.4	2.1-3.0
Pork	3.2-4.0	4.0-5.5
Beef	7	10

Source: Council for Agricultural Science and Technology (CAST) [41]

NB. These figures are for dry feed, but for wet live-weight or product. As such, the real conversion rates should be much higher.

TABLE 2: Land efficiency – Usable protein yields per acre from different foods



Source: United States Department of Agriculture (USDA) [42]

TABLE 3: Water usage – Litres of water to produce one kg of food

Potatoes	500
Wheat	900
Alfalfa	900
Sorghum	1,100
Maize	1,400
Rice	1,910
Soya Beans	2,000
Chicken	3,500
Beef	100,000

Source: BioScience [43]

7. Globalisation

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The rise of multinationals

The food industry is rapidly becoming global. The companies involved are increasingly international/ transnational and vertically-integrated; centres of production are changing across the globe; imports and exports of both products and live animals have increased correspondingly; and the power of supermarkets is rising astronomically.

The globalisation of the industry is characterised, according to the FAO, by "the expansion of foreign private investment in agriculture, food processing and marketing, to a large extent but not only through transnational corporations and an increasing international trade in food facilitated by the reduction in trade barriers."[44]

Some developing countries see the production of livestock products as an export opportunity, and encourage and welcome investment by these transnational/multinational corporations. However, as was examined in the section on "Local food production and livelihoods", this can jeopardise sustainable local food production systems, and put small farmers out of business or cause them to become contract farmers for large corporations. This in turn changes traditional food production and consumption patterns, including a move to unhealthy westernised fast-food for those able to afford it. It also makes the food production industry of the country vulnerable to changes in international competitiveness. Then, if the multinational corporation decides that production would be more profitable in another developing country, it can leave contract producers in the lurch, and the country with a decimated food production system.

The decision-making centres in this globalisation process are increasingly concentrated, controlled by small numbers of people, corporations and organisations. This leads to:

- The steady decline of traditional food production and its consequences (see above).
- The steady concentration in control over production and marketing.
- The increased power of corporations, and the need for greater control and transparency over their operations.
- The lack of sustainability of some kinds of production, not only locally but also globally.

Need or greed?

The great Indian leader, Mohandas Gandhi, famously said: "The world has enough to meet everyone's need, but not everyone's greed." While wealthier regions and social classes struggle with surplus meat production and consumption, almost one fifth of the world's population is under-nourished.

Consumption

Supporters of industrial animal agriculture claim that it is needed to produce enough livestock products to feed the poor. However, in reality, access to these products by poor individuals is limited because of lack of money to buy the products and inaccessibility of markets to the most needy – the rural poor. These products are more likely to be exported or to end up in the hands of the more wealthy (urban) members of developing countries.[45]

There is a historic connection between affluence and increased meat consumption. In many developed countries, people eat far more meat than is good for them, causing

an obesity epidemic and a whole range of other health problems. If people from the developing world try to follow this pattern as their economies develop, then the already unsustainable system will be under enormous pressure. But if those in the developed world reduced their meat consumption, and food policies and educational systems were reformed appropriately, then the world would have a fighting chance of being able to feed itself sustainably into the future. And those still choosing to eat meat – but less of it – would be able to afford better quality meat, from humane and sustainable systems.

Production

In many areas, subsistence food production is hampered by lack of access to capital, land and water. At the same time, more favoured growing areas are used for commercial production of feed for industrial livestock destined for wealthy urban consumers and lucrative export markets. The major constraints to food security are found in social, economic and political conditions.[46]

In his book *So Shall We Reap*[47], Colin Tudge argues that farming policies that favour industrialisation have very little to do with meeting human needs, guaranteeing food security, providing consistently healthy and nutritious food, supporting rural economies or farmers livelihoods, or using resources efficiently. His contention is that it is all about profit: ensuring the maximum financial gain from each stage of the food chain. And, of course, this benefits a very small number of already wealthy individuals, mainly in the world's richest countries.

Around 75% of the world's poor live in rural areas. Tackling poverty means addressing the problems that these poor rural populations face. The majority of these people are farmers, or depend on agriculture-related activities for their incomes, yet they do not produce or earn enough to meet their basic needs.

Around 75% of the world's poor live in rural areas. Tackling poverty means addressing the problems that these poor rural populations face.

8. Hi-tech solutions?

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There have been many overblown claims that Genetic Engineering (GE) will solve the problem of world hunger. This is particularly true in the United States, where parts of the US Government, from Congressional proponents of aid to Africa, to the US Trade Representative, to President Bush himself, have all acted as enthusiastic cheerleaders for the GE industry.[48]

However, there is no evidence to support these claims. The advances GE proponents hoped for have not been realised to date. And the fundamental truths about food supplies and hunger remain: people go hungry because they are poor, powerless or both, or have no access to land on which to grow food. So common sense makes it most unlikely that this hi-tech "solution" has any chance of becoming a reality. In the words of a senior spokesperson for the UK's Consumers' Association: "Biotechnology's promise to solve the world's food problems raises false hopes that a mere technological fix can solve a complex economic, social and political malaise."[49]

There remains considerable public resistance to Genetically Modified (GM) products, and this is not confined to the developed world. There is also significant protest in developing nations amongst those who see the technology as inappropriate. Delegates from 18 African countries at an international meeting of the FAO issued a statement in which they "strongly object that the images of poor and hungry from our countries are

A far more convincing and less dangerous way to ensure that the world's grain harvests can feed more people than through biotechnology is for the human population to eat lower on the food chain.

being used by giant multinational corporations to push a technology that is neither safe, environmentally-friendly, nor economically beneficial to us."[50] Indeed, doubts about GM products persist in many areas, including: safety, cross-contamination, biodiversity and human health risks.[51] In the 1990s, the invention of terminator genes (genes causing the second-generation seeds of genetically modified plants to be sterile) also illustrated the potential use of GM technology for the benefit of large corporations, to the detriment of developing nations. By preventing farmers from saving and replanting, this technology would force them to buy new seed every year. Thus it would generate higher profits for large corporations while maintaining poor smallholder farmers in a state of dependency.

With control of the food chain being concentrated in fewer hands, there are powerful and influential players advocating GE. According to Bill Hefferman, Rural Sociologist at the University of Missouri, in some cases there is "seamless and fully-integrated control of the food system from gene to supermarket shelf."[52] When the two giant corporations, Monsanto and Cargill, went into partnership they controlled seed, fertiliser, pesticides, farm finance, grain collection, grain processing, feed processing, livestock production and slaughtering, as well as several food brands. This system, developed in the US, is being exported in the name of globalisation.[53]

A far more convincing and less dangerous way to ensure that the world's grain harvests can feed more people than through biotechnology is for the human population to eat lower on the food chain.[54] However, one major obstacle to such an approach would appear to be that it would be less profitable to the multinationals who seek a controlling influence on world agriculture.[55]

The UN World Food Council has estimated that transferring "ten to fifteen per cent of cereals now fed to livestock is enough to raise the world's food supply to feed current levels" of the human population.[56]

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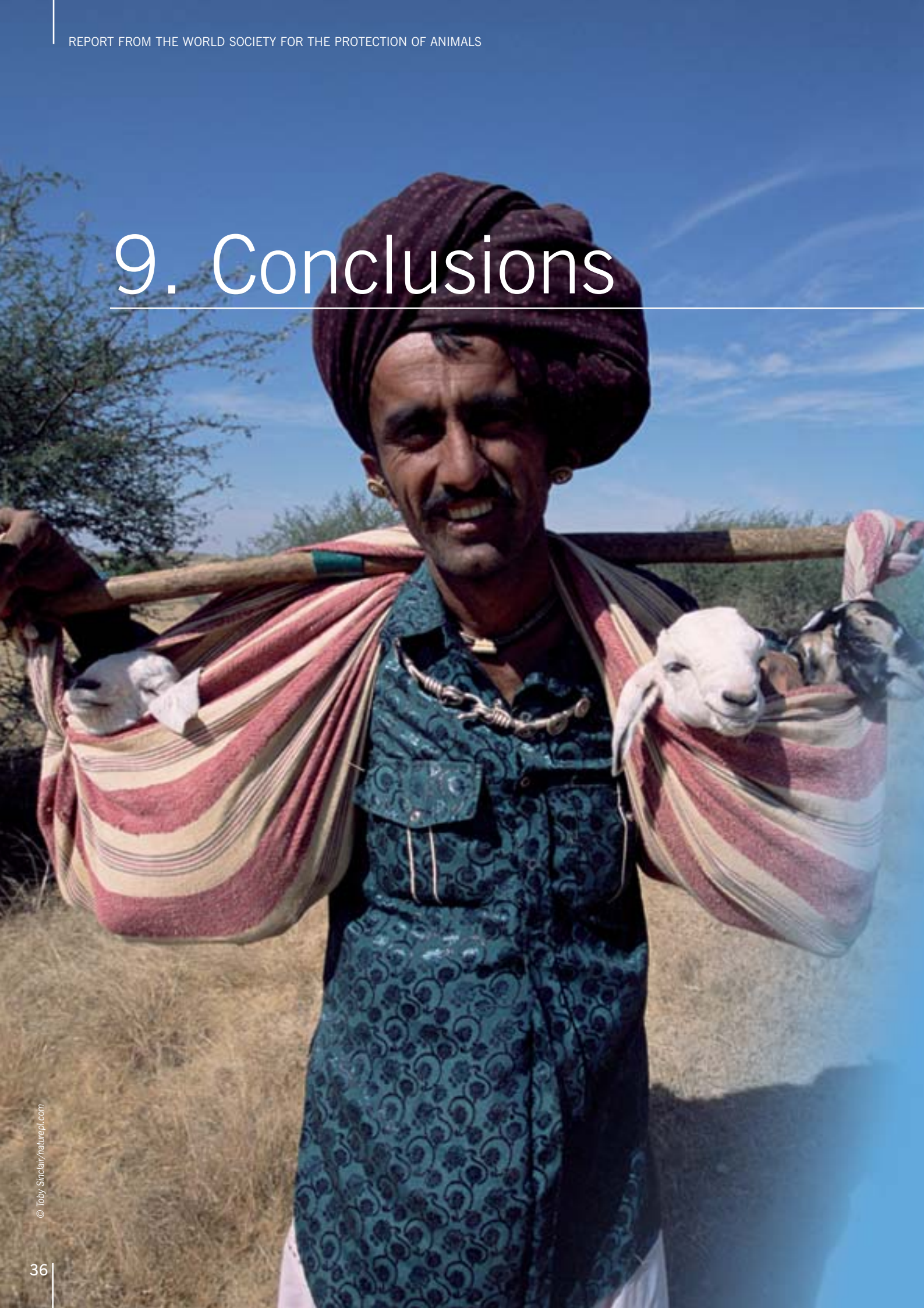
9. Conclusions



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It is recognised that the increase in industrial animal agriculture is being driven by commercial interests. However, its adverse effects on the world's poor, particularly those in developing countries, can no longer be ignored.

The time has come for the international development community to face and tackle the problem of industrial animal agriculture as an integral part of its poverty alleviation work. International organisations need to work vigorously and proactively to change the current policy environment, making industrial agricultural corporations bear the full liability for the detrimental impacts from their products.

International policy systems must educate and inform about these detrimental impacts, and work with national governments to change their policies so new entrants or expansions in this field are discouraged, rather than welcomed and assisted. No support – political or financial – should be given to industrial animal agriculture.

Government development agencies and NGOs need to recognise the poverty problems caused by industrial animal agriculture. They should use all the resources at their disposal to campaign for beneficial improvements to the policy environment, and to educate stakeholders and the public.

Industrial animal agriculture is bad news for animal welfare and bad news for the poor in developing countries. The UN will not succeed in their Millennium Development poverty goals without tackling the poverty problems caused by industrial animal agriculture.

The World Society for the Protection of Animals (WSPA) is calling for any future development support for agriculture to be given only to humane and sustainable agriculture, local production for local consumption, and the achievement and maintenance of a healthy diet.

Policy-makers seem to be absolving themselves of responsibility and giving the power of the vision to corporations. These corporations' visions are not in the public interest: they are visions of power and financial success – personal, not universal, rewards.

International policy-makers can no longer afford to limit their concern to mitigating the detrimental impacts of industrial animal agriculture. Instead, they urgently need to work proactively to create an ethical, equitable world consigning poverty and hunger to history.

Annex 1 Country case studies

Poland

Poland managed to maintain a traditional landscape, with numerous smallholdings and farms, throughout the socialist period, despite the communist-driven pressures for "collectivisation" and industrialisation. However, what communism failed to destroy, corporate agriculture and free trade is now attacking.

Foreign-owned corporations – like the US pork giant Smithfield Foods[57] – are multiplying around Poland, seeing the country as a foothold into European Union markets and hypermarkets.

These new industrial animal farms are polluting Poland's earth, air and water, as well as putting small farms out of business, changing the rural landscape. These small farms cannot compete, as they have to bear the full cost of their production, rather than saddling the country with their "external" costs. Many small farmers choose to become contract farmers – their destinies tied to the big corporations.

Year	1984	1994	2004
Pigs slaughtered (head)	14,050,000*	19,946,000*	23,231,000

Source: FAO[58]

*Figures rounded up to the nearest ten thousand

India

The Indian broiler chicken industry has grown phenomenally. The trend towards industrial production started in the early 1960s after government poultry farms began teaching the "efficiency of modern poultry farming". This message was further spread by agricultural universities and American Peace Corps volunteers. Now, about 60% of Indian chicken meat production is from industrial systems – and production has rocketed from 95 million birds slaughtered in 1974 to 1.75 billion in 2004.

Year	1974	1984	1994	2004
Chickens slaughtered (1000)	95,550	166,700	550,000	1,750,000

Source: FAO[59]

However, this increase has no impact upon human hunger, as the market is the fast-growing middle class. Furthermore, there is a sea change in Indian culture towards US-style fast-food, and a move away from traditional vegetarian diets. Nearly 75% of the Indian population is now non-vegetarian and about 92% of Indian people eat chicken.

There has also been considerable disruption of traditional poultry production, with small farms and businesses closing because they can no longer compete with the large corporations.

There are also marketing problems in the Indian poultry sector, as traditional markets have been unable to handle the large volumes involved and have insufficient cash to make necessary investments. This has led to many intermediaries and commission agents moving in – adding to the cost and inefficiency of distribution. Lack of cold storage, refrigerated vans and transport costs also hamper the movement of surplus goods to areas of potential demand. Industry sources have estimated that 75% of poultry consumption is in urban areas – reinforcing the claim that these industrial products are not reaching India's rural poor.[60]

Brazil

Like Thailand, Brazil has developed a massive poultry export industry in order to improve its Gross Domestic Product. It is now the third largest poultry producer in the world, after the USA and China – with a production level of just under that of the entire European Union.[61]

Brazil is a prime example of a country whose industrial production boomed at the expense of its small rural farmers. The industry has now become almost entirely vertically-integrated.

In the early days of industrialisation, small family farmers were paid to raise day-old chicks for larger companies. For example, Sadia, a large family-owned company, employed 14,000 smallholders to raise chicks on their mixed farms. The chickens were then bought back by Sadia, who processed and sold them.[62] But this and other seemingly co-operative systems were broken down as these family companies were taken over by larger foreign companies. They in turn could not compete with the massive corporations, who are increasingly taking over the entire production chain.

In Santa Catarina State alone, 20,000 families left the countryside in 1998, many leaving pig and poultry production because they could not compete with the big corporations.[63]

Industrial pig production is also on the rise in Brazil. A US company called Carroll Foods set up a "mega-farm" with 50,000 sows in Mato Grosso do Sul, and over 200 Dutch pig producers were also set to relocate there following the Dutch government plans to reduce pig farming in the Netherlands due to over-pollution.[64]

Brazil has also developed its soya bean production into a leading export crop. The vast majority of Brazil's soya feeds Japanese and European livestock.

Despite these seemingly impressive production trends, there has been no impact upon poverty: Brazil is still saddled with widespread poverty and hunger. This is to be expected, given that industrial animal agriculture favours large corporations and private enterprise, particularly vertically-integrated companies that push small local producers out of the market.

Year	1984	1994	2004
Chickens slaughtered (1000)	1,133,000	2,530,000	5,260,000
Pigs slaughtered (head)	11,100,000	39,710,000	38,400,000

Source: FAO[65]

Thailand

Like Brazil, Thailand developed a massive poultry export industry in order to improve its Gross Domestic Product. Thailand developed two main types of commercial poultry producers: independent commercial growers and contract growers. Independent growers are declining, and almost all commercial growers are now full- or part-time contract growers.

The industry has become vertically-integrated, as well as highly concentrated, with small producers being pushed out of the market.

Thailand was the fourth largest poultry producer in the world, until Avian Flu ravaged its industry.[66] It was also being pressed competitively by China (which has lower costs and services the same Asian markets, such as Japan) and Brazil (whose prices are more competitive).

However, despite this industry development, there has been no positive effect on the widespread poverty and hunger within Thailand. This is probably to be expected given the industry's export-orientation and the detrimental impact of industrialisation on small producers.[67]

Year	1984	1994	2004
Chickens slaughtered (1000)	272,000	679,798	698,544

Source: FAO[68]

China

China's meat production levels have risen massively over the last 20 years. It is now the world's largest producer-country for pig meat and beef, and the second largest (after the United States) for poultry meat.[69] It is also by far the world's largest egg producer. The consumption of food grain in China is falling, as consumers switch to animal products. There are growing reports of obesity in Chinese cities. As well as supplying their home market, the Chinese are keen to increase export earnings from livestock products.

In the pig meat sector, production has been shifting from individual family farms towards specialised livestock producers and commercial industrial producers. Small-scale pig producers (traditionally backyard producers with just one to several pigs) produced almost 95% of China's pork in the mid-1980s, but their share had dropped to 81% in 1996. Urban consumption of pork is also significantly higher than rural consumption – highlighting the fact that this production is destined for wealthier urban societies and export, rather than for feeding the country's poor.

China's poultry industry has also been industrialising, with foreign investment playing a large role. Both production and consumption increased rapidly during the 1980s and 90s. There are many large-scale operations in China, mainly located near large urban centres and east coast ports. However, Avian Flu has damaged consumer confidence in poultry.[70]

The Chinese government continues to support the development of industrial agriculture. It is also a leading proponent of biotechnological solutions.

Year	1984	1994	2004
Beef and veal slaughtered (head)	3,254,588	18,917,867	47,363,985
Chickens slaughtered (1000)	1,265,344	3,754,074	7,181,159
Pigs slaughtered (head)	233,649,150	427,161,877	630,309,615

Source: FAO[71]

Annex 2 Statistics

Livestock production by commodity: past and projected

	Million Tonnes					% increase p.a.			
Total meat	1967/69	1987/89	1997/99	2015	2030	1969-1999	1989-1999	1995/97-2015	2015-2030
World	92	166	218	300	376	2.9	2.7	1.9	1.5
excl. China	84	142	162	218	277	2.1	1.3	1.8	1.6
Developing countries	28	66	116	181	247	5.2	5.9	2.7	2.1
excl. China	21	41	60	98	147	3.8	3.9	3.0	2.7
excl. China and Brazil	18	34	47	79	123	3.5	3.3	3.1	2.9
Sub-Saharan Africa	3	4	5	9	16	2.3	2.2	3.3	3.5
Latin America and the Caribbean	10	19	28	43	58	3.5	4.5	2.6	2.1
excl. Brazil	7	11	15	24	33	2.5	3.1	2.7	2.3
Near East/North Africa	2	5	7	13	19	4.4	3.8	3.5	2.9
South Asia	3	5	7	13	23	3.7	2.8	3.6	3.9
East Asia	10	33	69	103	131	7.1	7.6	2.4	1.6
excl. China	3	8	13	21	32	5.1	4.1	3.0	2.8
Industrial countries	46	71	85	99	107	1.9	1.8	0.9	0.5
Transition countries	17	29	17	20	22	0.0	-6.4	0.8	0.8
Bovine meat									
World	38.0	53.7	58.7	74.0	88.4	1.4	0.8	1.4	1.2
Developing countries	11.8	19.3	28.0	41.2	55.0	3.0	3.8	2.3	2.0
excl. China	11.7	18.4	23.2	33.5	44.1	2.5	2.2	2.2	1.8
excl. China and Brazil	10.0	14.4	17.3	25.2	34.1	2.0	1.5	2.3	2.0
Sub-Saharan Africa	1.6	2.2	2.6	4.3	6.7	1.5	1.7	3.0	3.0
Latin America and the Caribbean	6.8	10.4	13.1	18.2	22.5	2.5	2.1	1.9	1.4
excl. Brazil	5.1	6.5	7.2	9.9	12.5	1.4	0.4	1.9	1.6
Near East/North Africa	0.7	1.3	1.8	2.8	4.1	3.2	3.4	2.4	2.6
South Asia	1.7	3.1	4.0	5.7	7.4	3.1	2.3	2.1	1.7
East Asia	1.0	2.3	6.4	10.1	14.4	6.4	11.5	2.7	2.4
excl. China	0.8	1.4	1.6	2.5	3.5	2.1	2.3	2.6	2.2
Industrial countries	19.1	23.8	25.0	26.6	26.5	0.6	0.6	0.4	0.0

Livestock production by commodity: past and projected

	Million Tonnes					% increase p.a.			
Total meat	1967/69	1987/89	1997/99	2015	2030	1969-1999	1989-1999	1995/97-2015	2015-2030
Transition countries	7.0	10.6	5.7	6.3	6.9	-0.3	-7.5	0.5	0.6
Ovine meat									
World	6.6	9.1	10.8	15.3	20.1	1.9	1.4	2.1	1.8
Developing countries	3.0	5.0	7.4	11.2	15.4	3.4	3.7	2.5	2.1
Sub-Saharan Africa	0.6	0.9	1.3	2.2	3.4	2.8	3.5	3.1	3.0
Near East/North Africa	0.9	1.5	1.8	2.6	3.5	2.3	1.9	2.2	2.0
South Asia	0.6	1.1	1.3	2.1	3.1	3.5	1.4	2.6	2.6
East Asia	0.4	1.1	2.5	3.8	4.8	7.0	8.1	2.6	1.5
Industrial countries	2.4	2.8	2.7	3.1	3.5	0.6	-0.8	0.9	0.8
Transition countries	1.3	1.3	0.8	0.9	1.1	-1.0	-6.4	1.3	1.1
Pig meat									
World	34.1	66.3	86.5	110.2	124.5	3.2	2.7	1.4	0.8
excl. China	28.1	46.2	48.1	57.9	66.2	1.7	0.4	1.1	0.9
Developing countries	9.7	28.0	49.3	69.5	82.8	6.1	5.7	2.0	1.2
excl. China	3.8	7.9	10.9	17.2	24.5	3.7	3.4	2.7	2.4
Latin America and the Caribbean	1.8	3.0	3.9	6.0	7.8	2.1	3.9	2.5	1.8
excl. Brazil	1.1	1.9	2.3	3.4	4.4	1.7	2.8	2.3	1.8
East Asia	7.6	24.2	44.3	61.6	71.9	6.8	6.0	2.0	1.0
excl. China	1.6	4.0	5.9	9.3	13.6	5.1	3.3	2.8	2.5
Industrial countries	16.6	26.0	29.3	32.3	33.1	1.8	1.4	0.6	0.2
Transition countries	7.7	12.3	7.9	8.4	8.6	-0.1	-5.3	0.4	0.1
Poultry meat									
World	12.9	37.2	61.8	100.6	143.3	5.2	5.4	2.9	2.4
excl. China	12.1	34.6	51.2	81.4	117.5	4.8	4.1	2.8	2.5
Developing countries	3.3	13.2	31.3	59.1	93.5	7.9	9.4	3.8	3.1
excl. China	2.5	10.6	20.7	39.9	67.7	7.4	7.2	4.0	3.6
excl. China and Brazil	2.2	8.6	15.6	31.9	56.4	6.9	6.4	4.3	3.9

Livestock production by commodity: past and projected

	Million Tonnes					% increase p.a.			
Total meat	1967/69	1987/89	1997/99	2015	2030	1969-1999	1989-1999	1995/97-2015	2015-2030
Sub-Saharan Africa	0.3	0.7	0.9	1.9	4.1	3.8	2.6	4.3	5.1
Latin America and the Caribbean	1.0	4.7	10.5	18.2	27.3	7.8	9.0	3.3	2.7
excl. Brazil	0.7	2.7	5.4	10.2	16.0	6.7	8.4	3.8	3.0
Near East/North Africa	0.4	2.1	3.2	7.1	11.6	7.7	5.2	4.7	3.3
South Asia	0.2	0.5	1.1	3.9	10.6	7.7	7.2	7.9	6.9
East Asia	1.5	5.3	15.5	27.9	39.9	8.5	11.7	3.5	2.4
excl. China	0.7	2.6	4.9	8.7	14.1	7.3	6.1	3.4	3.2
Industrial countries	8.1	18.8	27.7	37.5	44.1	4.0	3.9	1.8	1.1
Transition countries	1.5	5.2	2.9	4.1	5.7	1.6	-6.7	2.0	2.3
Milk (whole milk e.q.)									
World	387	528	562	715	874	1.3	0.6	1.4	1.3
Developing countries	78	149	219	346	484	3.6	4.1	2.7	2.3
excl. China and Brazil	69	128	189	301	425	3.5	4.1	2.8	2.3
Sub-Saharan Africa	8	13	16	26	39	2.7	1.9	3.0	2.8
Latin America and the Caribbean	24	40	57	81	105	2.6	3.9	2.1	1.8
excl. Brazil	17	26	36	52	69	2.2	4.0	2.1	1.9
Near East/North Africa	14	21	28	41	56	2.3	3.1	2.2	2.1
South Asia	30	65	104	174	250	4.5	4.9	3.1	2.4
East Asia	3	10	15	25	34	6.9	4.5	2.9	2.2
excl. China	1	4	5	8	12	7.3	3.2	3.0	2.4
Industrial countries	199	236	246	269	286	0.7	0.5	0.5	0.4
Transition countries	110	144	97	100	104	-0.3	-4.6	0.2	0.2
Eggs									
World	18.7	35.6	51.7	70.4	89.9	3.4	4.2	1.8	1.6
Developing countries	4.9	16.2	33.7	50.7	69.0	7.0	8.0	2.4	2.1
excl. China	3.2	9.5	13.5	24.6	37.8	5.0	3.4	3.6	2.9
Sub-Saharan Africa	0.3	0.7	0.9	1.8	3.4	3.7	2.6	4.0	4.1

Livestock production by commodity: past and projected

	Million Tonnes					% increase p.a.			
Total meat	1967/69	1987/89	1997/99	2015	2030	1969-1999	1989-1999	1995/97-2015	2015-2030
Latin America and the Caribbean	1.2	3.6	4.6	7.3	10.4	4.5	2.5	2.8	2.3
Near East/North Africa	0.4	1.5	2.2	3.6	5.3	6.0	4.1	3.0	2.6
South Asia	0.3	1.4	2.2	5.7	9.9	6.3	4.7	5.8	3.7
East Asia	2.6	9.1	23.8	32.1	40.0	8.3	10.7	1.8	1.5
excl. China	0.9	2.4	3.6	6.0	8.8	5.0	3.5	3.0	2.6
Industrial countries	10.7	12.8	13.7	14.8	15.5	0.6	0.9	0.5	0.3
Transition countries	3.1	6.5	4.3	5.0	5.5	0.7	-4.7	0.8	0.7

Source: FAO [72]

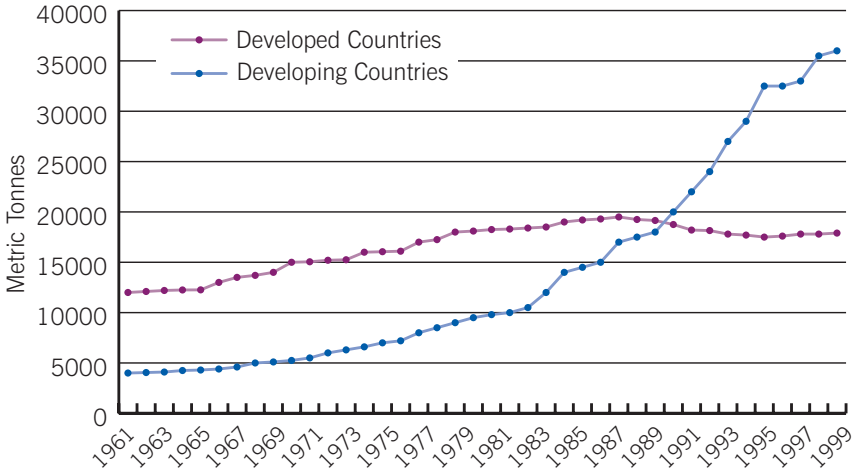
Slaughtered Animals (Head) in 2004

Country	Pigs	Chickens	Beef cattle and buffalos
European Union (25)	242,241,280	5,895,361	30,065,503
Australia	5,591,200	423,742	8,778,700
Brazil	38,400,000	5,260,000	36,500,000
Canada	23,000,000	–	–
China	630,309,615	7,181,159	47,363,985
Denmark	22,902,300	–	–
India	14,200,000	1,750,000	14,400,000
Mexico	13,867,200	1,277,030	7,479,840
Netherlands	14,341,000	–	–
Thailand	10,415,997	698,544	1,022,140
United States of America	103,573,400	8,895,748	33,759,700

Source: FAO [73]

The FAO tracks the global production of a wide range of agricultural commodities, including animals and animal products.[74] According to FAO data, global egg production grew from 37.6 million tonnes in 1990 to 54.3 million in 2000, an increase of nearly 45%. The majority of this growth is taking place in developing countries, particularly those in Asia. In 1990, developed and developing countries produced roughly equal numbers of eggs, but in 2000 the developed countries accounted for only 34% of production.

Trend of annual egg production, 1961-2000



Source: FAO[75]

The following table shows egg production in 2000 as a percentage of that in 1990. By far the most growth has occurred in Asia, where production has more than doubled in the past decade.

Region	% increase 1990-2000
Asia	223.2
North and Central America	129.2
Africa	127.1
South America	121.1
Oceania	108.6
Europe	85.4
World	**144.7**

Source: FAO[76]

Regarding individual countries, the top producer is China, which produces more than four times as many eggs as its nearest competitor, the US.

The following table summarises year 2000 production levels (in tonnes of eggs) for the top ten egg-producing countries and the actual change (also in tonnes) for the 10-year period beginning in 1990.

Country	Production (2000)	Growth (1990-2000)
China	22,161	+13,989
United States	5,011	+977
Japan	2,508	+89
Russia	1,877	-764
India	1,782	+621
Mexico	1,634	+625
Brazil	1,424	+168
France	1,050	+164
Germany	880	-105
Turkey	790	+405
TOTAL	**38,172**	**+16,169**

Source: FAO [77]

EU imports from the rest of the world in millions of euros

Year	2002	2003	2004
Bovine	509,188	548,302	858,490
Pigs	27,927	71,748	52,779
Chickens, ducks, turkeys	3,645,021	6,817,535	7,009,294

EU exports to the rest of the world

Year	2002	2003	2004
Bovine	259,459	230,305	261,613
Pigs	155,729	107,096	513,021
Chickens, ducks, turkeys	107,744,447	90,971,358	109,847,015

Source: World Trade Atlas [78]

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