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Good Practices for Animal Welfare in Agriculture Development: Impact on Sustainable Development and the Achievement of the SDGs

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Prepared for the “Wageningen Project” on “Guidance on the Implementation of Good Practices for Animal Welfare in Agriculture Development Projects” comprising the following partners: World Bank, Wageningen University and Research (WUR), World Animal Net (WAN)/now World Federation for Animals (WFA), Food and Agriculture Organization (FAO), World Organisation for Animal Health (OIE)

General

The 2030 Agenda envisages a development model “in which humanity lives in harmony with nature and ... other living species are protectedⁱ.” While the relationship between animal welfare, environmental well-being and human development is starting to be discussed and evidenced, there remains very little recognition of this relationship and the crucial role animal welfare plays in sustainable development for people and planet in UN discussions of the Sustainable Development Goals (SDGs). This paper discusses this further, with specific reference to the development of good practice for animal welfare in agricultural development. However, it is recognized that there are also broader issues of human-animal relationships and animal welfare of relevance to the achievement of the SDGs which are outside the scope of this paper.

In wider policy circles, it is increasingly recognized that animal welfare should be at the heart of sustainabilityⁱⁱ. It is an important ethical issue, and a societal value which is strongly supported by citizens/consumers across the world. Indeed, this was demonstrated in the Sustainable Development Goal consultation process when animal protection achieved the second highest score for the 17th – additional – option given in the My World 2015 survey. It is also an internationally-accepted policy issue; and a practical issue which can help with the achievement of most, if not all, of the SDGs.

The importance of animal welfare is underlined by an increasing body of science which confirms that animals are sentient beings who share with us feelings, emotions, perceptions – and the ability to suffer and experience wellbeing. Animal welfare is now covered by a wide-ranging and growing body of internationally and regionally accepted science-based standards, conventions, treaties, regulations, directives and agreements. It has an international policy stream with agreed international standards, under the aegis of the World Organisation for Animal Health (the OIE), and regional strategies for the development of animal welfare covering all continents. It has also been taken into account by other international and regional policy-making bodies, including some Regional Economic Communitiesⁱⁱⁱ, the UN’s World Committee on Food Security^{iv}, the Food and Agricultural Organization of the United Nations (FAO)^v, the Organisation for Economic Cooperation and Development (OECD)^{vi}, the International Organization for Standardization (ISO)^{vii}, and some lending institutions – including the International Finance Corporation (IFC)^{viii} and the World Bank.

Indeed, the World Bank described animal welfare as a “critical issue” at its 2017 Agricultural Global Practice Forum. This was also the occasion when it made a commitment to the development of “Good Practices for Animal Welfare in Development”.

As can be seen from the report from the FAO’s Agriculture and Consumer Protection Department on “[Animal Welfare at the Heart of Sustainability](#)”^{ix}, The European Commission (EC) and the FAO have also stressed the need for animal welfare to be at the heart of sustainability; and recognized that animal production and animal welfare are inextricably linked with ethical, political, economic, environmental and social issues. The EC’s Andrea Gavinelli has repeatedly made the case for animal welfare to be included in the sustainability agenda; and stated that: “The welfare of animals is not only about changing values, but about added value for all those involved.” Daniela Battaglia of FAO pointed to the ways in which animal welfare is directly related to such fundamental rights as the right to food and adequate nutrition, livelihood, decent work conditions and overall social justice; and such global common goods as biodiversity and natural resources. FAO data indicates that up to 850 million people are currently malnourished and for many of these people, particularly in rural communities, the welfare of their animals is inextricably linked with their own livelihood. In Battaglia’s words: “The food and the way we eat is not a private issue anymore, we have to take into consideration the effects on the global population, the environment and the animals.”

Ultimately, giving due concern to animal welfare provides many opportunities: Opportunities in market differentiation and segmentation; quality production; national reputation and trade; as well as livelihoods, sustainability and development.

Animal welfare is also inextricably linked with animal health, and human health and welfare. The “One Health” approach is now a well-entrenched collaborative effort of multiple disciplines – working locally, nationally and globally – to attain optimal health for people, animals and the environment.”^x Increasing awareness of the importance of animal welfare across the board has now led to moves to advance a “One Welfare” approach, which emphasizes these links, and brings forth a harmonized, interdisciplinary way of working to solve complex animal welfare problems. This will lead to changes in systems of animal welfare governance at international, regional and national levels, as well as to further increasing the political importance and adoption of animal welfare.

Good Practices for Animal Welfare in Agricultural Development Projects

The World Bank made a commitment to develop good practices for animal welfare in agriculture at its 2017 Agricultural Global Practice Forum. Since then, it has joined with partners from the FAO, the OIE, Wageningen University and Research (WUR), and World Animal Net (WAN) to develop this project.

The objectives of the project are to support the World Bank, FAO, and the broader development and cooperation community in assisting Low- and Middle-Income Countries (LMICs) with the effective implementation of good animal welfare practices for the sustainable development of the agricultural sector.

More specifically, the objective is to provide practical guidance and promote the implementation of good animal welfare practices in agricultural development activities.

The outputs from the project will include a set of guidelines consisting of practical guidance; checklists for project design and implementation; indicators for monitoring, and case studies; and material to conduct training activities for task team leaders and project managers.

Sustainability

The use of animals in agriculture has developed industrially over time to meet increased demand for animal products (due to drivers such as population increase and changing consumer tastes and habits). However, there is now increasing consideration of whether certain animal production systems or methods are sustainable; together with recognition that profitability and demand are no longer sufficient reasons for continuation of production in the absence of sustainability.

A system or procedure can be defined as sustainable if it is acceptable now and if its expected future effects are acceptable, in particular in relation to resource availability, consequences of functioning and morality of action. A system might not be sustainable for several possible reasons. For animal usage systems, including those involved in animal production, examples of such reasons are: (i) because it involves such a depletion of a resource that the resource will become unavailable to the system, (ii) because a product of the system accumulates to a degree that prevents the functioning of the system (this could cover aspects such as pollution and greenhouse gas emissions, for example), or (iii) because members of the public find any activities involved unacceptable.^{xi}

Where there is depletion of a resource or accumulation of a product, the level at which this is unacceptable, and hence the point at which the system is unsustainable, is usually considerably lower than that at which the production system itself fails. A system could be unsustainable because of harms to the perpetrator, harms to other people, harms to the environment, harms to the animals involved (including poor welfare) or harms to other animals (including impacts on wildlife). No system or procedure is sustainable if a substantial proportion of the local or world population, at this moment, finds aspects of it unacceptable, or if they consider now that its expected consequences in the future are morally unacceptable.^{xii}

Some consequences of practices in animal production, transport or slaughter are unacceptable because the information that is internationally available makes clear the damaging consequences to people, animals or the environment. Some systems of agricultural production are considered unsustainable because of inefficient utilization of resources and pollution. On the other hand, some systems can use resources efficiently, increase biodiversity, minimize pollution and improve animal welfare^{xiii}.

The development of Good Practices for Animal Welfare in Agricultural Development Projects aims to support the implementation of sustainable production systems, which are beneficial

for humans, animals and the environment. This will support the achievement of most, if not all, of the SDGs; as explained briefly in the analysis of impact on individual SDGs below.

GOAL 1: No Poverty

End poverty in all its forms everywhere

The introduction of good animal welfare systems in agriculture will support family and small-scale/emerging farmers in producing sustainable, high quality and healthy food. This will enhance their viability and competitiveness against industrial agricultural production. Industrial animal agriculture exacerbates poverty through unfair competition with family and small-scale farmers, and its detrimental impacts on rural communities: In particular, with regard to resource use and pollution in its various forms. Industrial agriculture makes food supplies insecure, as it is often dependent on imports and technology, and concentrated in the hands of a small number of major commercial interests. It is also low labor, resulting in a loss of agricultural jobs, which are the mainstay of developing country economies. In contrast, small-scale, high welfare, agroecological production strengthens local food security and labor opportunities.

The project will also provide guidance on animal welfare for larger systems and review the ability of systems to meet animal welfare criteria.

Industrial agriculture's rearing of large single-species units, in close-confinement systems, increases vulnerability to disease, health risks and accidents. This imposes numerous environmental and health costs which are borne by the countries involved rather than by the corporations profiting from the goods, (including significantly contributing to greenhouse gas emissions and antibiotic resistance). 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, as indicated in the report "[Industrial Animal Agriculture: Part of the Poverty Problem](#)"^{xiv}.

The recent UN Committee on World Food Security report, [Sustainable agricultural development for food security and nutrition: what roles for livestock?](#)^{xv} recognized that industrial livestock production contributes to negative impacts on the environment (through land and water use and water, soil and air pollution), human health (through antimicrobial resistance and emerging diseases), social structure (through rural abandonment, poor working conditions and low wages) and animal welfare. These impacts will exacerbate poverty and disadvantage. Conversely, the introduction of high welfare, sustainable, agroecological systems will provide a pathway out of poverty, building food-secure and sustainable rural populations for many generations to come.

The Good Practices for Animal Welfare in Agricultural Development Project also covers working animals, and these animals play an important role in livelihoods, production efficiency, transport and traction and access to wider markets—permitting families to be economically active. Those who own animals are better off, and those who are able to ensure their animals' health and welfare enjoy further improved outcomes.

In general, healthy, well-cared for animals can make a real difference to raising people out of poverty.

GOAL 2: Zero Hunger

End hunger, achieve food security and improved nutrition and promote sustainable agriculture

This SDG is linked to SDG 1, in particular, and there is overlap in many of the issues affecting each SDG.

Improving animal welfare in agricultural development can make a significant contribution towards the achievement of food security; and the production of healthy, nutritious food. Furthermore, higher-welfare systems are needed in order to safeguard and develop local production/consumption systems and, as explained above, to ensure future sustainability.

The introduction of industrial animal agriculture systems in developing countries can result in increased food insecurity. This is because such systems are concentrated in the hands of a small number of major commercial interests, which mainly produce for more lucrative export and urban markets. They compete unfairly with local, small-scale producers (particularly due to the externalized costs of their significant detrimental impacts, such as pollution), and often putting such producers out of business or integrating them as contract producers—thus incrementally eliminating sustainable, local production. They are also import and technology dependent, which can increase insecurity, especially due to factors such as: lack of plant maintenance, technical expertise and equipment supplies (especially in cases where there is lack of expertise and experience with modern systems and technologies, and where there is not a culture or tradition of regular maintenance); insecure power supplies; and volatile global trade/market and currency fluctuations.

Industrial animal production systems decouple animals from the land by relying on feed inputs like grains and soy, also grown intensively and which could otherwise be used to directly feed humans, instead of grazing. According to the [World Economic Forum](#)^{xvi}, this means that up to 20% of calories produced per person today are lost to feeding animals. More people could be fed, using less land, by reducing the amount of grain fed to animals rather than humans. The sheer scale of the losses entailed in feeding cereals to animals means that this practice is increasingly being recognized as undermining food security. The UN FAO states that further use of cereals as animal feed could threaten food security by reducing the grain available for human consumption^{xvii}.

Furthermore, these close-confinement animal systems and crop monocultures are particularly vulnerable to disease and accidents, increasing food insecurity and health risks. Various pharmaceutical and chemical inputs are used, including antibiotics, to keep such systems functional in the short-term, but these have detrimental impacts over the longer term (in terms of sustainable food security; as well as health, environment and animal welfare).

Animals only contribute to food security when they are converting materials that people cannot consume – such as grass, crop residues, and unavoidable food waste – into food that we can eat. This is what happens in small-scale, high welfare, agroecological production. Such systems provide local food security; and do so in a manner which replenishes and protects

natural resources and the soil for the benefit of future generations. In the words of the [NGO Major Group position paper](#)^{xviii}: “Biodiversity, soil health, and wildlife conservation are central to increasing food security and improving nutrition through sustainable diets. The sustainable production of nutritious food requires that we learn from and live in harmony with nature, preserving the environment on which we all depend.”

Good animal welfare includes the use of agroecological systems, such as raising animals on extensive pastures and rangeland and integrated crop/livestock production, which restore the link between animals and the land, enhance sustainability and contribute to food security. One example is silvopastoral systems for cattle that, alongside pasture also provide shrubs (preferably leguminous) and trees with edible leaves and shoots. Such systems do not need synthetic fertilizers, produce more biomass than conventional pasture and hence result in increased meat and milk production.^{xix}

Good animal welfare also includes improved healthcare and nutrition for the animals through better disease prevention and management, which results in increased livestock productivity and quality. This will improve smallholders’ purchasing power, making them better able to buy the food that they do not produce, further supporting food security.

GOAL 3: Good Health and Well-being

Ensure healthy lives and promote well-being for all at all ages

Balanced diets and good, nutritious food are vital for health and vigor. We are faced with a burgeoning problem with non-communicable diseases among wealthier segments of the world’s population, associated with high intakes of animal source foods, and in particular animal fats and red meat. These include cardio-vascular disease, diabetes, and certain types of cancer. These are increasingly affecting developing countries, as well as developed countries, as consumers move from traditional diets towards increased intake of meat, fats and sugar, paying little attention to balanced and sustainable diets^{xx}. As more countries develop, this problem will only increase unless food demand is influenced.

The World Health Organisation (WHO) recommends eating a nutritious diet based on a variety of foods originating mainly from plants, rather than animals^{xxi}. This would mean eating smaller quantities of animal products, which could then be produced using higher animal welfare standards, extensively, and according to agroecological principles – as opposed to industrially produced.

The cramped, unhealthy environmental conditions in factory farms and feedlots increase the risk of infectious and non-communicable food-borne diseases. There are many food safety risks from factory farms and feedlots including pathogens and zoonotic diseases, such as Swine Flu and Avian Flu, which run the risk of becoming pandemics. Common bacteria include: salmonella, E. coli, and campylobacter. Food safety risks from industrial farms and feedlots have been well documented – with the OIE estimating that no less than 60% of human pathogens and 75% of recent emerging diseases are zoonotic^{xxii}.

These conditions are also central to the global threat that antimicrobial resistance (AMR) poses to human and animal health. Antibiotics are routinely used non-therapeutically in factory farming, both as growth promoters and prophylactics (and metaphylactics in aquaculture). The WHO, states: “Antibiotic resistance is one of the biggest threats to global health, food security, and development today”^{xxiii}. In the words of the European Food Safety Agency: “Reducing the use of antimicrobials in food-producing animals, replacing them where possible and re-thinking the livestock production system is essential for the future of animal and public health”^{xxiv}. There are also health implications from other veterinary medicines, such as vaccines and growth promoters, which move from farms through water to drinking-water sources.

One Health/One Welfare are concepts gaining traction across human health and veterinary fields, and which assert that human, environmental, and animal health and welfare are interlinked and interdependent.^{xxv} Our current treatment of animals in food production can cause not only suffering to the animals involved, but also have cascading effects on our own health. The development of good animal welfare in agriculture will include improved management, disease prevention, healthcare and nutrition for animals. These animal health and welfare improvements will contribute to healthier, safer food for humans.

Progress for SDG3 also depends on mitigating the effects of climate change and environmental risks with far-reaching implications, including on the health and well-being of all people, food and agriculture production, and sustainable industrialization.^{xxvi} The industrial production of animals causes a significant amount of pollution of air, water and soil, which is largely unregulated in most countries. This pollution can have significant impacts on human health through disease transmission and increased concentrations of certain substances, like nitrates. There are also health risks for those living near factory farms and feedlots, particularly from ammonia, hydrogen sulphide, volatile organic compounds, particulate matter and bacteria from animal excrement which enter the air, and nitrates, pathogens and pharmaceuticals which enter surface water through run-off or leach into groundwater).^{xxvii}

There can be a correlation between poor animal welfare and infection of zoonotic pathogens in humans. For example, research has demonstrated that reducing welfare problems by the better management of rearing conditions for broilers would not only improve their welfare, but would also decrease the risks of *Campylobacter* contamination, of carcass condemnations and of economic loss for the poultry industry^{xxviii}.

The development of good practice for animal welfare in development will provide tools and training to assist producers in developing countries to move to higher welfare, agroecological production methods which will produce healthier animals while improving environmental and human health outcomes.

GOAL 4: Quality Education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Education is fundamental to the achievement of any form of societal progress, because changing the way people think and determine their values is the only way to permanently change the way they behave – as individuals, companies, institutions or governments.

The good animal welfare practices for agricultural development project is largely focused on education and training. This will be world-class in quality, as it will be prepared by leading experts from across the world. Its outputs will include a set of guidelines consisting of practical guidance, checklists for project design and implementation, indicators for monitoring, and case studies). These will be used by the World Bank and the FAO (and, over time, other international development organizations) to train a range of stakeholders. These stakeholders could range from agricultural project workers (including those in international organizations), government officials, extension officers, agricultural and veterinary trainers, farmers, slaughterhouse workers and transporters.

The education and training delivered will build the knowledge, understanding and skills of these stakeholders, enabling them to produce higher quality, more humanely- and environmentally-produced foods, which contribute to local food security and rural development.

In developing countries, agriculture employs between 50 percent and 90 percent of the population. Of this percentage, small farmers are the most prevalent form of producers, making up 70-90 percent of those working in agriculture.^{xxx} Agriculture is viewed as a vital means through which poverty and unemployment can be addressed; and education and training are key long-term strategies to support such development.

GOAL 5: Gender Equality

Achieve gender equality and empower all women and girls

Women comprise about 43 percent of the agricultural labor force globally and in developing countries, where it has been confirmed that they make essential contributions to the agricultural and rural economies in all developing countries.^{xxx} In Sub-Saharan Africa in 2015, they represented 40 % of the agricultural labor force. In some developing countries, their contributions exceed 50%.^{xxxii}

Within pastoralist and mixed farming systems, livestock play an important role in supporting women and in improving their financial situation, and women are heavily engaged in the sector. An estimated two-thirds of poor livestock keepers, totaling approximately 400 million people, are women. They share responsibility with men and children for the care of animals, and particular species and types of activity are more associated with women than men. For example, women often have a prominent role in managing poultry and dairy animals, and in caring for other animals that are housed and fed within the homestead.^{xxxii}

These occupations provide them with gainful employment and sometimes their own income and a degree of independence and self-worth.

However, women often face constraints that reduce their agricultural skills and productivity. Thus, improving rural women's access to training and information, and extension services, is critical.^{xxxiii} The good animal welfare practices for agricultural development project will include education and training which will benefit women directly; and help to build the skills of extension services which serve their communities on an ongoing basis. Improving the health and welfare of their animals will improve the productivity, development and sustainability of their agricultural work.

Working equines also play a significant role in the lives of the women who keep them, as they help with activities such as daily chores, paid work, and transportation. Safeguarding the health and welfare of working animals is imperative for the poor women who keep them, as they enable these women to spend more time with their children and families, improve food security and access to education, and increase integration in their communities. All of these factors reduce the barriers to equality that women often face.

It is noted that women's groups also support organic agriculture.^{xxxiv} Conversely, industrial animal agriculture competes with their small-scale and subsistence farming, and support for this can adversely impact their food security, incomes and business viability.^{xxxv}

GOAL 6: Clean Water and Sanitation

Ensure availability and sustainable management of water and sanitation for all

To implement SDG 6, we must reduce water pollution and increase water-use efficiency. Agriculture is the single largest user of freshwater on a global basis and a major cause of degradation of surface and groundwater resources^{xxxvi} through erosion, chemical runoff, and pollution from other organic and inorganic wastes.

Agriculture uses a global average of 70% of all surface water supplies. While livestock directly use only 1.3% of total water used in agriculture, water for livestock feed requires a significant amount of water.^{xxxvii} Without addressing animal agriculture, we will not be able to ensure availability of water and sanitation for all.

The global growth of industrial agriculture has fueled the intensive use of inputs such as pesticides and chemical fertilizers. Livestock waste, including run-offs from these chemical applications and manure, has serious implications for water quality. This includes the creation of oxygen-deprived "dead zones" at the mouths of major waterways (such as the largest ever recorded dead zone in the Gulf of Mexico, at 8,776 square miles, an area about the size of New Jersey).

In the last 20 years, a new class of agricultural pollutants has emerged in the form of veterinary medicines (antibiotics, vaccines and growth promoters), which move from farms through water to drinking-water sources – with serious health implications.

According to the U.S. Environment Protection Agency, the agricultural sector is "the leading contributor to identified water quality impairments in the nation's rivers and streams, lakes, ponds, and reservoirs." In particular, the agency has noted that water quality concerns are

most pronounced in areas “where crops are intensively cultivated and where livestock operations are concentrated.”^{xxxviii}

The livestock sector is growing and intensifying faster than crop production in almost all countries. The projected increase in the production and consumption of animal products is likely to put further pressure on the globe’s freshwater resources. Population growth, urbanization, industrialization, and climate change will all necessitate improved water use efficiency and reallocation of water in water stressed regions.

Aquaculture is now also recognized as a major problem in freshwater, as well as estuarine and coastal environments, leading to eutrophication and ecosystem damage^{xxxix}. Aquaculture is increasing worldwide in order to satisfy the increasing demand for animal protein, due to the limitations of capture fisheries production. However, it has been found to have significant impacts on the environment and natural resources, with water pollution being cited as of most concern. Discharges from flow-through aquaculture systems such as raceways and tanks contain organic matter, nutrients, and suspended solids and directly impact oxygen depletion, eutrophication, and turbidity in receiving waters^{xl}.

Experts predict that, because pollution can no longer be remedied by dilution in many countries, freshwater quality will become the principal limitation for sustainable development in these countries early in the next century^{xli}.

There are increasing calls for food policy and agricultural strategies to be reviewed and strengthened in order to move away from polluting and unsustainable foods, towards healthier and more environmentally-friendly options, supported by: best practice promotion; education and awareness for consumers; and incentives/disincentives for agricultural producers. The good animal welfare practices for agricultural development project fits these calls. It will promote, educate and train in animal-welfare-friendly and agroecological methods which are respecting of natural resource use, including water; and through natural methods in harmony with nature also minimize pollution.

GOAL 7: Affordable and Clean Energy

Ensure access to affordable, reliable, sustainable and modern energy for all

There is a large and wasted energy use in industrial agriculture. Animal production is a poor converter of energy because it is based on a double energy transformation. First, solar energy and soil nutrients are converted into biomass by green plants. Then, when the plants are fed to animals, for which a major share of energy intake is spent on maintaining body metabolism and only a small portion is used to produce meat, milk or eggs. Other relevant factors are:

- Animals can convert only 17-30% of the feed input energy (GE) to usable product (milk and meat energy)^{xlii}.
- Fossil energy is a major input of industrial livestock production systems, used mainly for the production, transport, storage and processing of feed.
- Depending on location (climate), season of the year and building facilities, energy is also needed for control of the thermal environment (cooling, heating or ventilation) and for animal waste collection and treatment.

The good animal welfare practices for agricultural development project will promote, educate and train in animal-welfare-friendly and agroecological methods which are respecting of natural resource use, including energy. Many of these high welfare systems will be local production for local markets, as part of international development programs; and these are also energy efficient food solutions, as opposed to agricultural systems which are largely based on exported commodities (such as feed) for inputs.

GOAL 8: Decent Work and Economic Growth

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

1.2 billion people still live in extreme poverty. Among the poor, 78% live in rural areas, and 500 million are small farmers. Of these, 170 million are women farmers. Globally, 2.5 billion are dependent on small farms as a source of livelihood and employment. Agriculture contributes one third of GDP in Africa and more than 65% of the workforce depends on this sector. Agriculture has a massive potential to become a job and livelihood creator for the poorest sectors of society in developing countries (the bottom 40% World Bank Challenge).^{xliii}

A large proportion of future jobs will be created not only on farms but also in positions connected to food servicing and delivery. The good animal welfare practices for agricultural development project will lead to increased knowledge and management skills for animal health and welfare, which will improve the success, development potential and sustainability of development projects for livestock (including dairy projects) and aquaculture.

A development path that will create sustainable and broad-based jobs and livelihoods, and reduce poverty, must include the encouragement of more labor-intensive agricultural systems, especially smallholder farming.

Industrial agriculture is a high-input, low-labor system, meaning loss of agricultural jobs, which are the mainstay of developing country economies – whereas small-scale, high welfare, agroecological production provides local food security and labor opportunities. Such small-scale systems, when well-managed, can produce development opportunities for rural populations, including youth and women.

In most developing countries, milk is produced by smallholders, and milk production contributes to household livelihoods, food security and nutrition. Milk provides relatively quick returns for small-scale producers and is an important source of cash income.^{xliv} However, some dairy development projects have been supported which did not meet good practice in various areas, including unsatisfactory management, husbandry, care, health, hygiene and animal welfare. These attract criticism and adverse publicity; and are not sustainable.^{xlv xlvi}

In addition, aquaculture and fish production has reached 158 million tons^{xlvii}. However, managing and regulating aquaculture is a complicated issue: one which political scientists refer to as a “wicked problem”. This is because there is a great extent of uncertainty and lack

of firm knowledge with respect to the externalities of aquaculture production (e.g., diseases, environmental impacts, and conflicts with other user interests).^{xlviii} There are a number of decent work deficits associated with the aquaculture industry.^{xlix}

Ethical concerns about certain agricultural industries or practices can affect the nature and sustainability of work, and future prospects for growth. The FAO defines ethics as a “systematic and critical analysis of the moral factors that guide human conduct in a particular society or practice”. For example, there are diverse ethical issues in aquatic food production but these may be broadly grouped into three categories: social, environmental and animal. Welfare and ethical issues can emerge at many stages in the production process and supply chain.^l

GOAL 9: Industry, Innovation and Infrastructure

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Industry and infrastructure development that ignores economic, environmental and social costs can impact long-term economic viability and undermine the environmental foundation on which people’s livelihoods, well-being, and cultural life depend^{li}. The same is true of industry and infrastructure development which does not meet the health and welfare needs of animals.

The good animal welfare practices for agricultural development project will identify good practice which will guide the development of animal industries, and associated infrastructure, into the future. This will help to safeguard sustainability and ensure that investments in related industries and infrastructure are not put at risk through regulatory or societal changes due to future unacceptability. Over time, the project will include good practice in areas such as transport and slaughter, as well as livestock and fish farming systems.

As regards innovation in animal industries, the project will help to ensure that this is able to take full account of the health and welfare needs of animals. This will also support sustainability and thus protect against loss of investment.

GOAL 10: Reduced Inequality

Reduce inequality within and among countries

Inequality is an important issue in animal production, slaughter and processing. Family and small-scale farmers face vulnerable futures – with increased competition from industrial agriculture, and many unable to make a profit some years. In contrast, agri-businesses are able to make money more consistently, and continue to grow. Corporate concentration of agricultural inputs, production, processing and distribution has increased substantially over the last 20 years. The system is structured in a way that allows farmers to operate at a loss, which maximizes profits further downstream for agribusiness and leaves the public covering the farmers’ losses. When looking at the cost of production and the movement to ports and then to export, there are profits and losses at various stages. However, many of these losses

are hidden behind vertically integrated supply chains (for example, when grain traders also own feedlots, or when poultry producers contract with farmers to control the breeding and raising of chickens while also controlling the processing and marketing).^{lii}

The current food and farming system leads to unfair competition and inequalities in other ways too. For example, agricultural subsidies provide unfair price advantages, and producers are not charged for external costs such as social and environmental impacts (including massive pollution, which is suffered by local communities and often uses taxpayers' resources if/when addressed). There has also been criticism of United States agribusiness corporations exporting food at artificially low prices, which widens the economic divide between the global North and South — and within rural America.^{liiii}

Poor and marginalized people are often driven to work in industries which exploit animals. For example, in the United States, slaughterhouse and meat processing workers are predominantly people of color living in low-income communities. Historically, a significant percentage of the workforce has been African American. In recent decades, an influx of Latin American workers has been seen across the country, partially due to active recruiting by the corporations. Today, approximately 38% of the country's slaughterhouse and meat processing workers were born outside of the United States.^{liv}

Like all agricultural workers, slaughterhouse and meat processing workers struggle to live above the poverty level and provide a decent quality of life for their family. Their jobs are often associated with high rates of physical injury and psychological trauma.

The good practices for animal welfare in agricultural development project will provide training for animal farming, transport and slaughter. This will help to upskill their roles and make their jobs more rewarding.

Many of the improved agricultural practices will need to be implemented by smallholder farmers, which will build their competitiveness with industrial agriculture. The project will provide high quality information and resources, delivered by local project workers and extension workers, who will also be able to ensure that the information is locally relevant and applicable. At present, smallholder farmers in Africa have little access to information, partly due to a lack of modern connectivity. Agricultural extension workers are integral in supplying information to farmers, particularly in information and resource constrained contexts.^{lv}

GOAL 11: Sustainable Cities and Communities

Make cities and human settlements inclusive, safe, resilient and sustainable

Today, about half of humanity live in cities. By 2050, two-thirds of the global population will be urban dwellers. Rapid urban growth in the developing world is placing enormous demands on food systems. Cities expand into fertile land, increasing the food needs of urban families and competition for natural resources such as land and water.^{lvi}

Human communities are intrinsically linked to the ecosystems surrounding them and the ecosystems that human settlements replace. One factor that is systematically destroying

nature and biodiversity, and pushing wildlife to the brink of extinction, is the expansion of industrial livestock farming^{lvii}. Urban and peri-urban agriculture is often introduced as a development and poverty alleviation scheme. However, where livestock projects are concerned, these can bring negative impacts for communities through the over-use of pesticides and human exposure to contaminants and pathogens. Zoonotic diseases (disease of animals that can be transmitted to humans and vice versa) can also be a risk of urban livestock raising. Building new slaughterhouses in cities, necessitating greater transport/movement of animals, can further exacerbate these risks. Research has shown that these impacts are more likely to affect marginal groups (who may have to make use of the most contaminated lands, or work in animal industries) and women (who are the main fieldworkers in many regions, and so at greater risk of pesticide poisoning)^{lviii}.

Municipal ordinances to remove farm animals from city limits have played a central part in defining city planning's role in urban ecosystems, economies, and public health for decades. This has aligned the field with the field of public health in creating a hygienic city. In the efforts to untangle animal agriculture from waste management, public space, and urban food supply, urban authorities employed some of the first land-use regulations in countries such as the United States. Ordinances were introduced which banned slaughterhouses, piggeries, and dairies; and zoning became important to planning. These regulations allowed planners to transform cities and their food environments. Now planners are seeking to reweave animal agriculture into cities, but the same problems that previously led to its extraction from cities continue to exist.^{lix}

The good practices for animal welfare in agricultural development project will provide training for animal farming, transport and slaughter, and introduce agroecological methods which are respecting of local communities and their environment.

GOAL 12: Responsible Consumption and Production

Ensure sustainable consumption and production patterns

Transformation toward a sustainable world requires fundamental changes in how our societies produce and consume goods and services. Worldwide, especially in the global North, over-consumption and mass resource waste negatively impact caring for land, wildlife, water, and humanity.^{lx}

Achieving sustainable consumption and production (SCP) patterns has been recognized as an integral part of the 2030 Agenda for Sustainable Development. It is identified as both a standalone goal and as a central component of many of the 17 goals and 169 targets agreed in the agenda. Yet current patterns and levels of consumption and production are clearly unsustainable, even without the projected growth in the world's human population to 9.7 billion in 2050. Four out of nine of our planetary limits (thresholds or tipping points, that, once exceeded, can result in irreversible and abrupt environmental change) have already been crossed^{lxi}.

Our current food systems are unsustainable on a number of fronts. In particular, industrial livestock production impacts detrimentally on the environment (through land and water use

and water, soil and air pollution), human health (through antimicrobial resistance and emerging zoonotic diseases), social structures (through rural abandonment, poor working conditions and low wages) and causes immense animal suffering. This is increasingly the subject of scrutiny and research, and UN agencies are joining NGOs in calling for food policy and dietary changes.^{lxii lxiii}

The world wastes or loses around a third of the food it produces, while almost 1 billion people go undernourished and another 1 billion go hungry. Conversely, 2 billion people globally are overweight or obese; with overconsumption of food adding detrimental impacts to both our health and the environment.^{lxiv} UN Environment has recognized this problem. A video produced in part by UN Environment, entitled “Why do we need to change our food system?^{lxv}” states: “Every day you have to eat, just like the other 7.2 billion people on the planet. By 2050, at least 2 billion more people will join you.” The video goes on to explain the limitations of our current food systems; and calls for every step of our food systems to be reformed.

To implement SDG 12 we must, at minimum, halve global food waste; and this waste must include the loss incurred through feeding edible crops to animals (which according to the World Economic Forum is the largest loss in the food supply chain is from animal feed, amounting to a net 20% of the calories produced per person per day).^{lxvi}

A new Worldwatch Institute article entitled “Is Meat Sustainable”^{lxvii} explains why meat-eating has risen from a marginal issue to a central issue for sustainability, impacting everyone on the planet. While the problems of tropical forests being clear-cut to make way for cattle grazing have been known for some years, it is only comparatively recently that it has become widely recognized that industrial livestock production is a driving force behind virtually every major category of environmental damage now threatening the human future - deforestation, erosion, fresh water scarcity, air and water pollution, climate change, biodiversity loss, social injustice, the destabilization of communities, and the spread of disease.

As Worldwatch explains, per-capita meat consumption has more than doubled in the past half-century, even as global population has continued to increase. As a result, the overall demand for meat has increased five-fold. That, in turn, has put escalating pressure on the availability of water, land, feed, fertilizer, fuel, waste disposal capacity, and most of the other limited resources of the planet. The UN itself recognizes that the food sector accounts for around 30 per cent of the world’s total energy consumption and around 22 per cent of total greenhouse gas emissions^{lxviii}.

In a report entitled “Appetite for Destruction”^{lxix}, WWF also examines the unsustainability of current food systems. They state: “In a world where more and more people adopt a Western diet – one that’s high in meat, dairy and processed food – producing crops to feed our livestock is putting an enormous strain on our natural resources and is a driving force behind wide-scale biodiversity loss. The UK food supply alone is directly linked to the extinction of an estimated 33 species at home and abroad. WWF’s vision of a future where people and nature thrive is threatened by this current food system. They add: “We already produce enough to feed the world. But overconsumption, inequality, waste, and inadequate production and distribution systems stand in the way of enough food for everyone and space for wildlife. To

feed the world in an equitable and environmentally sustainable way, we need to consume and produce food differently.”

The UN Committee on World Food Security report, “Sustainable agricultural development for food security and nutrition: what roles for livestock?^{lxx}” has also recognized that intensive livestock production contributes to negative impacts on the environment (through land and water use and water, soil and air pollution), human health (through antimicrobial resistance and emerging diseases), social structure (through rural abandonment, poor working conditions and low wages) and animal welfare.

In their position paper for the 2018 High Level Political Forum^{lxxi}, the UN’s Non-Governmental Organisation Major Group is calling for:

- An increase in political will and consumer education to tackle unsustainable patterns of production and consumption, which lie at the root of environmental degradation, species extinction, and the violation of fundamental human rights in many communities worldwide.
- Governments to prioritize SDG12 in their national action plans, embedding sustainable consumption and production priorities within all aspects of development, trade, industry, science, environmental stewardship, research, and technology.
- SDG12 must also be integrated into sectoral plans and sustainable business practices, supported by educational programs which enhance consumer awareness by providing greater transparency and information on products and services.
- Governments to regulate the private sector and enforce the provision of accessible information for consumers on the social, animal protection, and environmental impacts of a product and its packaging throughout its lifecycle.
- Governments to conduct a thorough review of food and farming systems in the context of sustainable production and consumption, human rights for all, and protection of living creatures and their habitats.
- Policies to include agroecological solutions that are humane, sustainable, and interlinked with the principles of food sovereignty and the right to adequate and nutritious food.
- Government policies that support socially and environmentally harmful production and lifestyles to be stopped and reallocated towards incentives for more humane and sustainable alternatives.

In their 2018 position paper^{lxxii}, the UN’s Women’s Major Group is calling for governments to:

- Exercise oversight to ensure that sustainable production and consumption priorities are incorporated in development, trade, industry, science, research, agriculture, aquaculture, forestry and technology policies.
- Establish fiscal incentives and disincentives to guide industry towards sustainable production patterns, particularly targeting the mining, extraction, **industrial farming**, transportation, and energy generation industries. Most important of these are:
 - Removal of subsidies from unsustainable and polluting production;
 - Disincentives/penalties applied to unsustainable/polluting production;
 - Incentives to support sustainable, ecological alternatives.

Food production using systems, methods and practices which involve animal cruelty and poor animal welfare practices will not be sustainable for the reasons given above (see the introduction on Sustainability). There are increasing investigations and exposés of these, including extensive coverage in traditional and social media. This builds significant pressure for change away from the consumption and production of such products. One example is the use of cages, crates and other close confinement systems for the rearing of animals.

The concept of addressing unsustainable food systems nothing new. Indeed, many financial institutions and food businesses have already introduced environmental, animal welfare and social standards/safeguards – and more are under pressure from consumers, NGOs and shareholders to follow suit. Calls for action are intensifying, including growing pressure for official measures such as the following to be taken:

- Regulation and enforcement;
- Fiscal incentives and disincentives (most importantly, the removal of subsidies from unsustainable and polluting production, disincentives/penalties applied to unsustainable/polluting production (internalizing externalities plus) and incentives to support humane, sustainable, ecological alternatives); and
- Education/awareness backed by sound information and labelling.

These are in addition to the changes already being made by many consumers and food businesses.

The NGO Major Group reports that such efforts are already underway: “City, territorial and even some national governments are beginning to join academic, civil society, and private sector actors to convene these transformative efforts in all regions, to ensure educated consumers and increased brand focus on ethics and sustainability”.^{lxxiii}

The good practices for animal welfare in agricultural development project will contribute significantly to the development and implementation of environmental, animal welfare and social standards/safeguards by providing authoritative guidelines, checklists and indicators for monitoring. The project will support the introduction of associated regulations; and education and awareness programs (through its training programs and resources).

The project will also facilitate the called-for move towards “agroecological solutions that are humane, sustainable, and interlinked with the principles of food sovereignty and the right to adequate and nutritious food”. This will be particularly helpful when governments begin to repeal policies that “support socially and environmentally harmful production” and replace these with incentives “for more humane and sustainable alternatives”.^{lxxiv}

GOAL 13: Climate Action

Take urgent action to combat climate change and its impacts

It will not be possible to implement SDG 13 without addressing animal agriculture and current levels of meat and dairy consumption, because of the contribution of animal agriculture to greenhouse gases. A 2006 study by the FAO found that 18% of global greenhouse gas emissions is directly attributable to livestock production, more than the emissions attributable to the entire transportation sector^{lxxv}.

Recent research indicates that the contribution of livestock production, including the feed crops required for this sector, is even higher than the 30% figure cited by the U.S. Department of Agriculture (USDA) in its Climate Change Science Plan^{lxxvi} which states that: “On a global scale, agriculture is responsible for 30 percent of GHG emissions, including emissions caused by deforestation and land use change”.

Dr. Julie Wolf, from USDA’s, Agricultural Research Service (ARS) said: "In many regions of the world, livestock numbers are changing, and breeding has resulted in larger animals with higher intakes of food. This, along with changes in livestock management, can lead to higher methane emissions. Methane is an important moderator of the Earth's atmospheric temperature. It has about four times the atmospheric warming potential of carbon dioxide”.

Greenhouse gases, primarily methane, carbon dioxide, and nitrous oxide are produced by animals during the digestion process. Additional emissions result from degradation processes occurring in uncovered waste lagoons and digesters^{lxxvii}. When emissions from land use and land use change are included, the livestock sector is said to account for nine percent of CO₂ deriving from human-related activities. However, the sector produces an even larger share of more powerful greenhouse gases, generating 65 percent of human-related nitrous oxide, (which has 296 times the Global Warming Potential of CO₂), 37 percent of all human-induced methane (23 times the potential as CO₂), and 64 percent of ammonia (which contributes significantly to acid rain)^{lxxviii}.

Meat production is not only a major hotspot for global greenhouse gas (GHG) emissions, it also takes up more than two thirds of agricultural land and is the main driver of deforestation, biodiversity loss and land degradation^{lxxix}. Cattle ranching has a massive impact on forests around the world, particularly tropical rainforests like the Amazon. Forests play many important ecological roles, including helping to mitigate climate change. So, forest destruction detrimentally impacts climate change as well^{lxxx}.

A 2014 study on this subject by the University of Cambridge and the University of Aberdeen^{lxxxi} found that if current meat consumption trends persist by 2050 there will be 120 billion farmed animals raised each year, and the agricultural sector will emit almost the entirety of allowable emissions to keep global temperatures under the target 2°C increase in the Paris Agreement.

Climate change is having profound consequences on our planet’s diversity of life and people’s lives. Sea levels are rising and oceans are warming. Longer, more intense droughts threaten freshwater supplies and crops, endangering efforts to feed a growing world population. Without action, the changing climate will seriously compromise food production in countries and regions that are already highly food insecure. It will affect food availability by reducing the productivity of crops, livestock and fisheries, and hinder access to food by disrupting the livelihoods of millions of rural people who depend on agriculture for their incomes^{lxxxii}.

Food production threatens to be the greatest casualty of climate change, but sustainable agriculture can be part of the solution. The FAO is already supporting countries to adapt to and mitigate the effects of climate change by developing national climate plans and through

research-based programs and projects, with a focus on adapting smallholder production and making the livelihoods of rural populations more resilient^{lxxxiii}.

Indeed, the FAO had been raising these issues in a wider context for some time – including by sharing a 2016 World Food Day educational resource on “Climate is Changing”^{lxxxiv} – which incorporated messages on eating less meat, going organic, and cutting down on food waste.

The forward to the FAO’s Strategy on Climate Change^{lxxxv} points out that “as the impacts of climate change increase and become more intense, a global transformation to sustainable agriculture must begin immediately.” The Strategy also recognizes the central role of the food and agricultural sectors for human development; and that these need to be at the center of the global response to climate change. The importance of integrating biodiversity and ecosystems is highlighted, through agroecological approaches.

Silvo-pastoral animal production systems, which use of shrubs and trees, as well as pasture plants, reduce greenhouse gas production in several ways. First, carbon loss from growing plants in silvopastoral systems is lower. Second, the loss of carbon from soil is less, because the structure of the soil is maintained better. Third, where trees are browsed, the area is more likely to be used continuously rather than for a short period, so there is less carbon loss when the trees or other plants are removed. Fourth, there is reduced methane production from ruminant animals feeding in the system. Overall, methane emissions per tonne of meat in intensive silvopastoral systems are 1.8 times lower than in extensive cattle ranching^{lxxxvi}.

The good practices for animal welfare in agricultural development project will provide training and resources which will support the development of agroecological methods which will form an important component of the transformation towards sustainable agriculture. It has been shown that improvements in animal management and feeding practices (such as better pastures, the provision of bedding such as straw, new types of food and feeding regimes and others) can help to reduce greenhouse gas emissions^{lxxxvii}.

However, there is growing acceptance of the fact that supply-side measures will be insufficient on their own to prevent an increase in farming’s greenhouse gas emissions, let alone achieve a sufficient reduction to achieve the Paris targets. There will also need to be a change in consumption patterns.

“The world’s current consumption pattern of meat and dairy products is a major driver of climate change and climate change can only be effectively addressed if demand for these products is reduced.”^{lxxxviii}

Hilal Elver, UN Special Rapporteur on the right to food

GOAL 14: Life Below Water

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Oceans, seas and coastal areas provide the world with numerous goods fundamental to human well-being and global food security. Fisheries and aquaculture are used as protein sources to reduce hunger, improve nutrition and alleviate poverty. However, overfishing is

threatening livelihoods and the lives of local populations, unmanaged aquaculture expansion can cause pollution, and rising levels of carbon dioxide in the atmosphere contribute to ocean acidification.^{lxxxix}

Aquaculture is increasing worldwide in order to satisfy the increasing demand for animal protein, due to the limitations of capture fisheries production. The Food and Agriculture Organization of the United Nations (FAO) projects that by 2030, aquaculture, one of the fastest growing methods of food production globally, will be responsible for almost two-thirds of the fish we eat.

Aquaculture is now recognized as a major problem in freshwater, as well as estuarine and coastal environments, leading to eutrophication and ecosystem damage^{xc}. The most common method of aquaculture uses net pens or cages anchored to the sea floor in the ocean near the coast. Alternative methods use closed systems of tanks or ponds that float on water. Fish waste and leftover food spill out from nets and tanks into the ocean, causing nutrient pollution, eutrophication and hypoxia which can stress or kill aquatic creatures. Also, antibiotics or pesticides used on farmed fish can affect other marine life or human health. These nutrients and chemicals impact the biodiversity on the ocean floor when they sink and have made potentially toxic algae even more poisonous^{xc}.

Agriculture uses a global average of 70% of all surface water supplies. While livestock directly use only 1.3% of total water used in agriculture, water for livestock feed requires a significant amount of water.^{xcii}

According to the U.S. Environment Protection Agency, the agricultural sector is “the leading contributor to identified water quality impairments in the nation’s rivers and streams, lakes, ponds, and reservoirs.” In particular, the agency has noted that water quality concerns are most pronounced in areas “where crops are intensively cultivated and where livestock operations are concentrated.”^{xciii}

Water quality issues generated by intensive agriculture include the release of various wastes, such as sediments, pesticides, animal manures, fertilizers and other sources of inorganic and organic matter. The most common cause of water pollution in the U.S. is excess levels of nitrogen and phosphorous, the main source of which is fertilizer runoff that occurs when rain carries fertilizer into waterways^{xciv}.

Pollutants are transported overland and through the soil by rainwater and melting snow. These pollutants ultimately find their way into groundwater, wetlands, rivers and lakes and, finally, to oceans in the form of sediment and chemical loads carried by rivers^{xcv}. Many pollutants reach surface and groundwater resources through over-application of manure to available land resulting in nutrient run-off, overflow or leakage of manure storage tanks and lagoons, and aerosolized pollutants which condense into waterways^{xcvi}.

Experts predict that, because pollution can no longer be remedied by dilution in many countries, freshwater quality will become the principal limitation for sustainable development in these countries early in the next century^{xcvii}.

The development of good practice for animal welfare in agricultural development will cover both livestock production and aquaculture. It will provide tools and training to assist producers in developing countries to move to higher welfare, agroecological production methods which will minimize the need for chemical inputs and nutrient overloading; instead moving towards systems which protect both the animals and the environment, including seas, oceans and waterways.

GOAL 15: Life on Land

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Healthy ecosystems protect the planet and sustain livelihoods. Forests, wetlands, mountains and drylands, in particular, provide myriad environmental benefits - clean air and water, biodiversity conservation and climate change mitigation. Forests and rangelands sustain a range of industries, generate jobs and income and act as a source of food, medicine and fuel for more than a billion people.^{xcviii}

Today, however, natural resources are deteriorating, ecosystems are stressed and biological diversity is being lost across the globe. Land use changes, including deforestation, result in a loss of valuable habitats, a decrease in clean water, land degradation, soil erosion and the release of carbon into the atmosphere. They contribute to the loss of valuable environmental, social and economic assets, including food and livelihood opportunities.^{xcix}

In the words of the New York Declaration on Forests: Forests are essential to our future. More than 1.6 billion people depend on them for food, water, fuel, medicines, traditional cultures and livelihoods. Forests also support up to 80% of terrestrial biodiversity and play a vital role in safeguarding the climate by naturally sequestering carbon. Yet, each year an average of 13 million hectares of forest disappear, often with devastating impacts on communities and indigenous peoples. Agriculture is widely believed to be one of the main causes of deforestation.^c Meat production is a major driver of both deforestation and habitat loss – either for direct conversion to pasture or through conversion to agriculture for feed production.^{ci}

Industrial animal agriculture is also one of the main causes of land degradation, climate change, and biodiversity loss. No matter what methods are used, agriculture always has some impact on the environment. However, industrial agriculture is a special case: it damages the soil, water, and the climate on an unprecedented scale. Further, the production of monoculture crops for animal feed, food, and biofuels is dependent on destructive pesticide and fertilizer chemical inputs which negatively impact all forms of life. Intensive monocultures deplete soil and leave it vulnerable to erosion. Chemical fertilizer runoff and industrial animal agriculture wastes add to global warming emissions and create oxygen-deprived "dead zones" at the mouths of major waterways. Herbicides and insecticides harm wildlife (including insects and pollinators) and can pose human health risks as well. Biodiversity in and near monoculture fields is also decreased, as populations of birds and beneficial insects decline.^{cii}

On 12 September 2017, the UN Convention to Combat Desertification (UNCCD) launched its new flagship report, [the Global Land Outlook](#), which assessed the current and future state of the world's land resources^{ciii}. The report stated that a third of the planet's land is severely degraded and fertile soil is being lost at the rate of 24 billion tons per year. It examined agriculture's contribution to this; and called for a shift away from destructively intensive agriculture^{civ}. Louise Baker, external relations head of the UN body, likened industrial agriculture to an "extractive industry", and stressed that it was not sustainable – adding that the fact that a third of land is now degraded should prompt more urgent action to address the problem.

The study noted that pressures will continue to grow unless changes are made. In a series of [forecasts](#) on land use for 2050^{cv}, the authors note that sub-Saharan Africa, south Asia, the Middle East and North Africa will face the greatest challenges unless the world sees lower levels of meat consumption, better land regulation and improved farming efficiency.

The report's working paper on "Threats to Soils: Global Trends and Perspectives^{cvi}" states that solutions need to be embedded in policies and programs that support the development of more sustainable agricultural systems.

Soil pollution due to human activities also took center stage at the 5th [Global Soil Partnership](#) Plenary Assembly held at the FAO's headquarters in Rome in June 2017. The FAO stated that nitrogen and metals can strain farmable land by polluting soil, damaging plants, and, ultimately, posing risks to food security. They called for global collaboration and reliable scientific evidence to reduce knowledge gaps and promote sustainable soil management^{cvi}.

For thousands of years agriculture was a natural process that did not harm the land. In fact, farmers were able to pass down their land for many generations and it remained fertile. It is modern agricultural practices, particularly monocultures and industrial animal agriculture, that have caused land pollution and degradation of ecosystems^{cvi}.

The loss of terrestrial ecosystems and biodiversity may interfere with the enjoyment of a wide range of human rights, including the rights to life, health, food, livelihood, water, housing, and culture^{cix}.

The development of good practice for animal welfare in agricultural development will support producers in low- and middle-income countries to move towards agroecological solutions that are humane and sustainable. An example of this is the use of silvo-pastoral systems, which use three-levels (or other multi-levels) of edible plants for grazing livestock, using native shrubs and trees. These encourage biodiversity, rather than destroying it as monoculture livestock grazing systems do. They also maintain complex soil structures, which helps worms and other invertebrates to flourish, and support water retention^{cx}. Such systems will minimize the need for chemical inputs and nutrient overloading, instead moving towards methods which protect both the animals and the environment; including land, soil, forests and biodiversity.

This is in tune with the views expressed by the UN Women’s Major Group in their 2018 position statement^{cxii}, which called for practical alternatives to unsustainable agriculture, such as “agroecology, agroforestry and many forms of peasant agriculture and traditional pastoralist practices, using native breeds and species”.

In addition, the UN’s NGO Major Group stated in its 2018 position statement^{cxiii}: “To achieve sustainability for all forms of life on land, governments should pursue community-based participation and partnerships with civil society organizations, universities, and local governments. Validated, low cost, scalable good practices must be replicated and exchanged among stakeholders.”

GOAL 16: Peace and Justice Strong Institutions

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Food security and a healthy agricultural sector can play a critical role in preventing conflict and distress migration, and in building peace. In many countries, disasters or political instability have resulted in protracted crises and food shortages. Rural populations continue to be the most effected in conflicts, as attacks on farming communities undermine livelihoods and force people from their homes. Peace and food security are often mutually reinforcing.^{cxiii}

There is also a demonstrated connection between cruelty and violence towards animals and violence towards other humans. This is borne out by an increasing body of research by psychologists, sociologists and criminologists.^{cxiv} There are also coalitions addressing the link between animal and human violence across the world.^{cxv}

Slaughterhouse workers tasked with killing animals for a living frequently experience severe psychological trauma, which carries over into their communities with increased rates of crime and domestic abuse. Sometimes slaughterhouse workers become desensitized to animal suffering, largely as a self-protection mechanism, and this can spill over to their relationships with other humans.^{cxvi}

Desensitization can also be deliberately harnessed to promote or rationalize violence against perceived human enemies. One devastatingly effective tactic is dehumanization, whereby victims or enemies are likened to non-human animals in order to lessen their perceived moral value. Increasing the moral status of animals in society helps to undermine dehumanization’s power in justifying inter-human violence. Encouraging compassion for non-human animals establishes a sort of sociological buffer, ensuring that people cannot be robbed of their human rights merely by likening them to other species.

The good practices for animal welfare in agricultural development project will provide training and resources to build animal care and compassion in relationships with animals, including working animals, farmed animals, and animals in transport and at slaughter. This will help to develop compassionate relationships with animals, building empathy and consideration, which will also impact relationships with other humans. This work will help to give animal handlers, transporters, users and slaughterers a greater sense of responsibility and pride in

their role of caring for, and dealing with, animals; and help guard against desensitization and brutalization. The work will also help small-scale producers to overcome social, political and economic barriers, helping to overcome the marginalization and disempowerment which can lead to violence and aggression.

GOAL 17: Partnerships to achieve the Goal

Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

As can be seen above, implementation of the SDGs could be significantly supported by the good practices for animal welfare in agricultural development project. The program will cover areas such as policy/legislation, education and awareness, and capacity building, as well as agricultural and working animal projects. This will also work to harness partnerships for the improvement of animal welfare, because the process of developing good practice resources will be participatory, and subsequent roll-out will involve multiple stakeholders.

Partnerships between governments, intergovernmental institutions, research and academic institutions, and civil society are critical to gaining the comprehensive perspectives, expertise and resources necessary to fully implement the 2030 Agenda, as well as ensure effective monitoring, review, and accountability. Through a participatory and collaborative approach, this project will succeed in furthering the well-being of humans and animals and ensuring transformation towards sustainable and resilient societies for all.

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