



**HUMANE SOCIETY
INTERNATIONAL**

ANIMAL WELFARE, INTERNATIONAL TRADE
AND SUSTAINABLE DEVELOPMENT
IMPROVING THE LIVES OF ANIMALS, FARMERS AND COMMUNITIES

Submitted to:

Food and Agriculture Organization of the United Nations

Open Forum on Capacity Building to Implement Good Animal Welfare Practices

Rome, Italy

29 September 2008

Introduction

On behalf of Humane Society International (HSI), the international arm of the Humane Society of the United States (HSUS), and our more than 10.5 million constituents, we thank the Animal Production and Health Division (AGA) of the Food and Agriculture Organization of the United Nations for convening an Expert Meeting to deliberate on the many impacts of animal welfare, including on policies and legislation, international trade, capacity building, sustainable development, and the animals themselves.

We laud AGA's initiative and leadership in striving to best develop protocols for promoting good animal welfare practices. Indeed, concern for the higher welfare of animals raised for meat, eggs, and milk is growing globally, whether in developed countries, developing countries, or those in transition. As such, it is essential that animals' welfare, which encompasses both their physical and psychological well-being, be of paramount importance, particularly since the majority of the world's poor is economically dependent on their animals.

The best approach to assessing welfare is to integrate information across disciplines, using several different methodologies.^{1,2,3} As such, to determine an animal's welfare, indicators such as mortality rate, physiological measures (typically of stress indicators), disease and health status, behavior, and productivity must be examined together. Analyzing a sole indicator, such as productivity, can often be misleading if other indicators suggest a conflicting conclusion. A holistic approach to evaluating welfare, using all the available science, results in a more complete assessment. It is for this reason we welcome AGA's call for information to explore the full breadth of animal welfare assessment, drawing from the scientific literature, as well as case studies.

HSUS and HSI, through our decades of experience focusing squarely on these important issues, are pleased to support the FAO in its mission. Since our founding in 1954, we have actively worked to achieve a humane and sustainable world for all animals, reduce suffering, and create meaningful and lasting social change. HSUS and HSI employ a multi-pronged strategy to achieve our goals, including advocating for sensible public policies, investigating cruelty and working to enforce existing laws, educating the public about animal issues, joining with corporations and industries on behalf of animal-friendly policies, conducting hands-on training programs, and advancing international trade policy and local sustainable development projects to help developed and developing countries address such issues as more humane and sustainable agriculture, environmental conservation, and wildlife and habitat protection. HSUS and HSI also serve as an important disaster relief agency for animals, and provide direct care for thousands of animals at our sanctuaries and rescue facilities, wildlife rehabilitation centers, and mobile veterinary clinics.

We welcome this opportunity to continue the working relationship we first established with FAO with the production of [Guidelines for Humane Handling, Transport and Slaughter of Livestock](#), published jointly by our two organizations in 2001.

Farm Animal Populations and the Exportation of Low-Welfare Production Systems

Globally, approximately 63 billion land animals⁴ were raised for human consumption in 2007. The reach of industrialized, intensive animal agriculture practices customary in the United States and Europe have extended into less-developed countries particularly in Asia and Latin America.⁵ In China, India, and Brazil, for example, producers are increasingly favoring intensive, industrial production systems⁶ over more welfare-friendly and sustainable practices. Industrial systems account for an estimated 67% of poultry meat production, 50% of egg production, and 42% of pork production.⁷ According to a 2007 report, "[i]n recent years, industrial livestock production has grown at twice the rate of more traditional mixed farming systems and at more than six times the rate of production based on grazing."⁸

Of particular concern is the exportation of low-welfare production practices and systems that were once customary throughout the European Union member states and in other developed countries, but are being phased out by legislation. In North America, where these industrial agriculture models are still prevalent, higher welfare reforms are being adopted by state legislation, corporate purchasing policies and schemes, and industry itself. This move away from low-welfare industrial systems has been dramatic. In only the last five years, there has been tremendous progress

towards more welfare-friendly animal production in the United States, which reflects growing interest beyond America's borders.

On the corporate level within industry and retail, truly meaningful advances have been achieved to improve the welfare of farm animals. Smithfield Foods,⁹ the world's largest pig producer, has pledged to phase-out its confinement of sows in gestation crates, as has the Colorado Pork Producers Council¹⁰ and Maple Leaf, Canada's largest pig producer.¹¹ Marcho Farms¹² and Strauss Veal, the leading U.S. veal producer,¹³ have both pledged to phase out the use of veal crates and convert their operations to group housing systems within two to three years. As reported by *Meat Processing*, Strauss Veal & Lamb International "is committed to raising veal calves in a more humane manner. The company's goal is to be 100-percent converted to raising calves by the European-style, group-raised method within the next two to three years." Randy Strauss, co-president and CEO, stated to the industry journal that "this is the right thing to do...The traditional way of raising veal calves involves putting each calf in an individual stall. This practice is increasingly being frowned upon by a growing number of customers and consumers alike throughout the world."¹⁴ Industry journal *Feedstuffs* reported eight months later that the American Veal Association's board of directors "unanimously approved new policy that the veal industry fully transition to group housing production by the end of 2017."¹⁵

The number-two fast-food restaurant chain, Burger King, has announced that it will institute a number of corporate policies to improve farm animal welfare. In addition to other commitments the company has made, Burger King has begun purchasing 5% of its eggs from producers who do not confine hens in cages as well as 20% of its pork from producers who do not confine sows in gestation crates, and gives a purchasing preference for chicken meat from plants that use the more humane slaughter method of controlled atmosphere killing for farmed birds.

Legislatively within the United States, low-welfare industrial production methods are increasingly being disallowed, in response to growing public concern about the treatment of farm animals. The confinement of pregnant pigs in gestation crates has been banned in Arizona, Colorado, Florida, and Oregon, and the crating of calves raised for veal has been banned in Arizona and Colorado. California voters will elect in November 2008 whether to allow for the most basic protection to nearly 20 million of the state's farm animals by requiring they be given enough room to turn around and extend their limbs, thereby prohibiting intensive confinement of egg-laying hens in battery cages, as well as the use of gestation crates and veal crates.

As these industrial models are already being phased out throughout the European Union and increasingly in North America, developing countries and those in transition would be at a significant disadvantage—economically and in terms of sustainability—should they embrace these low-welfare systems.

This concern is held not only by animal protection NGOs, but by the International Finance Corporation (IFC) of the World Bank, as well. In October 2006, the IFC issued its *Animal Welfare in Livestock Operations* Good Practice Note,¹⁶ which states:

Animal welfare is gaining increased recognition as an important element of commercial livestock operations around the world....Animal welfare is just as important to humans for reasons of food security and nutrition. Better management of and care for livestock can improve productivity and food quality, thereby helping to address nutritional deficiencies and food shortages as well as ensuring food safety. Higher animal welfare standards are also increasingly seen to be a prerequisite to enhancing business efficiency and profitability, satisfying international markets, and meeting consumer expectations...

Animal welfare is important for commercial as well as ethical reasons. The health and well-being of animals can have a direct impact on growth, reproduction, or meat quality, and is therefore important to producers, food retailers, customers, and others in the supply chain... The future of animal production may be headed toward a prioritization of the environment and animal welfare, at the expense of increased production.... This will undoubtedly open up new opportunities for producers with systems that are less compromising to animal welfare.

Environmental Impacts of Industrial Farm Animal Production

As mentioned by the IFC, concerns about the integrity of the environment, as well as animal welfare, are of increasing importance. Industrial animal agriculture practices are known to pollute water and air, threaten public health, and contribute to climate change. Much of the environmental harm caused by these operations results from the volume of waste that must be stored and disposed of when continuously confining so many animals exclusively or primarily indoors, with some facilities producing as much waste as an entire metropolitan city.¹⁷

Water quality issues arising from this waste include contamination of surface water and ground water caused by overapplication of manure to available land, manure storage tanks and lagoons overflowing or leaking, and pollutants that had been released into the air redepositing into waterways.¹⁸ The microbial breakdown of organic carbon and nitrogen compounds in manure can contribute to air pollution and odor problems.¹⁹ During decomposition, noxious levels of gases are emitted, putting workers and nearby residents at risk of developing a number of acute and chronic illnesses. Waste storage and land application lead to emissions of fine particulates, carbon dioxide, hydrogen sulfide, ammonia, and methane.²⁰

The wealth of information linking these industrialized operations with illness led the world's largest association of public health professionals, the American Public Health Association, to evaluate the issue in 2003 and subsequently issue a policy statement urging governments and public health agencies to impose a moratorium on the construction of new operations "until additional scientific data on the attendant risks to public health have been collected and uncertainties resolved."²¹

In 2006, the FAO's own landmark report, "Livestock's Long Shadow: Environmental Issues and Options," found that the animal agriculture sector is responsible for 18%, or nearly one-fifth, of human-induced greenhouse gas (GHG) emissions, greater than the share contributed by the transportation sector.²² These emissions result from various aspects of the farm animal sector, including feed crop production and transport, waste management, and on-farm energy expenditures.²³ The report concluded that "the livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global."²⁴ In fact, the farm animal production sector annually accounts for 9% of human-induced emissions of carbon dioxide (CO₂),²⁵ 37% of emissions of methane, which has more than 20 times the global warming potential (GWP) of CO₂,²⁶ and 65% of emissions of nitrous oxide, which has nearly 300 times the GWP of CO₂.²⁷

According to the Pew Center on Global Climate Change, growth in farm animal populations, particularly in large, confined operations, has greatly increased emissions of methane from both animals and their manure since the 1940s. The Pew Center also notes that the growing use of industrial fertilizers over the last 50 years—with a significant percentage going toward farm animal feed production—has considerably elevated artificial nitrogen inputs to the soil. This in turn has led to increases in nitrous oxide emissions.²⁸ CO₂ emissions are also rising as a result of animal agriculture. The burning of fossil fuels is necessary in the production of feed and fertilizers, while tropical forests and other carbon sinks are destroyed to create grazing land or fields to grow feed.²⁹ Raising animals on pasture and eschewing industrial production systems lessens the burden on the environment, in terms of fossil-fuel use and land-use changes.

Animal Agriculture, Climate Change, and Global Hunger

Given that the animal agriculture sector is responsible for more human-induced GHG emissions than the transport sector and that global farm animal populations are expected to double by 2050, with most of those increases in the developing world,³⁰ concerns about the impacts of global warming on the world's peoples are grave. While the United States, Europe, and China are responsible for the greatest amounts of GHG emissions, these regions will likely not be the most affected. The majority of climate experts agree that the impoverished will be hit hardest by climate change, including farmers and small-scale farm animal keepers in the developing world. The Intergovernmental Panel on Climate Change (IPCC) predicts that those areas already in drought will become even drier, adding to risks of both hunger and disease, and the world will face heightened threats of flooding, severe storms, and the erosion of coastlines.³¹

For the nearly 2 billion people worldwide who rely on farm animals to support part or all of their daily needs for food, clothing, shelter, and income and the almost 200 million people who depend on grazing animals as their only source of livelihood,³² the rising risks of drought, animal disease, and other serious problems that result from climate change will be devastating. The poorest tend to live in high-risk areas, such as coasts, and are less able to withstand the effects of climate change on water supplies or food sources.³³ Communities reliant on subsistence farming will be among the hardest hit. "Studies have consistently shown," says Robert Watson, former chair of the IPCC and now a senior scientist with the World Bank, "that agricultural regions in the developing world are more vulnerable, even before we consider the ability to cope."³⁴

In the United States, it is much easier for farmers to endure a climatic setback than in poor nations such as Malawi, where approximately 40% of the economy is supported by rain-fed agriculture.³⁵ Henry Miller of Stanford University has reportedly said that "like the sinking of the Titanic, catastrophes are not democratic...A much higher fraction of passengers from the cheaper decks were lost. We'll see the same phenomenon with global warming."³⁶

Drought will bring obvious human suffering. According to the IPCC, by 2020, up to 250 million people may experience water shortages and in some African nations, food production could fall by half.³⁷ The IPCC also warns that warming temperatures could result in food shortages for 130 million people across Asia by 2050. The report suggests that a 3.6°C (6.5°F) increase in mean air temperature could decrease rain-fed rice yields by 5-12% in China. In Bangladesh, says the IPCC, rice production could fall approximately 10% and wheat by one-third by 2050.³⁸ Temperature warming in the Himalayas could drive yak to higher elevations where there is less grass and fodder.³⁹

As grazing areas dry up in sub-Saharan Africa, pastoralists will be forced to travel farther to find food and many animals will likely starve. In particular, cattle, goats, camels, sheep, and other animals who depend on access to grazing areas for food will suffer from hunger and dehydration.⁴⁰ The increased use of unsustainable agriculture practices, including intensive farm animal production methods and attendant land-use changes necessary to support industrial systems, will likely exacerbate the effects of climate change.

Conflicts among pastoral communities are also likely to rise along with temperatures. As water supplies dry up, farmers and herders are living out an ancient struggle over land and water resources. One startling example is in Sudan's Darfur region. There, the effects of climate change and population growth, including dwindling water supplies and diminishing arable land, have created an untenable and devastating situation. Farmers and herders have taken up arms, fighting to gain and maintain control of increasingly scarce water and land.⁴¹

A 2007 report by the United Nations Environment Programme cites environmental degradation as a catalyst for the ongoing conflicts in Darfur and other parts of Sudan. Among its critical concerns are land degradation and desertification, which are tied to increases in farm animal populations: "Vulnerability to drought is exacerbated by the tendency to maximize livestock herd sizes rather than quality...In addition, an explosive growth in livestock numbers—from 28.6 million in 1961 to 134.6 million in 2004—has resulted in widespread degradation of the rangelands."⁴² An almost unprecedented scale of climate change in the region is also a source of conflict due to the stress its effects impose on communities whose livelihoods depend on agriculture.⁴³ Not confined to Sudan, these same battles are being fought with greater frequency in several other African nations, including Chad and Niger.⁴⁴

The welfare of farm animals and the ways in which they are raised are critically important—not only for the sustainability of our communities, the integrity of the environment, food safety, public health, and the animals themselves, but for mitigation of the devastating impacts of climate change that we are already facing.

The Importance of Higher Welfare for Farm Animals on International Trade and Sustainable Development

As discussed above, improving the welfare of animals has myriad benefits, including within the realm of trade capacity building. HSI, as a member of the Trade and Environment Policy Advisory Committee (TEPAC) in the United States, advises the U.S. Trade Representative (USTR) and the federal Environmental Protection Agency (EPA) on international

trade policy. HSI also promotes more humane, sustainable, and equitable development in discussions of international trade and economic policy at the World Trade Organization (WTO). Our work in this arena further highlights the critical need for developing countries and those in transition to adopt higher welfare production systems and practices in lieu of those industrial models increasingly being phased out by many developed nations, particularly as export markets expand.

Indeed, the value of global agricultural exports has more than doubled since 1990. Concurrently, consumers around the world are increasingly demanding meat, eggs, and milk produced according to higher animal welfare standards. The benefits of this growing ethical consciousness, which is helping to catalyze reform of farm animal rearing, transport, handling, and slaughter practices, should not be—and indeed must not be—limited to developed countries. Higher animal welfare standards deliver significant benefits for developing countries, such as expanded domestic and international trade opportunities, improved food safety and quality, premium pricing for more humanely produced foods, and mitigation of the spread of diseases like avian flu and foot and mouth disease. Case studies from our work in Indonesia, India, and Costa Rica follow.

The lack of both explicit international trade rules and capacity and expertise to implement farm animal welfare reforms have led many developing countries to view higher welfare standards as trade barriers that are protectionist in purpose. However, stronger animal welfare standards, improved food safety and quality, and sustainable and humane development are issues that must not be divorced from international trade. In fact, the environmental protection and sustainable development goals of the WTO's current agenda lay the foundation to include animal welfare issues in the policy of the multilateral trading system and beyond.

The success of developing countries going forward is largely contingent upon influencing international trade policy and rules while simultaneously working on the ground to help these countries improve animal welfare standards and receive the economic benefits of trade. To facilitate FAO in its efforts to best help developing countries and those in transition, we respectfully propose the following recommendations:

1. Acknowledgment that higher farm animal welfare practices, production systems, and standards are necessary to achieve sustainability, address rising global concern for the treatment of animals, elevate economic conditions for developing countries and those in transition, and better secure nutritious and adequate global food supplies.
2. Explicit recognition in the WTO Agriculture Agreement (AoA) that animal welfare payments are permissible, non-trade distorting subsidies that meet Green Box criteria.
3. Inclusion of a “peace clause” in the AoA that would provide litigation protection for non-trade distorting Green Box programs.
4. Elimination of subsidies to industrialized agriculture operations.
5. Provision of capacity building and technical assistance through the WTO or bilateral/regional free trade agreements to developing countries to encourage sustainable agriculture development without further environmental degradation.
6. Encouragement of greater transparency and public participation at the WTO.

FAO can take a leadership role in supporting higher animal welfare standards while also working towards a world without hunger. This can be accomplished by providing support for capacity building and technical assistance programs, and by promoting non-industrialized animal production as an organizational policy—two endeavors that would complement ongoing and future work at the WTO and in bilateral and regional trade agreements.

The World Trade Organization and Animal Welfare

The WTO, established on 1 January 1995, is the preeminent international organization governing trade between nations. Its 153 Members are from developed and developing countries, each seeking equitable access to the benefits of liberalized trade. To accomplish this, Members negotiated the WTO Agreements, which set forth binding commitments and rules to which each country agrees, but which also allow for exceptions for social and environmental objectives in certain circumstances.

The WTO Agreements cover numerous issues including agriculture, food sanitation regulations, and intellectual property. Several key principles underpin this trading system: 1) non-discrimination among WTO trading partners, also known as “Most Favored Nation” treatment; 2) equal treatment of imported and locally produced goods, or “National Treatment”; 3) liberalized trade through negotiations; 4) fair trade, or compliance with negotiated sets of rules set forth in the WTO Agreements; and 5) facilitation of development and economic reform for developing countries and transition economies.⁴⁵

While there are exceptions to the WTO rules for the protection of public morals, human and animal life and health, and the conservation of natural resources, animal welfare issues are not explicitly mentioned in the WTO Agreements, nor have they been the subject of any completed WTO dispute.⁴⁶ This is not surprising as there is considerable divergence in the cultural, economic, and ethical views that WTO Members have with regard to animal-related issues, particularly humane treatment. Broadly speaking, developing nations have historically opposed measures that require stronger animal welfare standards on grounds that they act as barriers to trade. There is a general sentiment that higher standards benefit only those countries that can afford to implement them, leaving developing nations with restricted access to export markets and, consequently, negative impacts on their economic development.

Importantly, the current round of WTO negotiations, officially called the Doha Round, has been labeled the “Development Round.” One of its central aims is to achieve greater market liberalization while concurrently encouraging sustainable economic development in developing and least developed countries.⁴⁷ Beyond these broad objectives, the inclusion of specific environment, sustainable development, capacity building/technical assistance,⁴⁸ and transparency provisions⁴⁹ in the Doha Declaration sets this negotiating agenda apart from its predecessors. That is, the Development Round represents an historic opportunity to link animal welfare issues with sustainable development.

However, to date, the Doha negotiations have largely focused on the reduction of trade-distorting domestic support subsidies by developed countries in exchange for greater access to developing country markets. While significant progress has been made in other areas, such as new provisions to reduce fisheries subsidies, the success of the Doha Round is contingent upon agreement in all areas. To this end, Trade Ministers convened in Geneva, Switzerland in July 2008 with the aim of reaching an agreement on modalities for agriculture and non-agricultural market access (NAMA) that would pave the way for possible conclusion of the Doha Round before 2009. After two weeks of negotiations, talks collapsed over a special safeguard mechanism designed to alleviate surges in imports of agricultural products.

Although the future of the Doha Round remains uncertain, retaining sustainable development and environmental protection as priority objectives is critical, be it in resumed negotiations or the launch of a new round. Indeed, a WTO dispute panel in the *Brazil-Tyres* dispute explained that environmental protection includes the preservation of animal life and health, and is recognized as an important and legitimate goal of national and international policy by the signatories to the WTO Agreement.⁵⁰ As a result, while there is a distinction between animal life and health and animal welfare, these objectives can be the building blocks for explicit inclusion and recognition of animal welfare and protection in WTO Agreements. They are also necessary to ensure that developing countries share in the benefits of the international trading system without causing further degradation of the environment and natural resources.

Animal Welfare and the Green Box

The agricultural sectors of many WTO Member countries are facing enormous pressure to be more responsive to the demands and preferences of consumers. This is especially true in developed countries, where citizens are increasingly

demanding more humane and environmentally responsible agricultural practices and products to mitigate their concerns for animal welfare, public health, environmental protection, and wildlife and habitat protection.

In turn, this demand has begun to open new markets for products from animals raised under higher welfare standards in Europe, the United States, and other countries where consumers are increasingly demonstrating a vested interest by using their purchasing power to reject meat, eggs, and milk from low-welfare industrial production systems.^{51,52}

In an effort to meet this new demand and address the rising consciousness regarding the treatment of farm animals, producers in many developed countries and some developing countries are implementing higher animal welfare practices and systems. Although there are substantial economic benefits to higher welfare production, some improvements made to practice more responsible and humane farming can necessitate increased capital. This led the European Communities (EC) to put forth a proposal in the WTO Committee on Agriculture seeking an express recognition that animal welfare payments—including those made to offset increased costs—be included in the “Green Box” of permissible agricultural subsidies.⁵³ The EC proposal, however, was met with skepticism by developing countries who viewed the proposal as an attempt at increased protectionism. The United States has publicly stated that animal welfare payments are already covered by the present criteria of the Green Box in the current text of Annex 2, paragraphs 1 and 12 of the AoA.⁵⁴ The United States has also taken the position that such payments should not be limited by any expenditure caps.⁵⁵ HSI agrees that the way animals are treated directly impacts the sustainability and profitability of agricultural operations. In fact, many studies demonstrate that mistreating or failing to provide adequate veterinary care for animals reduces economic output.

Furthermore, recent outbreaks of foot and mouth disease, avian influenza, and bovine spongiform encephalopathy (BSE) provide dramatic evidence of the need for higher animal welfare standards. Such simple measures as prohibiting the transport of sick animals, reducing the stocking density of farmed birds, and eliminating the use of feed containing animal byproducts, all of which qualify under current Green Box criteria, will help to greatly reduce the occurrence of diseases and improve the overall welfare of the animals.

To ensure that higher animal welfare standards will benefit producers, consumers, and the larger society in both developed and developing countries, however, such payments must not be used for protectionist purposes. Only programs that are non-trade distorting and meet the Green Box criteria of the AoA should be allowed. Developing country producers who observe higher animal welfare standards are just as eligible for these payments from their governments as their counterparts in developed countries. Animal welfare is not only in the best interests of developing WTO Members; it is also vital to any attempt to achieve a sustainable world.

In addition to the explicit recognition that animal welfare payments meet Green Box criteria, the inclusion of a “peace clause” that would provide litigation protection for non-trade distorting Green Box programs is necessary. Article 13 of the AoA, which contained the original peace clause for Green Box programs, expired in 2003. The inclusion of a peace clause protecting animal welfare payments from possible WTO challenges would ensure that such programs can safely and effectively be administered by all WTO Members without fear of reprisal. The United States has already stated its support for such litigation protection.⁵⁶ Article 13 should be amended to remove the language “During the implementation period” from the first paragraph. In this way, the litigation protection for programs conforming to Green Box criteria going forward will not be any more expansive than the former Green Box peace clause.

While the Doha Round is at an impasse, there are no indications that negotiations will not resume in some form, whether as renewed talks in furtherance of a single undertaking, efforts to at least conclude agreements on certain topics, or the launch of a new round. Irrespective of whichever path forward is pursued, explicit recognition of animal welfare in the Agriculture Agreement and the inclusion of a peace clause must be top priorities in the coming years, and we welcome support from the FAO on this important matter.

Government Subsidies to Industrial Animal Agriculture Production Systems

Any meaningful change that will benefit the agricultural sector and improve the lives of animals must include an

agreement that eliminates subsidies to industrialized production systems. Indeed, vast portions of government subsidies are given to industrial factory farms,⁵⁷ which are known to severely impair the welfare of animals who are intensively reared in typically barren, unhygienic conditions that deny them the ability to engage in nearly any of their natural behavioral repertoire. As intensive confinement practices are increasingly being phased out in developed countries, governments should not be subsidizing their existence.

Eliminating subsidies to industrial systems and other trade-distorting agricultural subsidies will benefit not only the animals and the environment, but will represent a significant step towards evening the playing field for trade among developed and developing nations. According to a recent press release from the Office of the USTR, “[d]eveloping countries would receive nearly two-thirds (63%) of the potential benefits of eliminating agriculture distortions (tariffs and trade-distorting subsidies) by developing and developed countries.”⁵⁸ Once these subsidies are eliminated or are being phased out, focus must be placed on building capacity for sustainable agricultural production, prioritizing higher animal welfare and preventing further environmental degradation.

Capacity Building and Technical Assistance Programs

Concerns about the environment and animal welfare have historically earned a high-profile status in WTO negotiations. When countries ban imports based on production method or product quality, or when countries require that imports meet certain standards, there are potential WTO implications since these measures restrict international trade. In the agriculture sector, for example, a WTO dispute concerning the European Union’s ban on imports of meat and meat products from cattle treated with certain growth hormones sparked considerable transatlantic debate and increased the profile of health and safety issues in the international food supply.⁵⁹ In addition to GATT, the Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures and the Technical Barriers to Trade Agreement may be implicated when WTO Members impose trade-limiting measures/regulations in furtherance of factors such as food safety, animal health and well-being, consumer safety, and environmental protection.

Capacity building and technical assistance programs that involve all sectors of society are critical, as they can offer developing countries the training and equipment needed to work towards higher welfare standards in practice that can ultimately expand their market opportunities and result in economic benefits for higher welfare products. Developing countries must be provided with tools to fully engage in growing market opportunities, such as higher welfare or organic schemes, that result from trade agreements. Indeed, the WTO has recognized “the importance of technical assistance and capacity building in the field of trade and environment to developing countries, in particular the least-developed among them.”⁶⁰

Increased Transparency and Public Participation

As trade measures involving animal issues can be highly contentious at the WTO, the WTO and its Members—both developed and developing countries—would benefit from increased transparency and public participation with respect to the Understanding on the Settlement of Disputes (DSU). When it was first adopted following the Uruguay Round, the DSU was hailed as a major accomplishment. Since that time, however, a number of shortcomings in the system have emerged. Three areas in particular that can be substantially improved to further animal welfare, environmental protection, and food safety objectives, among others, are:

1. For disputes involving environment, animal welfare, health and safety, or sustainable development issues, the roster of potential panelists should include experts in these areas, rather than exclusively those with expertise in the trade of goods and services.
2. Amicus curiae briefs and expert information should be accepted by panels and the Appellate Body when it is clear that the submitting entity (e.g., NGO, private party, or academic institution) has a clear interest in the subject matter of the dispute and is able to provide important information that should be considered by the decision makers. In many cases, NGOs and other private parties have significant expertise with environmental, animal welfare, health and safety, and sustainable development issues. In addition, they

likely have factual information regarding these issues that would be invaluable to the resolution of certain disputes.

3. Panel and Appellate Body proceedings should be open to the public or at a minimum to parties that have submitted an amicus curiae brief or have a demonstrated interest in the proceedings.

Animal Welfare in Developing Countries: Case Studies

In recognition of the many positive impacts of higher welfare for farm animals, HSI has been actively involved in a number of innovative partnerships. Following are three case studies:

Improving Animal Handling and Slaughter in Indonesia

From 2002 to 2007 in Indonesia, HSI, the World Society for the Protection of Animals, and the local animal welfare organization, Yudisthira, executed a humane handling and slaughter program in Bali through preliminary discussions with the Ministry of Agriculture and with assistance from the Animal Welfare Training Team (AWT) of the University of Bristol.

Findings from an initial investigation to outline the specific issues in the Indonesian slaughter industry determined that significant reform was needed. While there are no government regulations for slaughterhouses in Indonesia, there are specific guidelines for Halal slaughter nationwide, and cultural sensitivity was critical. Assessment visits to three slaughterhouses in 2001 reported similar conditions of poor hygiene, low maintenance, and lack of humane handling and slaughter techniques, including: poor lighting due to inadequate electrical supply and provision of light bulbs, which prevented thorough ante-mortem inspection of cattle as well as post-slaughter meat inspection; dull knives and no means by which to sharpen their blades, lack of any training for workers on effective and humane slaughter methods; and aggressive and ineffective handling of cattle, such as pushing, shoving, and bumping them throughout lairage and onto the slaughterhouse floor, and deliberately inflicting pain, such as twisting and skinning the animals' tails in efforts to control their movements. In fact, the initial assessment determined that, typically, after the first neck cut, workers would immediately start to skin and butcher the fully conscious animal prior to bleed-out.

As such, HSI and our partners envisaged a humane slaughter training program that would overcome the serious welfare problems at a fundamental level to account for the minimum availability of facilities or more modern technologies.

In October 2002, the first of the Bristol AWT Workshops was convened for all participating in the Bali commercial and traditional slaughter industry. The workshops included material that covered: 1) Understanding Welfare and Quality; 2) Understanding Unconsciousness, Stunning and Slaughter; 3) Codes of Practice; 4) Abattoir Welfare Assessment; and 5) Welfare Program Development. In addition, seminars and workshops were offered to educate the farm animal veterinary community, the lorry stockyard workers, and village farmers. Within the first year of the program, the participants drafted Bali's first Codes of Practice for its cattle and pig industries, which included the unloading and moving of animals, restraining for pre-slaughter, slaughter, dressing, butchering, and staff hygiene.

To ensure the longevity of these efforts, a "train the trainers" program was implemented: The most advanced students/personnel within the training course were designated as the chosen group of local trainers who would then develop and conduct similar courses to be offered throughout Indonesia—thereby minimizing the stress, pain, and suffering of animals, as well as improving the working conditions for those employed by the slaughter facilities. This "train the trainers" effort, which took place in both the classroom and the slaughterhouse to achieve a thorough understanding of theory and practical changes necessary to achieve a positive change in animal welfare, included six modules delivered twice yearly by experts from the University of Bristol that encompassed: 1) Understanding Welfare and Quality; 2) Understanding Unconsciousness, Stunning and Slaughter; 3) Slaughterhouse Welfare Assessment; 4) Understanding Codes of Practice and Assurance; 5) Welfare Programme Development 1; and 6) Welfare Programme Development 2.

As evidenced by the following table provided by our training team, the efforts in Bali had significant impacts:

Comparison of Pre-and Post-Training Changes	
Pre-Training: 2001	Post-Training: 2006
The slaughterhouse is disorganized; animals are being randomly moved and individuals are in each other's way, both pre- and post-slaughter.	Plan and layout is considerate to the movement of the animals and staff through the slaughterhouse.
Workers look shoddy in appearance, are smoking while moving/handling and slaughtering animals.	Workers now have roles and responsibilities and are involved and aware of the improvement process.
Workers are alone in their job, slaughterman has to restrain and slaughter animal, often the cut is ineffective.	Workers are a team for casting and restraining cattle, improving safety for the workers and welfare for the animals.
Moving cattle is rough and forced, tails are twisted and skin is pulled off, cattle are beaten and noise is used to frighten the animals along.	Movement of cattle is based on behaviour and flight zones, rather than ignorance and force and cattle tails are not twisted and pulled to facilitate animal movement.
Floors and ramps are smooth concrete, once animal defecates or urinate, cattle slip and fall, and others panic and attempt to escape.	Ramps and concrete surfaces have been scored to prevent slipping.
Knives are too short and not sharp, the cut for slaughter is not effective on first stroke.	Knives are always the appropriate length and sharpness (sharpening stones provided).
Casting is horrific, terrified animals attempt to escape as a single inept worker repeatedly attempts to alone cast the animal using worn ropes. Animal gets up and slams down to the floor over 20 times, after 30 minutes the animal is restrained.	Casting is swift and is done as a team of three people plus the slaughterman is standing by. The technique used means the animal is cast in one movement and is firm yet gently restrained on the floor. Casting to slaughter process takes 1 minute 30 seconds.
Ten or more animals are brought to the killing floor, while one worker takes one animal, the others are left to observe, by the time the last animal is slaughtered there are severe signs of stress noted. Cattle are walked through dead and dying animals to the next slaughter station.	Animals are brought to the killing floor individually. The layout means that the animal does not have close contact with dead or dying animals. The casting and slaughter process is swift.
The whole slaughterhouse is noisy, shouting, singing, whistling, radios blaring, dropping equipment, clanging, animals reacting and traffic.	Noise is greatly reduced to prevent stress. Workers and animals are in a peaceful environment.
Bad lighting makes moving the cattle a traumatic event, also the poor lights prevent inspection of the neck cut following slaughter.	Good lighting has been fitted to prevent shadows when moving animals and also to allow the slaughtermen to see anatomy during slaughter to ensure correct neck cut and swift bleed out.
Nobody at the slaughterhouse understands the difference between death and unconsciousness; cattle are dressed and butchered while alive.	Slaughtermen have been trained in checking death vs. unconsciousness
Animals in the lairage are in barren environment for up to 24 hours. The ropes are tight preventing movement or interaction.	Animals are provided with food and water and longer ropes in lairage area to allow movement
Casualty animals are ignored until the end of the shift.	Treatment and handling of casualty animals is prioritized, with the focus on alleviating animal suffering.
Workers are frequently injured, by being kicked by cow while working (and another cow is lead through work space), or from injury during casting or trying to move cattle around.	Worker safety has been considered at each stage and workers are empowered and given ownership of the positive change throughout the training.

As the program successfully progressed in Bali, the AWT training model expanded into other areas of Indonesia. In January 2004, HSI and WSPA collaborated once again and successfully provided the AWT program in Java, the center of Indonesia's meat production. In 2007, following the conclusion of the welfare training in Java, the Malaysian government expressed interest in conducting the same educational program throughout its government facilities, upon learning of the successful changes to the Indonesian farm animal production system. Presently, HSI and AWT are in partnership to introduce this program in Malaysia. The first of the workshops are due to take place in 2008.

The success of these programs has been exceptional. One of the primary interests held by the Ministry of Agriculture in Bali in initiating and implementing this program was based on economic viability and the need to increase food production for export, as the belief was held that higher standards of welfare would increase meat quality and, in turn,

expand export options. The experiences of HSI and our partners clearly show the direct correlation between improved welfare standards and improved product quality and productivity.

Improving the Welfare of Egg-Laying Hens in India

In recent years, we have begun to work closely with India's large-scale egg and poultry companies, food retail chains, and consumers, encouraging a shift away from the most inhumane practices in animal agriculture, such as the confinement of egg-laying hens in battery cages. India is one of the top four egg-producing countries in the world, with the nation's approximately 227 million egg-laying hens producing more than 48 billion eggs per year.⁶¹ Commercial egg production, which accounts for more than 80% of India's egg production, almost exclusively employs battery cages,⁶² which have been shown through extensive scientific inquiry to severely impair the welfare of hens, as they are unable to fully stretch their wings, nest, exercise, or engage in nearly any of their natural behavioral repertoire.⁶³ Facilities with 10,000-50,000 birds confined into a single shed have become customary in India.⁶⁴ While various animal protection groups within the country have expressed concern about the animal cruelty associated with this type of industrial production system, the development community has not yet fully addressed their negative impacts on human health and livelihoods.

Although the threats industrial systems pose to public health, the environment, and rural livelihoods have been well-documented in the United States and other developed countries, there is a dearth of similar studies in India. The Pew Commission on Industrial Farm Animal Production warned that "[t]he spread of industrial farm animal production to the developing world brings the benefit of rapid production of meat, but at the cost of environmental and public health, costs that may be exacerbated by institutional weaknesses and governance problems common in developing countries."⁶⁵

Epidemiological studies have shown that workers in industrial egg and broiler chicken production facilities in India suffer greater incidence of respiratory disorders than their counterparts in other agricultural industries.^{66,67} In fact, a study of respiratory diseases among agricultural workers in India found that the highest prevalence of work-related respiratory symptoms (40.2%) was recorded in poultry workers.⁶⁸ Those who had worked on poultry farms for a greater number of years were more likely to report respiratory symptoms than those who had worked on poultry farms for fewer years.⁶⁹ Respondents also noted an increase in their respiratory symptoms over the course of their employment on the poultry farms, a relationship that was not found in other agricultural environments.⁷⁰ The crowded, stressful, and unsanitary conditions in industrial egg production facilities are also ripe for the emergence of new infectious diseases, including highly pathogenic strains of avian influenza.^{71,72} As workers in India routinely handle eggs and birds with their bare hands, the risk of contracting infections and spreading it to their families is high.⁷³

Six large poultry integrators account for nearly 40% of egg production in India. Industry reports state that India will see the market further consolidate, leading to the dominance of large-scale producers and the likely elimination of small poultry farmers from the country's industry. "Regardless of the number of government schemes for backyard poultry, small units not connected to large scale marketing organizations...would find it extremely difficult to survive because of sheer competitive pressures."⁷⁴

Based on years of research on rural livelihoods, particularly those of women, and the animal agriculture sector in India, social scientists Rangnekar and Rangnekar concluded that "the [industrial farm animal production] system is suitable for a relatively developed area and resource rich persons. The system is not appropriate for underdeveloped rural areas and resource poor, underprivileged families which account for majority of rural population."⁷⁵

Rural populations in India suffer significantly higher rates of malnutrition than their urban counterparts.^{76,77} However, these industrial animal agriculture models do little to improve nutrition in these areas—75% of eggs produced in India are consumed by 25% of the population living in urban/semi-urban areas.⁷⁸ As such, low-welfare industrial practices must not be condoned based on food security indicators. Evidence suggests that these low-welfare and intensive systems further impoverish rural communities. The type of egg and meat production that most benefits these poor households takes place on rural homesteads, is managed by small farmers, and uses indigenous breeds of birds not confined in cages.

Even modest changes in existing industrial production systems, such as a switch to cage-free housing for laying hens, could result in considerable welfare improvements for the animals. However, mitigating the impacts on human health and the environment will require significant decreases in stocking densities, and poses a challenge to the highly concentrated poultry industry. Given the existing institutional weaknesses in developing countries like India, it is difficult to imagine higher environmental and public safety standards being implemented without significant pressure and support from international agencies such as the FAO. We welcome FAO's support in our ongoing initiatives, albeit in their early stages, to truly bring about meaningful changes both for animals and the people of India.

Improving the Welfare of Cattle Raised for Beef in Costa Rica

The Costa Rican animal agriculture sector employs about 12% of the country's labor force and raises approximately 1 million animals for milk and beef production. The local economies of San Carlos in the north and Perez Zeledón in the south depend mostly on animals raised for food. The Costa Rican beef industry has historically been geared toward local consumption, with less than 10% of its product exported annually to countries within the Central American region, primarily El Salvador and Guatemala, as well as to the United States.⁷⁹ Despite the current relatively low percentage of exports, the industry has recognized that open markets may increase the potential for export, particularly of beef raised according to higher animal welfare standards, to developed countries. International competition has become more important due to the Free Trade Agreement (FTA) negotiated between the United States, Dominican Republic, and Central America (CAFTA-DR) and the FTA in negotiation with the European Union, which further generates interest in advancing farm animal welfare improvements.

The Costa Rican National Livestock Association, Corporación de Fomento Ganadero (CORFOGA), representing all 46,000 producers in the country, endeavors to promote sustainable ways to enhance the animal agriculture sector, especially for small and medium-sized producers. Its responsibilities include participating in the negotiation of FTAs, particularly those with growing consumer preferences for higher welfare products, such as the European Union and the United States. In preparing for competition in open markets, CORFOGA developed a strategic plan with priorities for the animal agriculture sector that include preparing the beef industry for market globalization, making the beef industry sustainable, and ensuring proper compliance with treaties that affect the overall animal agriculture sector. These priorities have pinpointed animal welfare as an instrumental area to address.

Given the growing importance of international trade, rigorous food safety standards, and animal welfare requirements, the Costa Rican beef industry invited HSI to provide technical assistance, education, and training to improve farm animal welfare to better enable the members of the production chain to benefit from growing markets for higher welfare products on national, regional, and international levels. Since 2004, in partnership with the national animal agriculture association and the national beef industry, we have worked extensively throughout Costa Rica's beef industry.

CORFOGA and HSI's working relationship provides CORFOGA members with the necessary tools* to implement improvements in animal welfare and to comply with evolving international and national laws and standards for animal welfare. Complementary in conception to our efforts in Indonesia, HSI's work in Costa Rica includes presentations, workshops, and trainings on animal welfare, which encompass fundamental elements of animal well-being and the economic implications of higher welfare practices on transport, trade issues, and meat quality. The animal handling program has improved the welfare of cattle and also provided economic benefits for producers, improved productivity for workers, and elevated food safety. Due to their success after two years in practice, animal welfare trainings are now offered by CORFOGA in its educational outreach program, in collaboration with HSI.

In just the three years from 2004 to 2007, HSI reached more than 2,000 people within the Costa Rican animal agriculture sector, including university students, auction house representatives, slaughterhouse workers, government employees with the Animal Health Department, and farmers, among others. As well, HSI has provided technical

* Appended are educational training posters HSI prepared and distributed with CORFOGA in Spanish.

assistance on specific issues related to animal welfare improvements to three of Costa Rica's four major slaughter plants, four auction houses, and several universities, positively impacting the lives of more than 650,000 animals.

To analyze, assess, and ultimately promote the importance of animal welfare in beef production, CORFOGA and HSI conducted lesion studies in 2004 and 2006 to quantify the economic losses caused by poor animal handling practices, including the use of the electric prod, improper transportation, and rough and stressful handling of animals. These studies determined an average loss of \$2.00 per carcass for producers due to lesions caused by poor handling practices.

HSI and CORFOGA invited Bristol's AWT to assess welfare, and detailed data were collected from farms, transport vehicles, and slaughter facilities to develop a training program aimed at improving animal welfare within the beef and pork production chain. The main objective was to establish a local training program that would be able to transfer information to other segments of industry.

A steering group from the graduating group of the "train the trainers" modules established a Beef Animal Welfare Commission to oversee the creation and implementation of the trainings. This is one of the first such groups in Latin America. HSI leads the initiative, providing information on animal welfare issues and proposing specific activities to undertake. The Commission, with CORFOGA's endorsement, has recently initiated the creation of a training workshop for participants of the animal agriculture sector, which studies animal welfare at all steps in the production process, from farm through slaughter.

In 2008, HSI collaborated with the Costa Rican Department of Animal Health, EARTH University, WSPA, and other local organizations to hold the First Latin America Farm Animal Welfare Conference. The two-day symposium included approximately 125 representatives from auctions, slaughterhouses, and government, as well as students and transporters. Following the successful conference, HSI representatives joined 16 others to form the Latin American Animal Welfare Coalition, a group comprised of experts from different Latin American countries, including Brazil, Chile, Colombia, and Bolivia. The focus of the coalition is to promote overall awareness of the importance of animal welfare; strengthen animal welfare legislation and standards in Latin America; improve production, transport, and slaughter practices; and promote incentives and/or sanctions to encourage improvements in animal welfare.

Additionally, parallel to work done with CORFOGA, two auction houses have approached HSI to develop a long-term strategy for measurable improvements in animal welfare to provide value-added products and prepare them for open market schemes. HSI is in the process of working on establishing a work plan for auction houses that would enable them to implement short- and long-term improvements in practices and facilities that would positively affect animal welfare. HSI will also conduct twice-yearly employee audits to quantify welfare improvements. After 3-5 years of measured welfare improvements, the auctions are expected to be positioned to access a certification scheme that would provide value-added to a final product.

Conclusion

HSUS and HSI engage several different strategies to advance our efforts to achieve a humane and sustainable world for all animals, reduce suffering, and create meaningful and lasting social change. We work to be a constructive force in the development and strengthening of animal welfare practices, systems, and standards around the world; help shape more humane and responsible international trade policy; provide on-the-ground training and veterinary and disaster relief services; consult, collaborate, and negotiate with corporate, industry, and policy making leaders; and conduct scientific investigations to provide further evidence that improving the welfare of animals has positive effects on us all.

Because animal welfare issues are not exclusive to any one organization, we urge the FAO to conjoin its initiatives to combat hunger with a commitment to proactively work to improve animal welfare. We believe the FAO can be instrumental in providing support for capacity building and technical assistance efforts in developing countries to complement the work already being done through the WTO and other bilateral agreements. This can be accomplished by engaging experts in this field and preparing papers or briefings on this topic, disseminating information about

improved animal welfare standards in developing countries, and/or convening meetings about how to use the multilateral trading system to improve animal welfare and sustainable development. On-the-ground support through the FAO's field work may also be appropriate, and coordination with the WTO may facilitate the FAO's efforts. Finally, we encourage the FAO to promote the exclusive use of non-industrialized animal production methods as part of the organization's policy. These and other initiatives by the FAO to improve animal welfare and encourage sustainable development will be complementary to its mission to achieve a world without hunger, and we welcome the opportunity to support the FAO's work to this end.

¹ Scientific Panel on Animal Health and Welfare. 2005. Opinion of the Scientific Panel on Animal Health and Welfare on a request from the Commission related to the welfare aspects of various systems of keeping laying hens. The EFSA Journal 197:1-23. www.efsa.europa.eu/EFSA/Scientific_Opinion/lh_opinion1.pdf. Accessed March 25, 2008.

² Duncan IJH. 1981. Animal rights—animal welfare: a scientist's assessment. Poultry Science 60(3):489-99.

³ Mench JA. 1992. The welfare of poultry in modern production systems. Poultry Science Review 4(2):107-28.

⁴ Food and Agriculture Organization of the United Nations. FAO Statistical Database, FAOSTAT. <http://faostat.fao.org/site/567/default.aspx>. Accessed April 23, 2008.

⁵ Nierenberg D. 2006. Rethinking the global meat industry. In: Starke L (ed.), The Worldwatch Institute. 2006. State of the World 2006: A Worldwatch Institute Report on Progress Toward a Sustainable Society. (New York: W.W. Norton & Company, Inc., pp. 27).

⁶ Food and Agriculture Organization of the United Nations, Commission on Genetic Resources for Food and Agriculture. 2007. The state of the world's animal genetic resources for food and agriculture. www.fao.org/docrep/010/a1250e/a1250e00.htm. Accessed April 23, 2008.

⁷ Food and Agriculture Organization of the United Nations, Commission on Genetic Resources for Food and Agriculture. 2007. The state of the world's animal genetic resources for food and agriculture. www.fao.org/docrep/010/a1250e/a1250e00.htm. Accessed April 23, 2008.

⁸ Verge XPC, De Kimpe C, and Desjardins RL. 2007. Agricultural production, greenhouse gas emissions and mitigation potential. Agricultural and Forest Meteorology 142:225-69.

⁹ Smithfield Foods. 2007. Smithfield Foods makes landmark decision regarding animal management. Press release issued January 25. www.smithfieldfoods.com/Enviro/Press/press_view.asp?ID=394.

¹⁰ Colorado Livestock Association. 2007. Colorado pork producers announce new animal management procedures. Press release issued December 20. www.coloradolivestock.org/controller/home/alerts.html?inet=aD11YnpyLW55cmVnZi15YXgmcmg9dWJ6ci15YXgmcnBsdWdpbi1hY3Rpb249ZGVmYXVsdCZwbHVnaW4tYWNoaW9uPjY3BsdWdpbj1wbmkxJnJlY2lkPTE5NjI.

¹¹ Maple Leaf Foods. 2007. Maple Leaf endorses U.S. industry direction on sow stalls. Press release issued January 31. <http://investor.mapleleaf.ca/phoenix.zhtml?c=88490&p=irol-newsArticle&ID=956262&highlight>. Accessed May 16, 2008.

¹² Storck AB. 2007. Veal processor switches to new calf-housing system. Meatingplace.com, January 29.

¹³ Salvage B. 2006. Revolutionizing the veal industry. Meat Processing, December, pp. 14-21. www.meatprocessing-digital.com/meatprocessing/200612/.

¹⁴ Salvage B. 2006. Revolutionizing the veal industry. Meat Processing, December, pp. 14-21. www.meatprocessing-digital.com/meatprocessing/200612/.

¹⁵ Smith R. 2007. Veal group housing approved. Feedstuffs, August 6, p. 3.

¹⁶ International Finance Corporation. 2006. Good practice note: animal welfare in livestock operations. October, No. 6. www.ifc.org/ifcext/sustainability.nsf/Content/Publications_GoodPractice_AnimalWelfare.

¹⁷ Minority Staff of the U.S. Senate Committee on Agriculture, Nutrition, and Forestry. 1997. Animal waste pollution in America: an emerging national problem. Report compiled for Senator Tom Harkin, p. 11.

¹⁸ U.S. Environmental Protection Agency. 2003. National Pollutant Discharge Elimination System permit regulation and effluent limitation guidelines and standards for concentrated animal feeding operations (CAFOs); final rule. February 12. Federal Register 68(29):7176, 7181.

¹⁹ U.S. Environmental Protection Agency Emission Standards Division. 2001. Emissions from animal feeding operations, draft. August 15. p. xi. www.epa.gov/ttn/chief/ap42/ch09/draft/draftanimalfeed.pdf. Accessed June 17, 2008.

²⁰ U.S. Environmental Protection Agency, Office of Water. 2001. Environmental assessment of proposed revisions to the National Pollutant Discharge Elimination System regulation and the effluent guidelines for concentrated animal feeding operations. www.epa.gov/waterscience/guide/cafo/pdf/EnvAssessPt1of2.pdf. Accessed June 17, 2008.

²¹ American Public Health Association. 2003. Precautionary moratorium on new concentrated animal feed operations. Policy number 20037. www.apha.org/advocacy/policy/policysearch/default.htm?id=1243. Accessed June 18, 2008.

- ²² Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options. Food and Agriculture Organization of the United Nations, p. xxi.
- ²³ Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options. Food and Agriculture Organization of the United Nations.
- ²⁴ Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options. Food and Agriculture Organization of the United Nations, p. xx.
- ²⁵ Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options (Rome: Food and Agriculture Organization of the United Nations, p. xxi).
- ²⁶ Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options (Rome: Food and Agriculture Organization of the United Nations, p. xxi).
- ²⁷ Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options (Rome: Food and Agriculture Organization of the United Nations, p. xxi).
- ²⁸ Paustian K, Antle JM, Sheehan J, and Paul EA. 2006. Agriculture's role in greenhouse gas mitigation. Pew Center on Global Climate Change, pp. 4-5.
- ²⁹ Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options. Food and Agriculture Organization of the United Nations, pp. 86 and 90-92.
- ³⁰ Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options. Food and Agriculture Organization of the United Nations, p. 275.
- ³¹ Intergovernmental Panel on Climate Change. 2007. Climate change 2007: climate change impacts, adaptation and vulnerability; summary for policymakers. Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report.
- ³² Anderson S. 2003. Animal genetic resources and livelihoods. *Ecological Economics* 45(3):331-9.
- ³³ Intergovernmental Panel on Climate Change. 2007. Climate change 2007: climate change impacts, adaptation and vulnerability; summary for policymakers. Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report.
- ³⁴ Halweil B. 2005. The irony of climate. *World Watch Magazine*, March/April.
- ³⁵ Menin R. 2007. Human Development Report 2007/2008. Fighting climate change: Human solidarity in a divided world. Famine in Malawi: Causes and consequences. United Nations Development Program. http://hdr.undp.org/en/reports/global/hdr2007-2008/papers/menon_roshni_2007a_malawi.pdf. Accessed April 23, 2008.
- ³⁶ Revkin A. 2007. Poor nations to bear brunt as world warms. *The New York Times*, April 1.
- ³⁷ Intergovernmental Panel on Climate Change. 2007. Climate change 2007: climate change impacts, adaptation and vulnerability; summary for policymakers. Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report.
- ³⁸ Casey M. 2007. Millions face hunger from climate change. *The Associated Press*, April 10.
- ³⁹ Food and Agriculture Organization of the United Nations. 2007. Adaptation to climate change in agriculture, forestry and fisheries: perspective, framework and priorities, pp. 15-6. <ftp://ftp.fao.org/docrep/fao/009/j9271e/j9271e.pdf>. Accessed April 23, 2008.
- ⁴⁰ Intergovernmental Panel on Climate Change. 2007. Climate change 2007: climate change impacts, adaptation and vulnerability; summary for policymakers. Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report, Chapter 5: food, fibre, and forest products, pp. 275 and 277-278.
- ⁴¹ Baldauf S. 2006. Africans are already facing climate change. *The Christian Science Monitor*, November 6. www.csmonitor.com/2006/1106/p04s01-woaf.html. Accessed April 23, 2008.
- ⁴² United Nations Environment Programme. 2007. Sudan: post-conflict environmental assessment, p. 8. http://postconflict.unep.ch/publications/UNEP_Sudan.pdf. Accessed April 23, 2008.
- ⁴³ United Nations Environment Programme. 2007. Sudan: post-conflict environmental assessment, p. 8. http://postconflict.unep.ch/publications/UNEP_Sudan.pdf. Accessed April 23, 2008.
- ⁴⁴ Baldauf S. 2006. Africans are already facing climate change. *The Christian Science Monitor*, November 6. www.csmonitor.com/2006/1106/p04s01-woaf.html. Accessed April 23, 2008.
- ⁴⁵ See Understanding the WTO: principles of the trading system. www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm. Accessed August 27, 2008.
- ⁴⁶ Animal welfare concerns appear to be the basis for trade bans on seal products imposed by Belgium and the Netherlands, which were challenged by Canada at the WTO in September 2007. See European communities — certain measures prohibiting the importation and marketing of seal products, WT/DS369. The dispute is still in the consultations phase.
- ⁴⁷ WTO Ministerial Declaration, Fourth Session Doha, WT/MIN(01)/DEC/W/1 at 2, para. 6 (14 Nov. 2001) [*hereinafter* Doha Declaration]. According to the Doha Declaration, adopted by WTO Members at the Fourth Ministerial Conference in Doha, Qatar, in 2001, WTO Member countries:
- ... strongly reaffirm [their] commitment to the objective of sustainable development, as stated in the Preamble to the Marrakesh Agreement [and] are convinced that the aims of upholding and safeguarding an open and*

non-discriminatory multilateral trading system, and acting for the protection of the environment and the promotion of sustainable development can and must be mutually supportive.

⁴⁸ Doha Declaration at 8, paras. 38-41.

⁴⁹ Doha Declaration at 2, para. 10.

⁵⁰ See Brazil-measures affecting imports of retreaded tyres, WT/DS/332/R at para. 7.112 (June 11, 2007).

⁵¹ Poll conducted by David Hill of Hill Research Consultants and cosponsored by The HSUS, 2003.

⁵² Organization for Economic Cooperation and Development (OECD) Agriculture and Food. 2003. Organic agriculture: sustainability, markets and policies.

⁵³ GN/AG/NG/W/90 (Dec. 14, 2000).

⁵⁴ Statement of then USTR, Ambassador Robert Zoellick, at the WTO Ministerial in Cancún, Mexico in 2003 publicly announcing U.S. support for animal welfare payments that meet Green Box criteria.

⁵⁵ See U.S. Proposal for WTO agriculture negotiations (Oct. 10, 2005).

⁵⁶ See U.S. Proposal for WTO agriculture negotiations (Oct. 10, 2005).

⁵⁷ See, e.g., Union of Concerned Scientists. 2008. CAFOS uncovered: the hidden costs of confined animal feeding operations, p. 34, 37 (indicating that in the United States, for example, billions of dollars are given in direct and indirect subsidies to the industrial animal production industry).

⁵⁸ Doha Declaration at 7, para. 33.

⁵⁹ See EC – hormones dispute, WT/DS320.

⁶⁰ See Central America – European Union: background and negotiations, summary of the fourth round of negotiations (July 14-18, 2008). www.sice.oas.org/TPD/CACM_EU/CACM_EU_e.ASP#Background. Accessed August 27, 2008.

⁶¹ Food and Agriculture Organization of the United Nations. FAO Statistical Database, FAOSTAT.

<http://faostat.fao.org/site/567/default.aspx>. Accessed August 27, 2008.

⁶² Landes M, Persaud S, and Dyck J. 2004. India's poultry sector: development and prospects. U.S. Department of Agriculture Economic Research Service, Agriculture and Trade Report No. WRS04-03. www.ers.usda.gov/Publications/WRS0403/. Accessed August 27, 2008.

⁶³ See A comparison of the welfare of hens in battery cages and alternatives systems, prepared for the Humane Society of the United States by Sara Shields, Ph.D., and Ian J.H. Duncan, Ph.D.

www.hsus.org/farm/resources/research/practices/comparison_hen_welfare_cages_vs_cage_free.html.

⁶⁴ Rattanani J. 2006. India to see tremendous changes. World Poultry Review 22:6.

⁶⁵ Pew Commission on Industrial Farm Animal Production. 2008. Putting meat on the table: industrial farm animal production in America.

⁶⁶ Singh AB et al. 1999. Respiratory disease among agricultural industry workers in India: a cross-sectional epidemiological study. Annals of Agricultural and Environmental Medicine 6:1.

⁶⁷ Singh AB. 1996. Airborne fungi as important occupational sensitizers in poultry workers. Indoor and Built Environment 5:3.

⁶⁸ Singh AB et al. 1999. Respiratory disease among agricultural industry workers in India: a cross-sectional epidemiological study. Annals of Agricultural and Environmental Medicine 6:1.

⁶⁹ Singh AB et al. 1999. Respiratory disease among agricultural industry workers in India: a cross-sectional epidemiological study. Annals of Agricultural and Environmental Medicine 6:1.

⁷⁰ Singh AB et al. 1999. Respiratory disease among agricultural industry workers in India: a cross-sectional epidemiological study. Annals of Agricultural and Environmental Medicine 6:1.

⁷¹ Nierenberg D. 2005. Happier meals: rethinking the global meat industry. Worldwatch Paper 171.

⁷² Greger M. 2006. Bird Flu: A Virus of Our Own Hatching (New York, NY: Lantern Books).

⁷³ Jamwal N et al. 2006. Is influenza afflicting the government? Down to Earth, March.

⁷⁴ Rattanani J. 2006. India to see tremendous changes. World Poultry Review 22:6.

⁷⁵ Rangnekar SD and Rangnekar DV. 1999. Developing traditional family poultry production in tribal belt of Western India. Food and Agriculture Organization of the United Nations, International Network for Family Poultry Development E-Conference.

⁷⁶ Rajaram S, Zottarelli LK, and Sunil TS. 2007. Individual, household, programme and community effects on childhood malnutrition in India. Maternal and Child Nutrition 3:2.

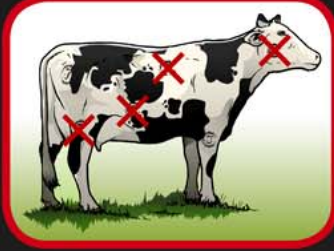
⁷⁷ Smith LC, Ruel MT, and Ndiaye A. 2004. Why is child malnutrition lower in urban than rural areas? Evidence from 36 developing countries. International Food Policy Research Institute, FCND Discussion Paper Number 176.

⁷⁸ Chandrashekar MV. 2007. Poultry industry on an upswing. Food and Beverage News, March 31.

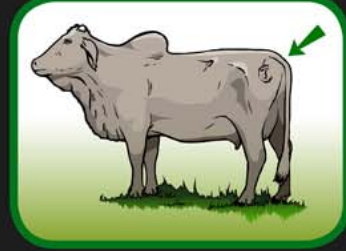
⁷⁹ Perez E, Pomareda C, and Shuetz P. 2004. Study on the role of supermarkets in the meat trade in Costa Rica and Nicaragua. International Livestock Research Institute.

ON THE FARM

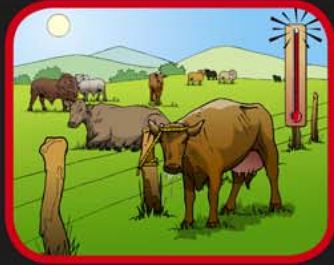
Animal Welfare can make your job easier and improve your yields



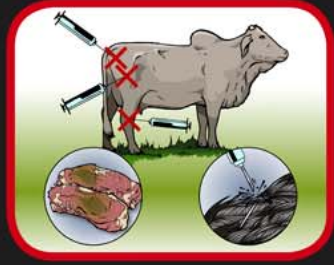
Branding the cattle in the correct place is less painful and ensures the animal can recuperate quicker.



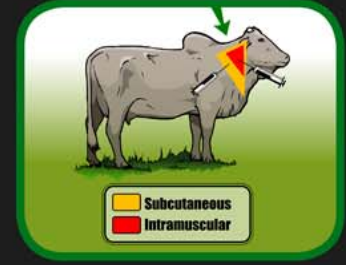
All procedures (dehorning, castration, branding) must be carried out on very young calves.



Provide your cattle access to shade and water at all times.



Inject in the correct location.



Provide your animals with enough food and water.



Control parasites regularly.



HUMANE SOCIETY INTERNATIONAL

TRANSPORT

Animal Welfare can increase your earnings and make your job easier



Transport cattle in trucks that are in good condition.



Trucks should have non slip floors.



Trucks should be kept clean.



Do not transport sick or injured animals.



Use the correct density and appropriate group divisions to load trucks.



Use well designed trucks.

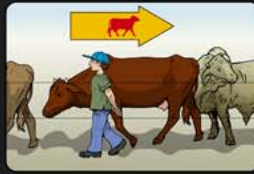
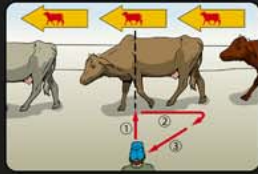


Ensure trucks are driven sensibly.



HANDLING

Animal Welfare can make animal handling easier and more efficient



To move the animals in the desired direction, use the animal's shoulder as a starting point. Move backward to get the animals to move forward. Move forward in order to get the animals to move backward and continue the movement in a triangular motion in order to get continuous movement of the animals.



Do not use prods, sticks, sharp objects or harm the animal in any way.



Give the animal a few seconds to study shadows, contrasts and obstacles.



Remove unnecessary objects from the chutes where the animals are handled.



Limit the number of people working the animals.

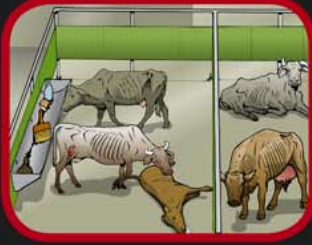


Work the animals in small groups.



SLAUGHTER

Animal Welfare can increase your profits



Provide water for the animals in waiting pens.



Appropriate handling of the animals avoids carcass losses.



Place the stunner in the correct location during stunning.



Verify that the animal is properly stunned before it is bled.



Keep the stunning equipment dry, clean and stored in an appropriate place.

